



Analysis of the Work Motives of Wonocolo Traditional Oil Miners

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This study aims to analyze the influence of physical environmental factors (geosite) and cultural environmental factors (culturesite) on the work motivation of traditional oil miners in Wonocolo Village, Bojonegoro Regency in 2025. This research is motivated by the unique characteristics of Wonocolo traditional oil mining which is still managed traditionally and is a historical legacy from the Dutch era. In addition, the issue of developing geosites, geoparks, and sustainable economic transformation is currently an important concern in local resource-based regional development. The research subjects were traditional oil miners who were still actively working and directly involved in the production process. The study used a descriptive quantitative approach with data collection techniques through closed questionnaires using a Likert scale. The research sample was determined using the snowball sampling technique considering the informal characteristics of workers. Data analysis was carried out using the Partial Least Squares–Structural Equation Modeling (PLS-SEM) method with the help of WarpPLS software. The results of the study show that geosites have a negative and significant effect on work motivation, which indicates that increasing public awareness of the geological value and potential for regional development encourages reduced dependence on mining activities as the main livelihood. However, this condition does not necessarily make people leave their jobs as miners due to limited alternative jobs and household economic considerations. Meanwhile, culturesite does not have a significant effect on work motivation, which shows that cultural values and mining traditions have not become a dominant factor in people's decisions to work as miners. These findings indicate that economic motives are still the primary consideration for people in maintaining employment in the traditional mining sector. This research contributes to the development of geosite and culturesite-based development economic studies, and has important implications for the formulation of Wonocolo area management policies towards a more sustainable local economic transformation through the development of geotourism and alternative economies based on local potential.

INTRODUCTION

Traditional oil mining activities in Wonocolo, Bojonegoro Regency, are one of the local economic phenomena that have been going on for generations and have become a source of livelihood for most of the local community. The traditional oil mining area of Wonocolo also has the potential to become a culturesite as a heritage site of small-scale mining, as well as a geosite as a geological asset with value for conservation and sustainable development (Tuzyahroya & Sariffuddin, 2020). However, the dynamics of area management, environmental conservation demands, and the emergence of alternative geosite-based land use have brought about changes in the patterns and motives of communities to work as miners.

Work is a basic human need that affects the economic, social, and psychological life of individuals. In addition to being a source of income, work is a means of self-actualization and achieving social status within the community (Lysova *et al.*, 2023). Career choices are influenced by internal factors, such as interests and abilities, as well as external factors, including economic conditions and job opportunities. Understanding work motivation is important for explaining individuals' decisions in choosing and staying in certain jobs (Pham *et al.*, 2024).

Work motivation is the drive that influences an individual's behavior in performing tasks and persevering in the face of occupational risks. Internal factors, such as personal aspirations and satisfaction, influence work intensity, while external factors, including social norms, culture, and the physical environment, shape motivation patterns (Bandhu *et al.*, 2024). In rural communities, decisions about work are often influenced by family traditions, social values, and the existence of the community. This shows that employment in the informal sector is not based solely on economic considerations (Tjokorda Gde Indraputra *et al.*, 2017).

The informal sector in rural areas, such as agriculture, small trade, or crafts, is characterized by uncertain income and high occupational risks. Even so, this job remains the primary choice for people due to the limited alternatives for formal employment (Goetz, 2022). Social and cultural

factors, including norms, traditions, and kinship relationships, play an important role in shaping work motivation. This phenomenon forms the basis for analyzing the influence of the physical and cultural environment on work motivation. (Vo *et al.*, 2022).

The physical environment of the workplace is a significant external factor that influences individual motivation (Dumitriu *et al.*, 2025). Geographical conditions, availability of natural resources, and ease of access shape comfort, safety, and work effectiveness. This physical dimension can be conceptualized as a geosite component, which encompasses the spatial location and environmental potential of a workplace. Therefore, understanding geosites is crucial for analyzing how physical environmental factors influence individuals' decisions regarding job choices and work engagement (Dumitriu *et al.*, 2025).

This phenomenon is evident among miners in the traditional oil mining industry in Wonocolo, where career choices cannot be explained by a single motive (Dariyo, 2020). Economic factors, in the form of relatively higher income compared to local agriculture, are indeed the main drivers (extrinsic motivation). However, their persistence in the face of extreme physical risks and legal uncertainty reveals deeper motives, such as cultural and historical heritage (culturesite) that shapes communal identity, as well as social solidarity and a sense of ownership of local resources (intrinsic motivation). Therefore, analyzing the motives behind their work is key to understanding the resilience of the Wonocolo community in carrying out such risky work (Rami *et al.*, 2022).

