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SUSTAINABLE LIVELIHOOD IN POST-DISASTER TOURISM: LESSON LEARNED FROM MERAPI TOURISM SITE

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Abstract

This research aims to explore the practice of the Sustainable Livelihood Tourism Framework (SLTF) in post-disaster management in the Mount Merapi area, Sleman, Yogyakarta. The focus of SLTF achievement in this study encompasses ecological, economic, sociocultural, and institutional dimensions. Research on the SLTF has indeed become a significant focus in tourism studies. However, most of these studies are confined to a single research methodology, resulting in limited scope and a lack of comprehensive discussion. This study used a mixed-method approach with an explanatory sequential design. The study found that tourism positively impacts the increase of economic activities in the community. However, on the ecological side, tourism presence degrades environmental quality due to issues such as carbon emissions, industrial waste, climate change, the greenhouse effect, illegal logging, and illegal mining. Furthermore, other policies were identified, such as mineral water mining permits that degrade the environment and the establishment of landfill sites in the Kaliurang area, which spoils the natural beauty. Tourism practices also have a negative impact on institutional aspects, as the community perceives government policies as too complex and not meeting their expectations. Lastly, in the socio-cultural aspect, tourism preserves traditional values, as tourists tend to respect them. This mixed-method approach underscores the need for balanced strategies that address environmental concerns while maximizing economic benefits, improving institutional involvement, and supporting socio-cultural enhancement.

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INTRODUCTION

This research is motivated by the debate on ensuring sustainable livelihoods for local communities, which have significantly shifted from agricultural sector to post-disaster tourism due to the eruption of Mount Merapi, Sleman Regency, Special Region of Yogyakarta (Antriyandarti et al., 2013). Volcanic disasters frequently occur in volcanic regions of Indonesia, with Java showing the highest number, accounting for 47% of the total eruptions with 23 active volcanoes (Harijoko et al., 2020). Mount Merapi is the most active mountain on Java Island (Gunawan, 2014; Nugraha et al., 2019). From 1672 to 2010, there have been more than 80 eruptions with an average interval of 4 years, with the 2010 eruption being the most devastating in the last 100 years (Akbar, 2019; Nugraha et al., 2019). Despite the many negative social and economic impacts, including the loss of livelihoods, people continue to return to the area due to strong social and economic ties, even with the high potential risk of disaster (Akbar, 2019; Antriyandarti et al., 2013; Gunawan, 2014).

Natural disasters cause socio-economic shocks (Bakkour et al., 2015), but the impacts and the recovery processes vary by region (Stanícǩová & Melecký, 2018). In terms of recovery and rehabilitation after Merapi eruption in 2010, the Sleman Regency Government has utilized the remnants of the Merapi eruption to create new tourist destinations (Putri & Damayanti, 2017). The goal is not only to rebuild the economy after the shock but also to share the historical values of the Merapi eruption that shaped the destination. This tourism is called post-disaster tourism, where an object becomes a tourist destination due to a disaster (Liu-Lastres et al., 2020). Examples include the Lava Tour, Kaliadem Bunker, and Merapi Museum, which emerged from the impact of the Merapi eruption, creating unique attractions (Muktaf, 2017). The development of post-disaster tourism in the Merapi area has multiplied, making the local economy dependent on this sector, even evolving into a local livelihood to recover from the negative impacts of the Merapi eruption (Kurniawan & Wasino, 2021). It means that the livelihood of the local community, which is run by agriculture (Antriyandarti et al., 2013), has shifted to rely on post-disaster tourism as a source of income.

The debate in this context revolves around the implementation of sustainable management concepts for the livelihoods of local communities in post-disaster tourism at Mount Merapi. The call to create sustainable tourism is further strengthened from a legal perspective, referring to the Regulation of the Minister of Tourism and Creative Economy/Head of the Tourism and Creative Economy Agency of the Republic of Indonesia Number 9 of 2021 on Guidelines for Sustainable Tourism Destinations. Therefore, the Sustainable Livelihoods Approach (SLA) is used to evaluate the sustainable livelihoods of the community to alleviate downturns (Stanícǩová & Melecký, 2018). SLA, combined with the tourism sector, checks the implementation of sustainable livelihood concepts known as the Sustainable Livelihood Tourism Framework (SLTF) (Figure 1).

