

## Analyzing the potential and development of sustainable tourism in Kampoeng Lama Tourism Village, North Sumatra

 Rahmi Khairani Nasution<sup>1</sup>,  R. Hamdani Harahap<sup>2\*</sup>,  Dewi Kurniawati<sup>3</sup>,  Hatta Ridho<sup>4</sup>

<sup>1,2,3,4</sup>Universitas Sumatera Utara, Medan, Indonesia; rahmikka20a@gmail.com (R.K.N.) r.hamdani@usu.ac.id (R.H.H.)  
dewi.kurniawati@usu.ac.id (D.K.) hattaridho@usu.ac.id (H.R.).

**Abstract:** This study aims to examine the potential and development of sustainable tourism in Kampoeng Lama Tourism Village, North Sumatra, by assessing its economic, social, and environmental dimensions. A mixed-methods approach with an explanatory sequential design was employed, beginning with a quantitative survey of 94 domestic tourists, followed by qualitative interviews with 10 key stakeholders. Analytical tools including Multidimensional Scaling (MDS) and Monte Carlo simulations were used to evaluate sustainability indicators. The findings reveal that Kampoeng Lama demonstrates strong social and environmental sustainability, characterized by active community participation, ecosystem-based attractions, and well-preserved landscapes. However, the economic dimension remains moderately sustainable, limited by inadequate infrastructure, low digital readiness, and fragmented institutional capacity. Key attractions such as Sanggar Lingkaran, Paloh Naga Agrotourism, and PASAR KAMU highlight local innovation in tourism. The typical tourist profile— young, educated, and local— suggests the need for more diverse tourism packages and service improvements. In conclusion, the study underscores the importance of integrated, community-driven governance involving BUMDes, Pokdarwis, and village stakeholders. Practical implications point to the need for increased infrastructure investment, improved environmental management, and stronger inter-sectoral partnerships to enhance long-term sustainability in rural tourism development.

**Keywords:** Collaborative governance, Community-based tourism, Rural development, Sustainable tourism, Tourism village.

### 1. Introduction

Tourism has become one of the mainstays in national development in Indonesia as it has made a significant contribution to employment, regional development, as well as foreign exchange income. The Ministry of Tourism and Creative Economy [1] reported that the tourism sector's contribution to GDP in Indonesia is 3.6% in 2022 compared to 2.4% in the previous year. The tourism sector also experienced significant growth in foreign exchange earnings with USD 0.52 billion generated in 2021 compared to USD 4.26 billion in 2022 showing a robust rebound after COVID-19. The increase is closely related to the efforts of the government in promoting priority tourist destinations through developing creative economies which are local culture-based [2].

The tactical function of tourism can also be found in its capacity to absorb labor and to generate regional economic activity. According to Kemenparekraf [1] more than 13 million jobs are directly or indirectly supported by tourism in Indonesia, representing 10.5 per cent of Indonesia's total national workforce. The presence of Indonesia being ranked 32 in the 2022 Travel and Tourism Competitiveness Index [3] reflects the growing competitive force of their tourism places. These successes are closely related to the diverse physical and cultural heritage of the country, which is also the nucleus on which the sustainability of tourism is constructed.

Indonesia has taken significant steps towards promoting sustainable tourism through the Ministry of Tourism and Creative Economy's implementation of Government Regulation No. 9 of 2021. This

regulation emphasizes four key pillars of sustainability: sustainable destination management, local economic utilization, cultural preservation, and environmental protection. According to Yanti, et al. [4] these four pillars are fundamental in creating guidelines for sustainable tourism destinations in Indonesia, aligning with global standards as outlined by the Global Sustainable Tourism Council and demonstrating the nation's commitment to sustainable tourism practices.