Traditional oil mining in Wonocolo is a clear example of the informal sector that still survives today. Activities are carried out from generation to generation using simple technology and directly involving the local community. (Tuzyahroya & Sariffuddin, 2020). Despite the uncertain income and high occupational risks, mining remains the main source of livelihood for the community. This phenomenon indicates a strong work ethic influenced by physical conditions and local culture (Rafael *et al.*, 2023).

Oil mining in Wonocolo has evolved into an intangible cultural heritage that is deeply

rooted in the social structure of the community. The mining profession is passed down from generation to generation, not only in the form of technical skills, but also values, work ethic, and tolerance for risk (Dariyo, 2020). This aspect of communal identity forms an intrinsic and social non-economic motive, whereby working in the mines is seen as an effort to preserve family history and social legitimacy. Recognition from the community is a major source of motivation that strengthens workers' loyalty and resilience to this risky profession (Johnson *et al.*, 2025).

The strength of Culturesite in Wonocolo is manifested in a communal solidarity system that functions as the main protection mechanism amid minimal formal guarantees. Cooperation patterns, traditional profit sharing, and mutual assistance in the event of accidents show that social motives play an equal role to economic motives (Arthur-holmes & Dokbila, 2024). On the other hand, the sustainability of this profession is also determined by the condition of the geosite in the form of shallow oil reserves that allow exploitation with simple technology. The availability of these natural resources is a key physical prerequisite that allows work to be passed down and continue despite the high risks involved.

In Wonocolo, the cultural landscape is reflected in the historical legacy of traditional oil mining, work practices passed down through generations, and the social identity of the community, which has been shaped by mining activities over several generations (Dariyo, 2020). In some informal mining communities, cultural values, social solidarity, and communal identity can play a role in sustaining the community's livelihoods (Arthur-holmes & Dokbila, 2024). However, this influence depends heavily on the socioeconomic and institutional characteristics of each region. In the context of Wonocolo, the community's decision to continue working as traditional oil miners appears to be influenced more by economic considerations such as income levels, oil well productivity, occupational risks, and limited alternative livelihoods than by the cultural values associated with mining activities (Tuzyahroya & Sariffuddin, 2020).

The presence of mining sites with shallow oil reserves continues to provide economic

opportunities for some residents of Wonocolo (Hung *et al.*, 2025). Compared to the agricultural sector, which is dependent on seasons and climatic conditions, traditional mining activities can, under certain circumstances, provide a relatively quicker source of daily income. However, declining productivity in traditional oil mining, high occupational risks, and uncertainty regarding the sustainability of mining activities have led the community to begin considering economic alternatives outside the mining sector. In this context, the presence of geosites does not directly encourage people to leave their jobs as miners, but it is beginning to influence a shift in the community's orientation toward more sustainable economic opportunities in the future.

Working as a traditional oil miner in Wonocolo inherently carries extreme physical risks due to the use of equipment that does not meet occupational health and safety standards, such as the risk of fire, toxic gases, and long-term health effects. In addition, workers also face non-physical risks in the form of legal uncertainty, which leads to psychological hazards and stress (Tuzyahroya & Sariffuddin, 2020). This combination of physical and non-physical risks poses a major conflict, because even though workers are aware of these dangers, they continue to work. This indicates that economic and sociocultural motives are far stronger drivers than workplace safety concerns (Rafael *et al.*, 2023).

Several previous studies have examined motives for working in the informal sector and traditional mining from various perspectives. Research by (Dariyo, 2020) shows that traditional miners' work motives are influenced by social and psychological factors, as well as individual resilience in facing occupational risks.. (Tuzyahroya & Sariffuddin, 2020) emphasize the social welfare of the community and the sustainability of traditional mining activities as a source of livelihood for the Wonocolo community. Another study by (Rami *et al.*, 2022) also emphasizes the importance of social solidarity in maintaining traditional mining activities.

Studies by Vo *et al.*, (2022) and Dumitriu *et al.*, (2025) show that physical and social environmental factors influence people's employment decisions also emphasize that culture serves as a mechanism for communities

to adapt to the limitations of formal employment. However, these studies address only some of the economic, social, cultural, and environmental factors and do not place traditional mining activities within the framework of geology- and culture-based regional economic transformation. Furthermore, previous research has tended to be descriptive and has not empirically tested the causal relationships among variables.