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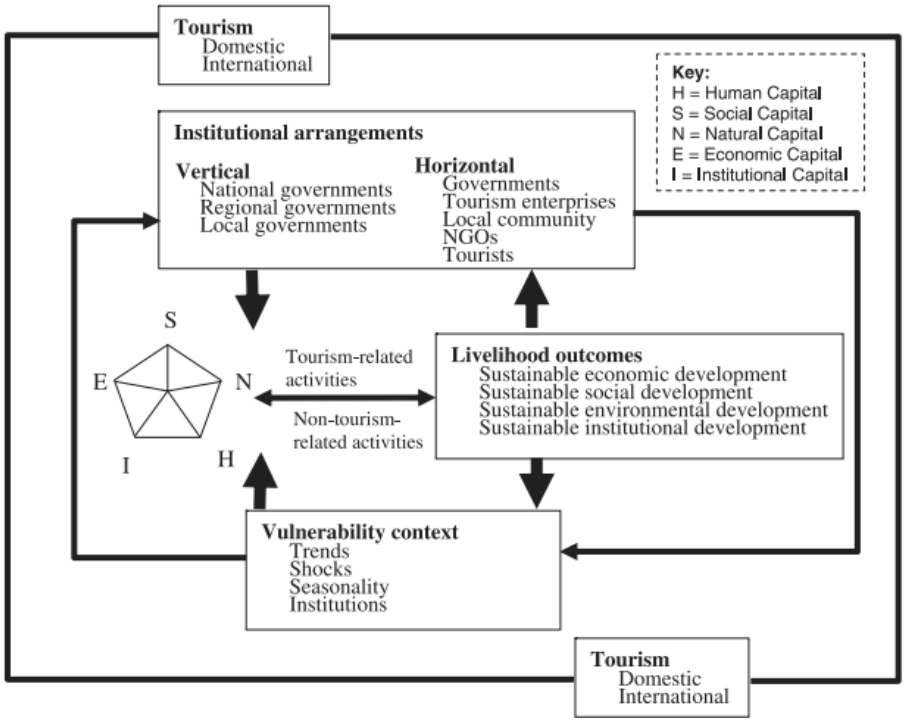

Figure 1. The Sustainable Livelihood Tourism Framework (SLTF)
Source: Shen et al., 2008

Studies related to SLTF in the tourism sector are limited to qualitative methodology, resulting in weak coverage of broader objects and generalization aspects of the framework. There are also studies limited to quantitative methodology, making comprehensive explanations of the framework challenging (Afandi et al., 2014). Discussions on SLTF in post-disaster tourism are not mainstream; if they exist, they are limited to one type of methodology. Furthermore, studies on SLTF in tourism fail to holistically explain the integration between variables within the framework (Singgalen et al., 2019). SLTF rebuilds village communities from downturns through tourism (Apriani et al., 2023; Sitorus et al., 2023). In post-disaster tourism, the promotion measurement for reviving local communities is limited to horizontal interactions between managing communities and consumers (Pottorff & Neal, 1994). In contrast, SLTF guides vertical and horizontal interactions while ensuring sustainable livelihoods through tourism (Su et al., 2019). Unlike mainstream tourism research that focuses on tourism product aspects, marketing, planning, and impacts, thus ignoring community livelihood sustainability from tourism (Ashley, 2000).

A dimension demands that all individuals have access to the resources and facilities they need to live healthy and dignified lives in the Social Dimension and implies a non-discriminatory social order, does not disrupt local norms and values, and supports local lifestyles through measures to reduce social exclusion and ensure minimum social standards and human rights. Last, the Economic Dimension focuses on meeting human needs for material well-being and involves an economy that supports employment and livelihoods within a competitive and stable macroeconomic framework. All dimensions of the prism of sustainability can be assessed by the perception of residents through the quality of dimensions as illustrated in the hypothesis (Figure 2) bellow:

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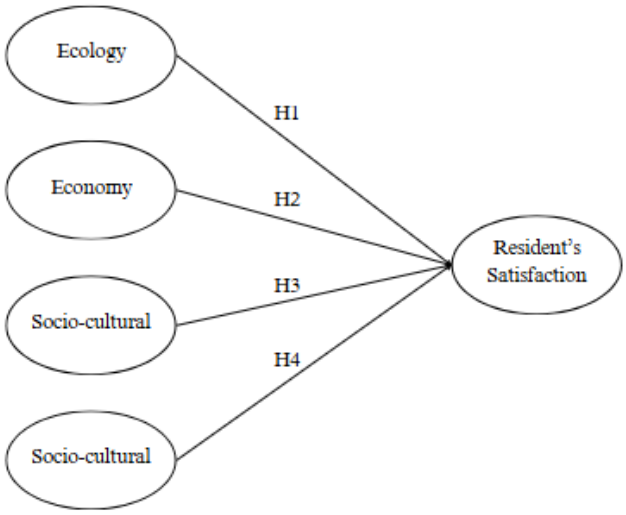

Figure 2. Resident's Perspective toward the Prism of Sustainability Implementation
Source: Results of processed data, 2024

By applying the Prism of Sustainability, this study aims to understand how tourism development at Mount Merapi can be managed to ensure environmental protection, institutional participation, social inclusivity, and economic stability through resident's perspective.