The first pillar, sustainable destination management, focuses on the effective management of tourist destinations to ensure their long-term viability. Pratiwi, et al. [5] assert that integrating local wisdom into tourism strategies enhances the unique characteristics of a destination while distinguishing it in a competitive market, thus fostering sustainable tourism practices. Concurrently, this regulatory framework ensures that the economic utilization pillar supports local communities by promoting their participation in tourism activities, thereby enhancing their livelihoods and contributing to local economic development, as noted by Sunardi, et al. [6].

Cultural preservation is another essential aspect highlighted in the regulation, fostering respect for local traditions and heritage. Hakim [7] emphasizes that community involvement in tourism management is crucial for maintaining cultural integrity, which is vital for enhancing local identity and ensuring that tourism does not exploit cultural resources. Furthermore, environmental protection, the fourth pillar of the regulation, is underscored by Wismantoro, et al. [8] who note that legal frameworks are established to manage national parks and biodiversity, ensuring that tourism activities contribute positively to the environment rather than detract from it.

Sustainable development is increasingly recognized as a balanced integration of economic, social, and environmental considerations, often referred to as the three pillars of sustainability. Gündoğdu and Aytekin [9] discuss how sustainable governance affects these dimensions, emphasizing that economic, social, and environmental components must harmonize to promote long-term stability [9]. In a similar vein, Abuzaid, et al. [10] underscore the need for balance among these pillars, indicating that effective sustainable practices hinge on the integration of environmental and socio-economic issues, often hampered by the elusive nature of social dimensions and inadequate economic considerations [10].

Nevertheless, there are many challenges to implement sustainability, including inequality, politics, and financial limitations [11]. The solution, or toolkit, needs to involve a multi-stakeholder approach [12] and strategic investment in renewable energy, circular economy approaches and participatory governance.

In tourism, sustainable tourism development strives for a balance between economic development, socio-cultural inclusiveness and environmental protection. As well as with socioecological systems theory underpinned e.g. in Indonesia's National Tourism Development Master Plan (RIPPN) 2010–2023. Deli Serdang Regency in the strategic area of Lake Toba has a quite potential of tourism with the location near from Kualanamu International Airport and increasing number of tourist attractions [1].

Number of tourist attractions the total tourist attractions of Deli Serdang (year 2019 and 2022) increased from 80 to 128, which are dominated by nature tourism-based on the community. But city tourism had yet to be professionally managed. Most sites are privately owned and tourism incomes adds little to the regional economies. The principal problem is the absence of organized sustain development and promotion and infrastructure.

Visitation exhibits up and down movements in the age of COVID-19 from 2018 to 2022. Overseas tourist numbers are low, but domestic tourists bounced back strongly in 2022, with the more than 1.27 million domestic tourists visiting the area. In such a revival, developing tourist experience and management capacity is of utmost significance particularly in rural and cultural tourism destinations such as the tourism villages.

Tourism villages, or what is locally referred to as *desa wisata*, are nound the world as sustainable tourism options are gaining attention. UNWTO [13] documented a 15% annual increase momentum of rural tourism, due to millennial preferences to immersive, community-based travel. Nations such as Indonesia and Thailand lead the way by incorporating agrotourism, local foods, homestays and handicraft workshops [14].

Even with economic gains, challenges remain. Hampton [15] cautions of the dangers of over commercialization, which has the potential to damage cultural integrity. The World Bank [16] notes that poor infrastructure, lack of human resource capacity and ineffective management systems are the main constraints facing rural tourism in the developing world. This underlines the necessity of models in which tourism development harmoniously fits with cultural and ecological sustainability.

This concept of “smart village tourism” is now being piloted in Indonesia. Gretzel describes how 82% of successful tourism villages in Europe and Asia have embraced digital marketing and management technologies [17]. Platforms such as Pesona Indonesia and Indecon have marketed more than 3,200 villages. However, AR/VR, IoT and real-time monitoring are poorly integrated in most of Indonesian contexts.