Based on this description, the novelty of this study lies not only in the addition of the geosite variable, but also in how this study views work motives as part of the dynamics of the economic transformation of traditional mining communities. This study integrates geosite and culturesite as factors influencing the shift in community work orientation from the extractive sector to more sustainable alternative economic opportunities. In addition, this study uses an empirical approach through Partial Least Squares–Structural Equation Modeling (PLS-SEM) to explain the causal relationship between physical environmental factors, culture, and work motivation in mining communities. Thus, this study provides a new contribution to the development of local resource-based development economic studies, particularly in the Wonocolo traditional oil mining area which has unique geological and cultural characteristics.

In line with the above discussion, this study aims to identify and examine the relationship between geosites and culturesites and the motivations for working as traditional oil miners in Wonocolo Village, Bojonegoro Regency. This study is based on the characteristics of Wonocolo as a traditional oil mining area where geological and cultural values have developed in tandem, thereby providing a unique context for understanding the economic behavior of the mining community (Dariyo, 2020). Although this region has been extensively studied from historical, social, and socioeconomic perspectives, empirical evidence regarding the relationship between the characteristics of geosites, culturesites, and the motivations for working as traditional oil miners remains relatively limited. Therefore, this study was conducted to provide preliminary empirical

evidence regarding the relationships among these variables in the local mining community of Wonocolo

The hypotheses in this study can be explained as follows, Hypothesis 1: Geosites have a significant effect on the motivation to work as a traditional oil miner in Wonocolo Village. Geosites are geological assets that possess scientific, educational, cultural, and economic value. The characteristics of geosites can influence the community's perceptions regarding the utilization of natural resources and economic opportunities in a given area. Hypothesis 2: Culturesites have a significant effect on the motivation to work as a traditional oil miner in Wonocolo Village. Culturesites represent the historical values, traditions, and cultural heritage that have developed within a community. In traditional mining areas, a work culture passed down from generation to generation can shape social identity, foster a sense of belonging to the profession, and promote the sustainability of culture-based economic activities.

RESEARCH METHODS

This study is a quantitative study with a descriptive quantitative analysis approach, which aims to describe and analyze the influence of physical environmental factors (Geosite) and cultural environmental factors (Culturesite) on the work motivation of traditional oil miners in Wonocolo (Riantas & Anwar, 2025). A descriptive approach was used to obtain an empirical picture of the characteristics of respondents and the trends in work motivation that developed in the traditional mining environment (Vo et al., 2022).

The population of this study consists of all traditional oil miners actively engaged in mining activities in Wonocolo Village, Bojonegoro Regency. Due to the lack of a sampling frame containing the exact number of active miners and the fact that mining activities take place in the informal sector which is difficult to identify administratively this study employed snowball sampling. This method is suitable for reaching a hidden population that is difficult to access

through probability sampling techniques (Noy, 2008). The recruitment process began with three key informants who met the study criteria: they were active traditional oil miners, had been working as miners for at least three years, were over 18 years of age, and were willing to provide information voluntarily. Each respondent recommended other miners who met the criteria until the recruitment process no longer yielded new respondents matching the study's characteristics. Based on this procedure, 30 respondents were identified, all of whom were active miners in Wonocolo Village.

This study uses Partial Least Squares Structural Equation Modeling (PLS-SEM) because it aims to analyze the relationships among latent constructs in an exploratory research context. Although PLS-SEM is known to be more flexible regarding sample size compared to covariance-based SEM, sample size should still be determined based on statistical power, expected effect size, the significance level (α), and the number of predictors in the model (Sarstedt *et al.*, 2022). Because of limited access to the population of active miners, this study is not intended to produce estimates that can be generalized to the entire population of traditional oil miners, but rather to obtain evidence of a relationship between geosite, cultursite, and work motives in the local mining community of Wonocolo Village.