METHODOLOGY

The study utilized quantitative and qualitative methods with an explanatory sequential design (Creswell, 2013). It can be explained as seen in Figure 3 bellow:

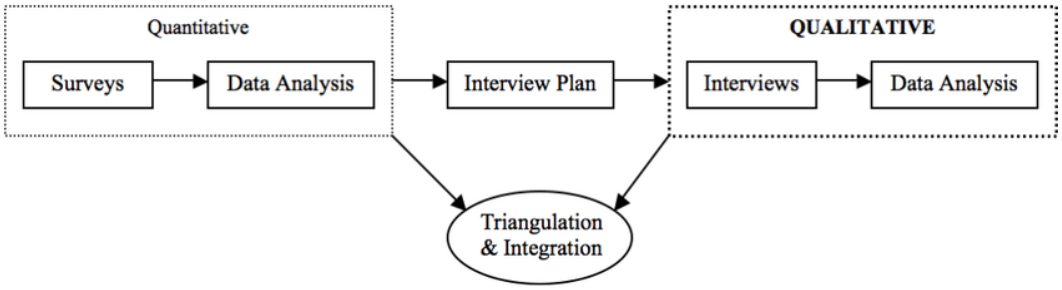

Figure 3. Explanatory Sequential Design
Source: Creswell, 2013

In the quantitative phase, the data collection uses several steps: questionnaire distribution, documentation, and observation. The initial stage of quantitative data collection involves the distribution of questionnaires. This process begins with designing and developing a structured questionnaire, ensuring the questions are clear, concise, and relevant to the research objectives. Once finalized, the questionnaire is distributed to the selected sample group. Distribution methods may vary depending on the target audience, including online platforms, email, or physical handouts. It is crucial to ensure that the distribution method aligns with the preferences and accessibility of the respondents to

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maximize response rates. This stage may also involve reminders or follow-ups to encourage participation and address respondents' issues.

Following the distribution of questionnaires, the next stage is documentation. It involves systematically organizing and recording the responses received. The collected data is compiled into a database or spreadsheet, which can be easily accessed and analyzed. During this phase, it is essential to verify the accuracy and completeness of the data to ensure that all responses are correctly recorded. Any inconsistencies or missing data should be addressed through data-cleaning techniques. Documentation also includes maintaining detailed records of the distribution process and any correspondence with respondents, which can be valuable for auditing and ensuring data reliability.

In conjunction with the questionnaire distribution and documentation, the observation phase provides a complementary data collection method. It involves systematically observing and recording specific behaviors, events, or conditions relevant to the research. Observations can be conducted in various settings, depending on the research focus, and may involve direct or participant observation techniques. The data gathered through observations are documented in field notes or observation logs, capturing details that the questionnaires may not fully address. This qualitative insight enriches the quantitative data, providing a more comprehensive understanding of the research topic.

This research first employs a quantitative method by utilizing a survey technique with respondents over a one-week survey in December 2023 in the Kaliurang district, Sleman Regency, Special Region of Yogyakarta. A hundred and twenty questionnaires were distributed to tourism stakeholders, achieving a 100% response rate. The questionnaires, administered by four researchers, included 29 items across four dimensions—ecological, economic, socio-cultural, and institutional-based on established research models (Gong et al., 2023; Hussain et al., 2015; Trišić, Nechita, Ristić, et al., 2023). The survey measured residents' satisfaction with sustainable tourism using a 5-point Likert scale, from "Strongly Disagree" to "Strongly Agree." Data analysis used Structural Equation Modeling (SEM) with Partial Least Squares (PLS) in SmartPLS 4.

After the phase of quantitative, the qualitative methods use some data collection with several steps: interviews, documentation, and observation. The first stage of qualitative data collection involves conducting interviews. This method is designed to gather in-depth insights and personal perspectives from participants. The process begins with developing an interview guide, which includes open-ended questions tailored to elicit detailed and meaningful responses. Once the guide is prepared, interviews with selected participants relevant to the research topic are scheduled. These interviews can be conducted in person, over the phone, or via video conferencing, depending on accessibility and convenience. Researchers aim to create a comfortable environment during the interviews to encourage open and honest communication. The interviews are usually recorded with participants' consent to ensure accurate capture of responses, which are transcribed for analysis later.

Following the interviews, the next stage is documentation. It involves systematically recording and organizing the qualitative data gathered. It includes transcribing recorded interviews into written text and organizing field notes or other relevant materials. Documentation also encompasses the maintenance of records related to the interview process, such as participant consent forms and interview schedules. Accurate and thorough documentation is crucial for ensuring the integrity and reliability of the data.

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Additionally, researchers often use qualitative data analysis software to assist in organizing and coding the data for further analysis.

Observation is a complementary method in qualitative data collection, providing direct insight into the context and behavior of subjects. In this stage, researchers observe and record relevant events, interactions, or settings related to the research focus. Depending on the research design, observations can be structured or unstructured and may involve direct participation or passive observation. The data collected through observations are meticulously documented in field notes, capturing detailed descriptions of the observed phenomena. These notes are then analyzed alongside interview transcripts to better understand the research topic and identify patterns and themes.

After obtaining quantitative data, the researcher then transitioned to qualitative methods by first developing interview forms based on the data collected from the survey to elucidate the phenomena identified. Interviews were with the Head of the Sleman Regency Tourism Office, the Chairman of the Tourism Village Communication Forum, and the Chairman of the Tourism Awareness Group. The interview results will be analyzed using NVIVO 12 Plus software to map the findings.