Based on rural tourism sustainability, Kampoeng Lama Tourism village Deli Serdang is an interesting case. It is underlying the cultural preservation and educational tourism in the “back to nature” approach [18]. This village provides local characteristic food and traditional arts to attract tourists both from local and foreign market [19]. Enrolling 90% of the inhabitants of all villages in tourism-based on the BUMDes system, Kampoeng Lama was able to elevate the average income of households by 60% of the original [20].

Nonetheless, issues remain. One of the serious issues is digital capacity, environmental sustainability and regeneration of generations [21]. In the country, youth involvement is weak, whereas plastic waste has increased by 45% since 2020 [22]. Public or academic activities, such as digital marketing training and water conservation using biopore systems, have a good prospect in the LPPM USU, 2023.

Tourist segmentation is decisive for the sustainable production. The knowledge about visitor profiles such as age, gender, income, visit motivation or satisfaction may contribute to the development of tailored offerings and to the prediction of visitors’ future behaviors [23]. This is because findings suggest that the development of sustainable rural tourism should be founded on the demand side of visitor expenditures, in which market trends should be monitored to penetrate the relevant markets within the current dates so that destinations being competitive in these markets would have to change dynamically in line with current market behavior [24].

However Kampoeng Lama does not have full-fledged model of sustainable tourism. Disputes over the sharing of revenue between BUMDes and private operators and infrastructure constraints as well as unequal community engagement call for more systemic solutions. Disputes over the sharing of revenue between BUMDes and private operators and infrastructure constraints as well as unequal community engagement call for more systemic solutions.

Therefore, in solving these problems, this research wants to see the potential of tourism and its visitors of Kampoeng Lama and establish a sustainable of tourism development model. This model will incorporate community based governance, economic innovation, and environmental stewardship to ensure long term ecological and social sustainability. The research attempts to add to the increasing literature of tourism village development and to provide the evidence for policy making on sustainable tourism of Indonesia.

## 2. Method

This study uses a quantitative research method with a positivist paradigm, which views reality as something that can be observed, measured, structured, and objectively verified through cause-and-effect relationships [25]. The positivist paradigm aligns with the researcher’s intention to examine how marketing capability, innovative performance, product advantage, and perceptual product congruity influence market performance among SMEs in North Sumatra. The quantitative approach is appropriate for this paradigm because it involves structured data that can be analyzed numerically and objectively.

A mixed methods approach will be applied to this study and it will be of the explanatory sequential design. The study starts with the gathering and processing of quantitative data, after which a qualitative phase is conducted, with the intention to offer more in-depth explanations and interpretation of the

quantitative outcome. Such practice is also suited when dealing with tourism research from the angle of descriptive (e.g., visitor behavior and sustainability indicators) and interpretive research (e.g., stakeholder views, governance dynamics).

Quantitative technique was used to measure the potentiality of Kampoeng Lama Tourism Village in terms of tourist characteristics and sustainability indicators of the village tourism development. Qualitative techniques, including interviews, observations, and focus group discussion, were used to understand stakeholder partnerships, local governance and cultural components such as community sustainability. This allows a comprehensive and contextually informed model of sustainable tourism development to be developed in the study.

The population in this study was domestic tourists in Kampoeng Lama Tourism Village, and all of the facilities they visited were that PASAR KAMU, Agro tourism Paloh Naga, Sanggar Lingkaran. According to DLH Deli Serdang [22] the number of tourists who come to the village is about 19,080 people in a year, or about 1,590 visitors in a month.

The sample was selected using purposive sampling, targeting respondents who meet specific criteria:

1. Minimum age: 18 years
2. Minimum number of visits: At least 2 visits to the destination

Sample size was calculated using Slovin formula with a 10% margin of error, and the minimum required representative sample was 94 respondents and sample data collection was carried out by face-to-face interviews.