Data collection was conducted using a structured questionnaire with a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). The research instrument was developed by adapting existing literature on geosites, cultursites, and work motivation, and then tailored to the characteristics of the traditional oil-mining community in Wonocolo Village

through a process of expert judgment and a pilot test. The Geosite variable was measured using four indicators: perceptions of the area's geological value, environmental conservation value, geotourism potential, and economic opportunities generated by geosite development. The Culturesite variable was measured through four indicators reflecting the historical value of mining, traditions passed down through generations, the cultural identity of the mining community, and the preservation of local cultural heritage. The Work Motivation variable is measured through four indicators, including the drive to earn income, the desire to maintain a livelihood as a miner, limited alternative employment options, and the willingness to continue working despite occupational risks. All items are measured using a five-point Likert scale, where higher scores indicate a stronger perception of the construct being measured.

Before data collection, each respondent was provided with an explanation of the research objectives, the benefits of the study, the voluntary nature of participation, and assurances that the respondents' identities and answers would be kept confidential. Informed consent was obtained from respondents before they completed the questionnaire. Given that the study was conducted among communities working in the traditional oil mining sector—an area sensitive to social and legal issues—the researchers did not collect information related to operational activities or the legal status of mining operations. All data were analyzed in aggregate form without disclosing individual identities or the locations of specific wells, thereby ensuring that respondents' confidentiality remained protected and minimizing social risks to participants.

Table 1. Operationalization of Variables

Variable	Operational Definition	Indicator	Scale
Geosite	Physical environmental conditions and workplace characteristics that affect the comfort and safety of traditional oil miners	- Geographical conditions of the mining site - Availability of oil resources - Level of physical risk at work - Accessibility of the mining site	Likert scale (1–5)

Variable	Operational Definition	Indicator	Scale
Culture site	Cultural values, traditions, and social bonds that develop in mining environments and influence work behavior	- Generational work traditions - Local cultural values - Social solidarity - Communal identity as miners - Economic motivation (extrinsic motivation)	Likert scale (1–5)
Work Motivation	Internal and external factors that influence individuals in choosing and maintaining employment as miners	- Sense of security and job continuity - Job satisfaction and pride (intrinsic motivation) - A sense of ownership of local resources	Likert scale (1–5)

Data analysis was conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM) with the assistance of WarpPLS software. The PLS-SEM approach was chosen because this study aims to analyze the relationships among latent constructs measured through several indicators, while also evaluating the model's predictive ability in the context of exploratory research with a relatively limited sample size. Compared to linear regression, PLS-SEM allows for the simultaneous testing of the measurement model (outer model) and the structural model (inner model), making it more suitable for analyzing the relationships between the variables geosite, culturesite, and work motivation as latent constructs. The following is the regression model equation used in this study:

$$Y = \beta_0 + \beta_1\chi_1 + \beta_2\chi_2 + \varepsilon \dots\dots\dots(1)$$

Where Y is Reasons for working as a traditional oil miner β_0 is Constant, χ_1 is Geosite χ_2 is Culturesite, β_1, β_2 is Regression coefficient, and ε is standard error.

The measurement model was evaluated to ensure that each indicator adequately represented the construct being measured. Convergent validity was assessed using factor loadings, with a criterion of ≥ 0.70 , and Average Variance Extracted (AVE) > 0.50 . Construct reliability was assessed using Composite Reliability (CR) and Cronbach's Alpha, with a minimum value of 0.70 as an indicator of adequate reliability. Next, discriminant validity was evaluated using the Fornell–Larcker criteria and cross-loading to ensure that each construct exhibited a good level of discrimination from the other constructs. Once the measurement model met the validity and

reliability criteria, the structural model was evaluated by analyzing path coefficients, the coefficient of determination (R^2), and the significance levels of the relationships between variables. Parameter significance testing was conducted using a bootstrapping procedure with resampling techniques to obtain standard errors, t-statistics, and p-values for each path in the model. In addition, model fit was evaluated using model fit indices provided by WarpPLS, such as the Average Path Coefficient (APC), Average R-squared (ARS), Average Adjusted R-squared (AARS), Average Variance Inflation Factor (AVIF), and Average Full Collinearity Variance Inflation Factor (AFVIF), based on the criteria recommended by Kock (2023). A model is considered valid if it meets the significance thresholds for APC, ARS, and AARS ($p < 0.05$), and if the AVIF and AFVIF values are below the maximum limit of 5, indicating the absence of multicollinearity issues that could interfere with model estimation.