FINDINGS AND DISCUSSION

Upon recapitulating the data gathered from the survey conducted by the author, it is discerned that the demographic distribution based on gender among the 120 respondents can be delineated as seen in Table 1 as follows:

Table 1. Gender of Respondents

No	Gender	Number	Percentage (%)
1	Male	77	64.17
2	Female	43	35.83
	Grand Total	120	100

Source: Results of processed data, 2024

Based on the acquired data, 77 respondents, constituting 64.17% of the total, identified as male, and an equivalent number of respondents, also 43, accounting for 35.83%, identified as female. The findings derived from the data recapitulation concerning the age distribution of the respondents can be categorized as seen in Table 2 as follows:

Table 2. Age of Respondents

No	Age	Number	Percentage (%)
1	18-25	23	19.17
2	26-35	40	33.33
3	36-45	47	39.17
4	46-55	8	6.67
5	>55	2	1.66
	Grand Total	120	100

Source: Results of processed data, 2024

Based on the author's data recapitulation, several conclusions arise concerning the age distribution of the respondents. A total of 120 respondents falls within the 36-45 age range is represented by 47 respondents, accounting for 39.17% of the total, which is the

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most dominating age range. Regarding to the occupational distribution, it can be seen from the data in Table 3 bellow:

Table 3. Occupational Distribution of Respondents

No	Professions	Number	Percentage (%)
1	Hotel/Homestay Owners	13	10.83
2	Hotel/Homestay Employees	26	21.67
3	Jeep Rental Owners	10	8.33
4	Jeep Rental Employees	20	16.67
5	MSME (traders) Owners	18	15
6	MSME (traders) Employees	25	20.83
7	Civil Servants	8	6.67
	Grand Total	120	100

Source: Results of processed data, 2024

Disaggregating this count, Hotel/Homestay Employees are 26 individuals, constituting roughly 21.67% of the collective count, the most dominating population. This composite delineation underscores the multifaceted occupational landscape present within the cohort, illustrating the varied distribution of individuals across distinct spheres of economic engagement in the Merapi Tourism at Sleman Regency.

Item Description

Below is a table depicting each item developed from the Prism of Sustainability dimension, along with the data results on mean values:

Table 4. Items of the Prism of Sustainability Dimensions

No	Items		Mean
Institutional Dimension			**4.413**
1	I possess the authority to influence the decision-making process for policies issued by the government.	X1.1	4.463
2	I consider that this tourism plays a significant role in improving waste management practices within the Merapi region.	X1.2	4.300
3	I consider that effective communication exists among stakeholders involved in policy formulation and decision-making processes.	X1.3	4.362
4	I consider that local authorities (local government) actively promote and encourage participation among community members.	X1.4	4.475
5	I feel empowered to access the decision-making process to influence tourism development in the district.	X1.5	4.463
6	I consider that Long-term planning by regional authorities (local government) serves to mitigate the adverse effects of tourism.	X1.6	4.412
Ecological Dimension			**4.429**
1	I feel that tourists contribute to environmental pollution, affecting water, soil, and air quality.*	X2.1	4.438
2	I feel that the influx of visitors leads to disruptions in the habitats of plants and animals.*	X2.2	4.400
3	I feel that tourist activities have led to the escalating depletion of water and energy resources.*	X2.3	4.438
4	I consider that tourism does not result in the extinction of authentic species within the Merapi region.	X2.4	4.438
Economic Dimension			**4.348**
1	I admit that tourism generates additional income for residents.	X3.1	4.338
2	I admit that tourism stimulates the demand for local products.	X3.2	4.362

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No	Items		Mean
3	I consider that tourism fosters employment opportunities for the residents.	X3.3	4.388
4	I consider that tourism has led to the diversification of the local economy capability.	X3.4	4.362
5	I consider that the availability of products and services has generally improved since the development of tourism.	X3.5	4.325
6	I witnessed that the region has improved in the field of infrastructure, including roads, electricity, water, and public transport, attributed to tourism.	X3.6	4.338
7	Tourism development has provided me with increased educational opportunities, particularly vocational training.	X3.7	4.325
Socio-Cultural Dimension			**4.363**
1	I feel that the Merapi region experiences an overwhelming influx of tourists.*	X4.1	4.325
2	I feel that the development of tourism results in a shift in resident lifestyles and traditional customs.*	X4.2	4.338
3	I find tourists to be bothersome.*	X4.3	4.350
4	I feel that the tourists visiting Merapi tourism site contribute to excessive noise pollution.*	X4.4	4.350
5	I think that the alterations in resident lifestyles due to tourism are positive things.	X4.5	4.400
6	I feel that tourism has led to an increase in criminal activities, alcoholism, vandalism, etc.*	X4.6	4.438
7	I feel that tourism has a detrimental impact on the norms and values within our area.*	X4.7	4.350
8	I feel that the local traditions have diminished in significance due to the influence of tourism.*	X4.8	4.350

Note: Items are assessed using a 5-point Likert agreement scale.
*The items are decoded to align with the positive direction.
Dimensional scale means in bold.
Source: Results of processed data, 2024

Table 4 depicts the Cronbach alpha reliability scale and means (N=120) from each item developed from ecology, economy, institutional, and socio-cultural dimensions. Each item is represented by the indicator X, where X1 represented from X1.1 to X1.6 are items from the institutional dimension, X2 represented by X2.1 to X2.4 are items from the ecological dimension, X3 represented by X3.1 to X3.7 are items from the economic dimension, and X4 represented by X4.1 to X4.8 are items from the socio-cultural dimension.