According to (Cheung et al., 2024) and (Haji-othman et al., 2022), mathematically convergent validity is measured using the Average Variance Extracted (AVE) formula as follows:

$$AVE(X) = \frac{\sum_{i=1}^p \lambda_i^2}{\sum_{i=1}^p \lambda_i^2 + \sum_{i=1}^p Var(\varepsilon_i)} = \frac{1}{p} \left(\sum_{i=1}^p \lambda_i^2 \right) \quad (2)$$

Description: AVE (Average Variance Extracted) represents the average variance extracted on construct X. The term λ_i^2 refers to the square of the loading factor of indicator i, while $Var(\varepsilon_i)$ denotes the error variance of indicator i, and i represents the indicator. Furthermore, p indicates the number of indicators in one

construct. AVE values that meet the criteria indicate that the indicators have a good level of validity in representing latent constructs, so that the measurement model is considered feasible to proceed to the reliability analysis and inter-variable relationship testing (Cheung *et al.*, 2024).

RESULTS AND DISCUSSION

Results of quantitative data analysis designed to examine the influence of geosites and cultural sites on the motives of communities in choosing employment as traditional oil miners in Wonocolo Village. Data analysis was performed using the Partial Least Squares Structural Equation Modeling (PLS-SEM) method, which was operated through WarpPLS statistical software. PLS-SEM was chosen for its ability to evaluate measurement models (Outer Model

and structural models (Inner Model) to predict causal relationships between latent variables in the research context (J. Hair & Alamer, 2022).

Convergent validity is part of construct validity that shows the extent to which indicators in a variable correlate with each other and consistently reflect the same construct (Mukhtar *et al.*, 2022). In PLS-SEM analysis, convergent validity is assessed through the loading factor value in the measurement model, where indicators are considered valid if they have a loading factor ≥ 0.70 , while values between 0.50 and 0.70 are still acceptable in exploratory research. The loading factor is a coefficient that indicates the strength of the relationship between the indicator and the latent construct. The higher the loading factor value, the greater the indicator's ability to represent the measured construct. (Mukhtar *et al.*, 2022).

Table 2. Convergent Validity Test of Loading Factor

Item	Geosite	Culturesite	Work Motivation	P Value
Item 1	(0.970)	(0.967)	(0.839)	<0.001
Item 2	(0.754)	(0.736)	(0.712)	<0.001
Item 3	(0.791)	(0.750)	(0.713)	<0.001
Item 4	(0.945)	(0.945)	(0.886)	<0.001

Source: Data Processed, 2025

Based on the test results in Table 2, all indicators in the Geosite (X1), Culturesite (X2), and Work Motive (Y) have loading factor values above the required minimum limit, with the range of values for each variable between 0.754–0.970 for Geosite, 0.736–0.967 for Culturesite, and 0.712–0.886 for Work Motive. In addition, all indicators show a probability value (p-value) < 0.001 , which indicates that the relationship between the indicators and latent constructs is statistically significant. Thus, it can be concluded that the measurement model has met the criteria for good convergent validity, so that the analysis can proceed to the reliability and discriminant validity testing stages. As an additional measure, the Average Variance Extracted (AVE) value is used to assess the proportion of indicator variance that can be explained by the construct, where an AVE value > 0.50 indicates that more than 50% of the indicator variance is successfully explained by the measured latent variable (Pereira *et al.*, 2024). The Average Variance

Extracted results are explained in the following table:

Table 3 Validity Test Results AVE

	Geosite	Culturesite	Work Motivation
Avg.	0.567	0.587	0.564
var.			
extrac.			

Source: Data Processed, 2025

Since all constructs in this study have an AVE value > 0.50 , it can be concluded that the convergent validity criterion has been met. Based on Table 4.2, the AVE values for the Geosite, Culturesite, and Work Motive variables are 0.567, 0.587, and 0.564, respectively. This value indicates that more than 50% of the indicator variance can be explained by the measured latent construct. Thus, the measurement model is declared valid and suitable to proceed to the next stage of analysis.

Table 4. Validity Cross Loading

Item	Geosite	Culturesite	Work Motivation	P Value
Item 1	(0.970)	(0.967)	(0.839)	<0.001
Item 2	(0.754)	(0.736)	(0.712)	<0.001
Item 3	(0.791)	(0.750)	(0.713)	<0.001
Item 4	(0.945)	(0.945)	(0.886)	<0.001

Source: Data Processed, 2025

Discriminant validity testing is a test that aims to ensure that a construct is empirically distinct from other constructs in a research model. According to (J. F. Hair, 2019), Discriminant validity indicates the extent to which a construct is unique and does not represent the same phenomenon as other constructs in the model. Discriminant validity is achieved when the indicators of a construct have

a higher correlation with their own construct than with other constructs (Mukhtar *et al.*, 2022).

Cross loading is the loading value of an indicator not only on the assigned construct, but also on other constructs. In the context of discriminant validity, indicators must show higher loadings on their original constructs than on other constructs. (Mukhtar *et al.*, 2022).

Table 5. Square Root AVE

	Geosite	Culturesite	Work Motivation
Geosite	(0.753)	0.451	-0.132
Culturesite	0.451	(0.681)	-0.161
Work Motivation	-0.132	-1.161	(0.751)

Source: Data Processed, 2025

Discriminant validity can be demonstrated if the square root of the AVE of a construct is greater than the correlation between constructs, indicating that the construct is better able to explain its own indicators than the indicators of other constructs. (Rasoolimanesh, 2022). Table 4.4 shows the results of the discriminant validity test using the Fornell–Larcker criteria as seen from the AVE square root value. The AVE square root values for each construct (Geosite = 0.753; Culturesite = 0.681; Work Motive = 0.751) are greater than their correlations with other constructs. This indicates that each construct has its own unique characteristics and is able to explain its own indicators compared to other constructs.

Reliability testing is a test to assess the consistency and stability of a research instrument in measuring the same construct repeatedly. An instrument is considered reliable if the indicators within it provide consistent results and have a good level of reliability, which is generally measured through Cronbach's Alpha and Composite Reliability values. (Mukhtar *et al.*, 2022). Based on Table 4.5, all constructs have Cronbach's Alpha and Composite Reliability values above the minimum threshold of 0.70. This indicates that the Geosite, Culturesite, and Working Motif constructs have good internal consistency. So, it can be concluded that all constructs in this study are reliable and suitable for use in further analysis.

Table 6. Reliability Test Results

Construction	Cronbach's Alpha	Composite Reliability
Geosite	0.803	0.832
Culturesite	0.780	0.811
Work Motivation	0.833	0.826

Source: Data Processed, 2025

Tabel 7. Determination Coefficient Results

Construction Endogenous	R-Squared	Adjusted R-Squared
Work Motivation	0.307	0.256

Source: Data Processed, 2025

The coefficient of determination is one of the important analyses in testing structural models in PLS-SEM, which aims to assess the strength of the relationship between latent constructs, especially in explaining the influence of exogenous variables on endogenous variables. The coefficient of determination (R^2) is used to measure how much variation in endogenous constructs can be explained by exogenous constructs in the model; the higher the R^2 value,

the better the model's predictive ability (Ega, 2024). Based on Table 4.6, the R-Squared value for the Work Motivation construct is 0.307 and the Adjusted R-Squared is 0.256. These results show that the independent variables in the model are able to explain 30.7% of the variation in Work Motivation, while the remaining 69.3% is explained by other variables outside the model. Thus, the explanatory power of the model is included in the moderate category.

Table 8. Model Suitability Evaluation Results

Indicator	Value	Interpretation Criteria	Description
Average path coefficient (APC)	0.367	$p < 0.05$	Significant
Average R-squared (ARS)	0.307	$p < 0.05$	Significant
Average adjusted R-squared (AARS)	0.256	$p < 0.05$	Significant
Average block VIF (AVIF)	1	≤ 5 (ideal ≤ 3.3)	No multicollinearity
Average full collinearity VIF (AFVIF)	1.182	≤ 5 (ideal ≤ 3.3)	No multicollinearity

Source: Data Processed, 2025

Structural model evaluation (inner model) is conducted using various model fit indicators generated through WarpPLS to assess the overall feasibility of the model in testing the relationship between variables. The analysis results show an Average Path Coefficient (APC) value of 0.367 with $p < 0.05$, indicating that the relationship between constructs in the model is simultaneously significant. The Average R-squared (ARS) value of 0.307 and Average

Adjusted R-squared (AARS) value of 0.256, which are also significant ($p < 0.05$), indicate that the model has sufficient explanatory power for the endogenous variables. In addition, the Average block VIF (AVIF) value of 1 and the Average full collinearity VIF (AFVIF) value of 1.182 are below the specified limits, so there are no multicollinearity issues and the model is deemed suitable for further hypothesis testing.