Below is a table depicting each item developed from the satisfaction scale of residents in the Merapi tourism region, along with the data results on Cronbach alpha reliability and mean values:

Table 5. Items of Resident's Satisfaction

No	Items		Mean
Satisfaction of residents			**4.309**
1	I find satisfaction in the multitude of benefits that Merapi tourism in the protected area brings to me and my family.	Y1	4.438
2	My satisfaction stems from the enhancement of the attractiveness of this protected area due to Merapi tourism.	Y2	4.312
3	I consider that the presence of sustainable Merapi tourism in this protected area holds significance.	Y3	4.237
4	I am content with the condition of Merapi tourism in this protected area.	Y4	4.250

Note: Items are assessed using a 5-point Likert agreement scale.
Dimensional scale means in bold.
Source: Results of processed data, 2024

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Table 5 depicts the Cronbach alpha reliability scale and means (N=120) from each item developed from the Satisfaction of local residents. Each item is represented by the indicator Y1 until Y4.

Testing Model Measurement (Outer Model)

Convergent Validity

The author developed a structural model for SEM-PLS analysis utilizing the SmartPLS 4 software. Below is the structural model serving as the framework for the research analysis and the outcomes of the author's data examination presented through the outer loadings matrix (Table 6).

Table 6. Outer Loadings

No	Indicators	Ecology	Economy	Institutions	Resident's Satisfaction	Socio-Cultures
1	X1.1			0.898		
2	X1.2			0.796		
3	X1.3			0.866		
4	X1.4			0.887		
5	X1.5			0.855		
6	X1.6			0.872		
7	X2.1	0.910				
8	X2.2	0.933				
9	X2.3	0.934				
10	X2.4	0.917				
11	X3.1		0.961			
12	X3.2		0.945			
13	X3.3		0.939			
14	X3.4		0.927			
15	X3.5		0.896			
16	X3.6		0.965			
17	X3.7		0.955			
18	X4.1					0.879
19	X4.2					0.913
20	X4.3					0.932
21	X4.4					0.932
22	X4.5					0.877
23	X4.6					0.768
24	X4.7					0.890
25	X4.8					0.824
26	Y1				0.732	
27	Y2				0.841	
28	Y3				0.876	
29	Y4				0.899	

Source: Results of processed data, 2024

Based on the findings derived from the author's data analysis, ll indicators (X and Y) exhibit values exceeding 0.7, indicating their validity within this research context. Convergent validity means that a set of indicators represents a single latent variable and underlies that latent variable.

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Average Variance Extracted (AVE)

Upon processing the data, the author has computed the Average Variance Extracted (AVE). Presented herewith is a concise overview of the obtained data:

Table 7. Average Variance Extracted (AVE)

No	Variable	AVE	Explanation
1	Ecology	0.853	Valid
2	Economy	0.744	Valid
3	Institutions	0.886	Valid
4	Resident's Satisfaction	0.704	Valid
5	Socio-Cultures	0.771	Valid

Source: Results of processed data, 2024

Table 7 provided indicates that all variables, such as ecology, economy, institutions, socio-cultures, and resident's satisfaction, exhibit AVE values exceeding 0.5. As such, all constructs meet the validity standards outlined, as their respective AVE values surpass the threshold of 0.5. It implies the validity of the constructs and their ability to elucidate more variance in their indicators compared to measurement error.

Construct Reliability

The subsequent discussion revolves around construct reliability, which evaluates the reliability of latent variables employed in this study. An indispensable criterion for construct reliability is a value exceeding 0.70 (> 0.70). In this context, Cronbach's Alpha is a reference for assessing these values. Presented in Table 8 below are the outcomes of the author's data analysis:

Table 8. Construct Reliability

No	Variable	Cronbach's Alpha	RH0_a	Composite Reliability
1	Ecology	0.942	0.945	0.959
2	Economy	0.931	0.942	0.946
3	Institutions	0.978	0.980	0.982
4	Resident's Satisfaction	0.858	0.858	0.905
5	Socio-Cultures	0.957	0.959	0.964

Source: Results of processed data, 2024

According to the tabulated results, which summarize the findings of the author's data analysis, all examined constructs demonstrate Cronbach's Alpha values surpassing the threshold of 0.70 (> 0.70). Consequently, all constructs employed in this investigation are considered reliable. This observation implies that the measurement instruments utilized to assess these constructs exhibit substantial internal consistency, thereby ensuring the reliability of the constructs for further scrutiny and interpretation of the research outcomes.

Structural Model Analysis (Inner Model)

Structural Equivalent

In this scenario, the author aims to analyze the structural equation of the data by utilizing the structural model that has been made by the author. Consequently, in this context, the author follows to the result of Path Coefficients (Table 9):

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Table 9. Structural Equivalent

No	Variable	Original Sample (O)	T statistics (O/STDEV)	P values
1	Ecology → Resident's Satisfaction	-0.232	0.640	0.522
2	Economy → Resident's Satisfaction	0.195	2.537	0.011
3	Institutions → Resident's Satisfaction	-0.865	0.754	0.451
4	Socio-Cultures → Resident's Satisfaction	1.677	3.689	0.000

Source: Results of processed data, 2024

The Effect of Ecology Dimension toward Residents' Satisfaction

The direct effect coefficient of the Ecology dimension on Resident's Satisfaction, with an Original Sample (O) value of -0.232, indicates a negative association. A one-unit increase in the Ecology dimension of Tourism in the Merapi region corresponds to a 0.232 decrease in Resident's Satisfaction. However, this effect is not statistically significant. The T-statistic value is 0.640, below the critical threshold of 1.96, and the P-value is 0.522, above the conventional significance level of 0.05. Consequently, the observed effect is considered statistically insignificant. Therefore, while tourism implementation in the Merapi region may have negatively impacted the Ecology (environment) quality, this effect on Resident's Satisfaction is not statistically significant.

Based on the interview results from all parties, including the Head of the Tourism Office of Sleman Regency representing the government, the Chairman of the Village Tourism Communication Forum of Sleman Regency representing Non-Governmental Organizations, and the Chairman of the Tourism Awareness Group of Sleman Regency (Pokdarwis) representing the community, it was found that there are several negative environmental impacts resulting from the presence of tourism. These impacts include illegal deforestation, illegal sand mining, the greenhouse effect, climate change, excessive carbon emissions, industrial waste, and the greenhouse effect (Figure 4).

Figure 4. Calculated Interview Result of Ecology Dimension toward Residents' Satisfaction (Word Frequency)
Source: Results of processed data, 2024

This can be seen from the processed interview data using NVIVO 12 Plus software, with the word frequency feature indicating that environmental issues are an integral part of

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the problems arising from tourism activities, with waste management issues being particularly dominant.

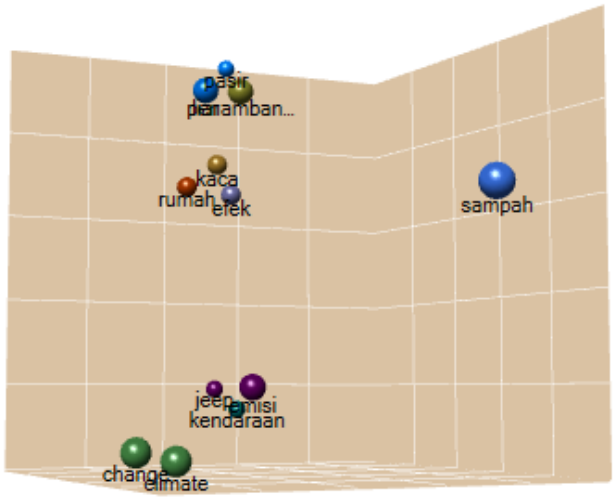

Figure 5. Calculated Interview Result of Ecology Dimension toward Residents' Satisfaction (Cluster Analysis)
Source: Results of processed data, 2024

The data further emphasizes, through the cluster analysis feature in NVIVO 12 Plus, that waste is the primary issue created by tourism operators and tourists (Figure 5). Additionally, climate change results from illegal deforestation and carbon emissions generated by tourism jeep fleets and tourist vehicles, ultimately contributing to the greenhouse effect. Environmental degradation is prevalent in the Mount Merapi National Park case study, particularly regarding deforestation and illegal water mining (Fandeli, 2008; Fauziyah & Putri, 2023).

This finding aligns with previous studies in the Prism of Sustainability dimensions field, such as those by (Huynh, 2018; Trišić, Nechita, Milojković, et al., 2023), which indicate that increased tourist activities and expanded tourism infrastructure often negatively impact natural environments. Mass tourism can degrade sensitive ecosystems, including mountain areas, and lead to excessive consumption of natural resources. Often, the expansion of tourism overlooks these adverse consequences. Therefore, it is essential to emphasize creating tailored tourist destinations that mitigate these adverse effects (Jeelani et al., 2023).

The Effect of Economy Dimension toward Residents' Satisfaction

The direct effect coefficient of the Economy dimension on Resident's Satisfaction, with an Original Sample (O) value of 0.195, indicates a positive association. A one-unit increase in the Economy dimension of Tourism in the Merapi region corresponds to a 0.195 increase in Resident's Satisfaction. This effect is statistically significant, with a T-Statistic value of 2.537, exceeding the critical threshold of 1.96, and a P-value of 0.011, below the conventional significance level of 0.05. In conclusion, the implementation of tourism in the Merapi region has led to an improvement in the economic quality, and resident satisfaction with it is statistically significant.