Tabel 9. Hypothesis Testing

Relationships Between Variables	Path Coefficient	P-Value	Description
Geosite and Work Motives	-0.495	<0.001	Significant (negative impact)
Culturesite on Work Motives	-0.239	0.076	Not significant

Source: Data Processed, 2025

Hypothesis testing is an analytical stage that aims to test the validity of assumptions or tentative statements regarding the relationship between variables in a study. (Ismael, 2021). In PLS-SEM analysis, hypothesis testing is conducted by examining path coefficient values to determine the direction and strength of

influence, as well as p-values to determine the significance of influence between variables.

The test results show that the relationship between Geosite and Work Motivation has a path coefficient of -0.495 with a p-value < 0.001 , indicating a significant negative effect. These findings suggest that the higher the community's perception of the value and development of

geosites in Wonocolo Village, the lower their motivation to continue working as traditional oil miners. Thus, the hypothesis stating that geosites have a significant effect on the motivation to work as traditional oil miners is accepted, with a negative direction of the relationship.

However, these findings do not indicate that the community has completely abandoned the mining sector, given that the study respondents are still active miners who rely on traditional mining activities as their primary source of livelihood. Meanwhile, the relationship between “Culturesite” and Work Motivation has a path coefficient of -0.239 with a p-value of 0.076 , indicating a negative but insignificant effect. These results indicate that cultural values, inherited mining traditions, and community identity are not the primary factors in determining the community’s decision to continue working as miners. Although mining activities in Wonocolo have evolved as a local cultural heritage passed down from generation to generation, the community’s employment decisions are more influenced by practical economic considerations, particularly regarding income levels and limited alternative employment options. Therefore, “Culturesite” plays a greater role as a social identity for the community in relation to work motivation in the traditional mining sector. Based on these results, the hypothesis stating that “Geosite” influences work motivation is accepted, while the hypothesis regarding the influence of “Culturesite” on work motivation is rejected.

The decline in motivation to work as a miner is also influenced by the decline in traditional oil productivity, which has led to low incomes and high work intensity. These conditions have prompted people to treat mining as a side job and combine it with work in other sectors, particularly agriculture. Thus, the decision to work in the mining sector is driven more by basic economic needs than by an awareness of the value of the region’s geosites.

In the context of regional development, these findings indicate that geosites have the potential to support more sustainable alternative economic development in the future, particularly

through the development of community-based tourism. However, this does not directly lead communities to abandon mining activities, given that the respondents in this study are still active miners who rely on the mining sector as their primary source of livelihood. The decline in work motivation more accurately reflects a shift in the community’s orientation and perspective regarding the sustainability of employment in the traditional mining sector, primarily due to declining oil productivity, high occupational risks, and the limited sustainability of the mining sector. Thus, geosites have not yet fully altered the community’s employment choices but are beginning to open their eyes to more sustainable alternative economic opportunities in the future.

Unlike geosites, culturesites do not have a significant influence on the motivation to work as a traditional oil miner. Cultural values, long-standing mining traditions, and communal identity are not the primary factors in determining people’s employment decisions. These findings confirm that economic considerations remain the dominant factor, while cultural aspects have not yet been able to provide a strong enough incentive to keep people working in the traditional mining sector.

Theoretically, a negative and insignificant relationship between cultural heritage and work motivation can be observed in employment decision-making within high-risk sectors. Although mining culture is passed down from generation to generation, these cultural values do not always translate into work motivation unless accompanied by tangible economic benefits. In the context of Wonocolo, mining culture functions more as a social identity and historical legacy of the community than as a factor that drives individuals to continue working as miners. This finding is consistent with research conducted by (Rami *et al.*, 2022), which states that family economic factors remain the primary determinant of employment decisions, particularly in high-risk sectors.

The situation here indicates that reinforcing cultural values alone does not automatically change people’s economic behavior. Without tangible economic benefits,

culture tends to be understood as a symbolic identity rather than a source of livelihood. This means that the culturesite still plays a marginal role in influencing work motivation, despite its strong historical and social value in the Wonocolo area.

Overall, the findings of this study confirm that economic motives are the most dominant factor in people's decisions to work, while geosites and culturesites play a greater role in triggering changes in economic activity. The practical implications of these findings highlight the importance of designing strategies for economic transition from the traditional mining sector to more sustainable sectors. This can be achieved by integrating the potential of geosites and culturesites into productive economic activities that provide direct benefits to local communities.