Based on the interview results from all parties, including the Head of the Tourism Office of Sleman Regency representing the government, the Chairman of the Village

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Tourism Communication Forum of Sleman Regency representing Non-Governmental Organizations, and the Chairman of the Tourism Awareness Group of Sleman Regency (Pokdarwis) representing the community, it can be seen from the data that calculated in NVIVO 12 trough Word Frequency feature:

Figure 6. Calculated Interview Result of Economy Dimension toward Residents' Satisfaction (Word Frequency)
Source: Results of processed data, 2024

The data processed from the above interviews indicates that there has been a significant economic change before and after the establishment of post-disaster management in the Merapi area (Figure 6). Economic growth is evident from the influx of tourists to the destinations provided by the Merapi area, such as jeep tours for lava activities, tourist villages, homestays, culinary vendors, souvenir vendors, and various other economic activities that have resulted in higher profits for tourism entrepreneurs, thereby enhancing their quality of life (specifically for MSME actors). On the other hand, economic development is also driven by the arrival of private investors aiming to develop more tourist destinations in the Merapi area, as it is considered to have substantial potential to become a major tourist destination. Consequently, this has led to increased economic activities in the Merapi tourism area. Simultaneously, support from the budget of the Special Region of Yogyakarta Provincial Government also acts as a catalyst for economic activities in the Merapi tourism area. The budget is utilized for Human Resource Development efforts to improve tourism management and infrastructure development in the Merapi area, aiming to attract more tourists.

In the case of Merapi tourism, the sector is a primary driver for the local community (Buol, 2016; Hartono, 2018). It aligns with the Sleman regency government's strategy of repurposing the remnants of the volcanic eruption into new tourist destinations to boost the economy (National Geographic Indonesia, 2010). Economic sustainability in tourism contributes to local community welfare through various avenues, including employment opportunities, revenue from ticket sales, local goods and services transactions, increased

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local involvement in tourism planning and management, and responsible resource utilization (Huayhuaca et al., 2010). Previous research also shows that economic development from the tourism industry benefits tourism stakeholders and residents (Trišić, Nechita, Milojković, et al., 2023).

The Effect of Institution Dimension toward Residents' Satisfaction

The direct effect coefficient of the Institution dimension on Resident's Satisfaction, with an Original Sample (O) value of -0.865, indicates a negative association. A one-unit increase in the Institution dimension of Tourism in the Merapi region corresponds to a 0.865 decrease in Resident's Satisfaction. However, this effect is not statistically significant, with a T-statistic value of 0.754 (below the critical threshold of 1.96) and a P-value of 0.451 (above the conventional significance level of 0.05). Thus, the observed effect is statistically insignificant. In conclusion, the community's limited access to influence public policies related to tourism implementation in the Merapi region results in dissatisfaction. The Institution dimension exhibits a negative and statistically insignificant effect on Resident's Satisfaction in implementing tourism practices in the Merapi region.

The Sleman Regency Tourism Office focuses on human resources development within the tourism sector, with policies designed to enhance existing human resources. Based on interview results, implementing tourism development policies from a human resource perspective is challenging. The causes can be identified from the interview data analysis using NVIVO 12 Plus with the word frequency feature as seen in Table 7 bellow:

Figure 7. Calculated Interview Result of Institution Dimension toward Residents' Satisfaction (Word Frequency)
Source: Results of processed data, 2024

It was found that tourism actors lack a service-oriented mindset, focusing instead on a money-oriented approach. Consequently, when the Sleman Regency Tourism Office implements specific policies for improving tourism services, these actors reject the policies, deeming them too complex and believing their current level of service is sufficient. It indicates that policy-making is not on mutual understanding between the tourism offices and actors. Tourism development policies are formulated solely by the government without involving the tourism actors. On the other hand, several instances of government policies not approved by the community have been documented in the tourism area of Mount Merapi. Significant issues include government permits for mineral water mining, leading

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to environmental damage (Fauziyah & Putri, 2023), and the construction of temporary waste disposal sites in the area (Trijoko, 2023).

The institutional dimension underscores the need for greater involvement of diverse stakeholders in strategic tourism planning. These stakeholders include governmental entities, indigenous enterprises, business entities, tourism bureaus, lodging establishments, and others (Trišić, Nechita, Milojković, et al., 2023). Previous research aligns with this finding, indicating a negative effect of the institutional dimension on resident satisfaction in tourism development. Prior research shows that lower values for the institutional dimension suggest insufficient support from local, national, and international institutions or limited resident access to decision-making processes (Obradović et al., 2021).

The Effect of Socio-Culture Dimension toward Residents' Satisfaction

The direct effect coefficient of the socio-culture dimension on resident's satisfaction, with an Original Sample (O) value of 1.677, indicates a positive association. A one-unit increase in the socio-culture dimension of Tourism in the Merapi region corresponds to a 1.677 increase in Resident's Satisfaction. This effect is statistically significant, with a T-statistic value of 3.689 (exceeding the critical threshold of 1.96) and a P-value of 0.000 (below the conventional significance level of 0.05). In conclusion, the implementation of tourism in the Merapi region has resulted in an improvement in the socio-cultural aspect, and resident satisfaction with it is statistically significant. The socio-culture dimension exhibits a positive and statistically significant effect on Resident's Satisfaction with the implementation of tourism practices in the Merapi region.