The results of the study show that geosites have a significant negative effect on the motivation to work as a traditional oil miner in Wonocolo Village. These findings indicate that the stronger the community's perception of the value of geosites, the lower their tendency to continue working as traditional oil miners. According to the Sustainable Livelihoods Framework, environmental characteristics are one of the assets (natural capital) that influence household livelihood strategies (Delfiyanti *et al.*, 2026). Changes in the value and function of natural resources will affect how communities utilize these assets to secure their livelihoods (Aazami & Shanazi, 2020). In the local context of Wonocolo, growing recognition of the area as Petroleum Geoheritage has led to the geosite no longer being viewed solely as a site for oil exploitation, but also as an asset for conservation, education, and geotourism.

These findings are also consistent with the socioeconomic characteristics of the Wonocolo community, which remains heavily dependent on traditional oil mining but faces vulnerabilities due to declining productivity of old wells, environmental pollution, and the non-renewable nature of oil resources. Research (Tuzyahroya & Sariffuddin, 2020) indicates that the well-being of mining households in Wonocolo remains

vulnerable due to their dependence on dwindling resources, making livelihood diversification essential for enhancing the community's economic sustainability. The development of geoheritage areas demonstrates that geosite management is not only oriented toward the conservation of geological resources but is also aimed at fostering livelihood diversification and more sustainable local economic development (Dada *et al.*, 2026). The Wonocolo area has been identified as possessing high geological, petroleum history, and cultural value, leading to its development as part of the Bojonegoro Geopark, which expands the area's function from extractive activities toward geotourism and educational initiatives (Fahirah & Alrianingrum, 2020). Furthermore, the history of traditional oil mining in Wonocolo demonstrates that mining activities have been passed down through generations since the Dutch colonial era and have become part of the local community's social identity. However, as Wonocolo has evolved into a geoheritage area, the region's economic function has begun to shift from oil exploitation toward the management of geological heritage that integrates conservation, education, and tourism. This shift in the area's function may explain why the increase in the geosite's value has a significant negative correlation with the motivation to work as a traditional oil miner, as the community has begun to see alternative sources of livelihood outside the mining sector.

Meanwhile, the insignificant influence of workplace culture on work motivation yields results that differ from a study (Arthur-holmes & Dokbila, 2024) emphasizing that cultural values and social solidarity play a crucial role in job retention in the informal sector. However, these findings are consistent with a study (Rami *et al.*, 2022), which states that economic factors remain the primary determinant of employment decisions, particularly in high-risk sectors. This suggests that, in the context of Wonocolo, cultural values do not yet possess sufficient economic clout to influence local residents' decisions to work as miners.

Furthermore, Wonocolo's development as part of the Bojonegoro Geopark means that

the cultural value of mining plays a greater role as a historical legacy and tourist attraction than as a factor that directly motivates the community to continue working as miners. Thus, the results of this study indicate that cultural sites hold significant value in preserving local identity, but they do not yet have a strong enough influence on work motivation unless accompanied by tangible economic benefits for mining households.

CONCLUSION

This research focuses on efforts to understand the factors that influence the work motivation of traditional oil miners in Wonocolo, particularly in the context of the interaction between the physical environment (geosites) and the cultural environment (cultural sites). This study uses a quantitative approach with the Partial Least Squares–Structural Equation Modeling (PLS-SEM) method to analyze the relationship between the variables studied. The results of the study show that geosites have a negative and significant influence on miners' work motivation. This indicates that increasing public understanding of geological values, environmental conservation aspects, and the potential for geotourism development tends to reduce dependence on traditional mining activities. Meanwhile, cultural variables did not show a significant influence on work motivation, which indicates that cultural values, traditions and mining history have not become dominant factors in determining people's work choices, compared to economic considerations.

Theoretically, these findings contribute to the development of regional economic and resource economic studies, by emphasizing that geologically based assets not only function as natural resources, but can also influence the preferences and economic orientation of local communities. From a managerial and policy perspective, the results of this study imply the importance of formulating an economic transition strategy from the traditional mining sector to a more sustainable sector, such as geotourism and the creative economy, supported by strengthening cultural values, economic

incentives, and community empowerment programs. However, this study has limitations in the relatively small sample size ($n=30$), so the results need to be interpreted with caution and cannot be generalized widely. Therefore, further research is recommended to expand the regional coverage, use a longitudinal approach, and consider institutional and policy variables to obtain a more comprehensive picture.

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