Based on the interview results from all parties, including the Head of the Tourism Office of Sleman Regency representing the government, the Chairman of the Village Tourism Communication Forum of Sleman Regency representing Non-Governmental Organizations, and the Chairman of the Tourism Awareness Group of Sleman Regency (Pokdarwis) representing the community, it can be seen from the data that calculated in NVIVO 12 through Word Frequency feature in Figure 8:

Figure 8. Calculated Interview Result of Socio-Culture Dimension toward Residents' Satisfaction (Word Frequency)
Source: Results of processed data, 2024

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The practice of upholding socio-cultural values in the Merapi area remains well-preserved and has even improved following the establishment of post-disaster management in the region. This improvement is attributed to the collaborative efforts of the Tourism Office, along with stakeholders such as local tourism awareness groups (Pokdarwis), the community, travel agents, museums, and various other parties. These collaborations work together to promote the cultural heritage of the Merapi area as a key attraction in schools and the broader public. Consequently, tourists are encouraged to respect the social and cultural conditions of the Merapi area during their visits.

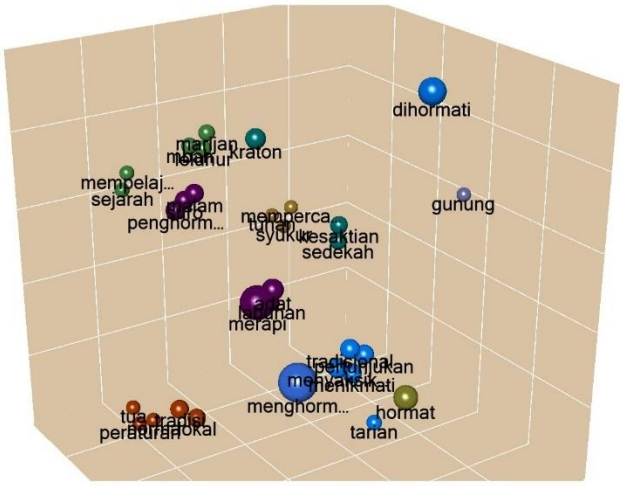

Figure 9. Calculated Interview Result of Socio-Culture Dimension toward Residents' Satisfaction (Cluster Analysis)
Source: Results of processed data, 2024

This can be observed from the results of the cluster analysis and word frequency, as shown in the Figure 9 above. The interview results indicate that tourists respect the traditions and customs of the Merapi area, including the belief in the sacredness of prominent figures such as Mbah Marijan. This respect extends to the tourists' trust in traditional practices in Merapi, such as the 'Adat Labuhan Merapi,' 'Sedekah Gunung,' and 'Tradisi pada Malam 1 Suro,' which are forms of gratitude to God, with tourists even participating in these traditional rituals. It is also noted that traditional dances in the Merapi area are an integral part of the attraction of many tourists due to the cultural significance. Additionally, the history and values upheld by the Merapi community are fully respected by tourists, including the pre-independence history and the volcanic eruptions of Mount Merapi, which have fostered greater sympathy and respect for the local community.

In this research context, tourism contributes to preserving the local culture of the Merapi community, making it an integral part of the tourism attraction. Additionally, the Merapi community exhibits greater openness to external influences due to tourism, resulting in positive impacts on their sociocultural conditions (Dinas Kebudayaan DIY, 2016; Sekretariat DPRD Yogyakarta, 2022). Sociocultural sustainability is achieved through the beneficial impacts of tourism development on the attitudes and satisfaction levels of the indigenous community (Bello et al., 2016; Khan et al., 2022). Previous research highlights the importance of socio-cultural aspects in tourism development and their positive impact on local residents. Studies (Asmelash & Kumar, 2019) have shown that the socio-cultural dimension is the highest positive predictor of resident satisfaction.

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The tourism sector is crucial in considering sociocultural aspects as it can alter the local culture positively or negatively.

CONCLUSION

The research highlights a mixed impact of tourism on community satisfaction in the Merapi region, illustrating both positive and negative dimensions. The ecological dimension reveals a negative influence, as tourism activities contribute to environmental degradation, which undermines local community satisfaction. Conversely, the economic dimension has a positive effect, demonstrating that tourism fosters economic growth and development, enhancing the community's financial well-being. The institutional dimension, however, negatively affects community satisfaction, suggesting that the lack of community involvement in tourism-related decision-making and local government policies hinders overall contentment. On the other hand, the socio-cultural dimension shows a positive effect, as tourism has played a role in enriching and promoting local culture, thereby contributing to the community's cultural pride and satisfaction. This mixed-method approach underscores the need for balanced strategies that address environmental concerns while maximizing economic benefits, improving institutional involvement, and supporting socio-cultural enhancement.

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