In addition, 10 key informants were chosen for qualitative interviews because of their direct or indirect involvement in the tourism development of the village. We list the informants below:

**Table 1.**  
Informants in the Study.

No	Informant Code	Position
1	I	BUMDes Director
2	P	Village Head
3	I	Head of Tourism Office
4	AT	Local Resident
5	FID	Academic (Poltekpar Medan)
6	DS	PASAR KAMU Representative
7	RHP	Head of Bappeda
8	FN	Subdistrict Head
9	HS	Head of Village Empowerment
10	IL	Media Representative

In order to confirm the credibility and provide in-depth insights, this study used a mixed-method methodology. Questionnaires were completed by 94 domestic tourists in order to investigate the sustainability of Kampoeng Lama in terms of economic, social and environmental aspects.

In addition to the quantitative data analysis, semi-structured interviews with relevant stakeholders (government officials, village heads, tour operators, and academics) were held to deepen the understanding of tourism perceptions.

Real time behavior and interaction at the tourism sites were observed through participant observation; while contextual understanding was gained using documents such as official reports, planning documents and media.

Finally, FGDs with community members and local leaders were conducted to confirm findings and feedback. This interdisciplinary approach allows a holistic view of sustainable tourism dynamics in Kampoeng Lama.

The quantitative phase relied on two standardised instruments:

**Table 2.**  
Indicators of Village Sustainability Status.

Dimension	Variables/Attributes
Economic	Tourist visits, tourist attractions, object promotion, object management
Social	Accessibility, safety/crime rate, public facilities, comfort
Environment	Land use deviation, cleanliness, vegetation, landscape scenery

Source: Puspitasari, et al. [26].

**Table 3.**  
Indicators of Community-Based Sustainable Tourism.

Aspect	Variables/Attributes
Economic	Skills training, economic incentives, funding access, economic benefits
Socio-Cultural	Community development, planning and management, cultural diversity, gender equity, local knowledge, social welfare, voice and participation, promotion
Environmental	Minimizing environmental impact, sustainable infrastructure

Method of Research The process of data analysis addressed the quantitative and qualitative methods entirely to best understand the sustainable tourism development in Kampoeng Lama Tourism Village.

Multidimensional Scaling (MDS) was employed as a common method to analyze the quantitative data (the questionnaire data) to investigate the Sustainability Index at economic, social, and environmental dimensions. The sustainability level was ranked according to the index scores as:

**Table 4.**  
Sustainability Index Categories.

Index Value	Category
00.00 – 25.99	Poor (Not Sustainable)
26.00 – 49.99	Low (Less Sustainable)
50.00 – 74.99	Moderate (Fairly Sustainable)
75.00 – 100.00	High (Sustainable)

Source: Kavanagh [27].

The reliability of the MDS results was quantified by computing stress and the coefficient of determination ( $R^2$ ). A stress of 0 with near 1.0  $R^2$  value indicates the model has high accuracy [28]. Furthermore, the Monte Carlo simulation was performed to verify the relative stability of the index under 95% confidence level.

Sensitivity attributes on sustainability using leverage analysis were investigated. Attributes judged to be more impactful (as measured by Root Mean Square levels) were of a higher priority when developing strategic guidelines.

Content analysis was applied to the qualitative data from interviews, observations and FGDs, with a thematic approach, searching for patterns connected with collaborative governance, community involvement, and barriers to development. 3.5 Triangulation with qualitative findings The quantitative results were triangulated and supplemented with the results on qualitative level.

### 3. Result and Discussion

#### 3.1. Tourism Potential of Kampoeng Lama Tourism Village, Deli Serdang

Kampoeng Lama Tourism Village has huge potential in the perspective of sustainable tourism development such as agricultural land area, rich of culture value, and strong community-based. The village zone covers 170 ha, which has integrated farmland with tourism spots to provide both a picturesque landscape and rural culture experiences. Meanwhile, local wisdom, traditional arts and culinary heritage have been maintained and marketed as one of its trademarks in tourism.

A constuctive assessment was made to determine the tourism resources of the village, such as natural resources, infrastructure, cultural resources, community resources, etc. The testing results are shown below:

**Table 5.**  
Tourism Potential Score of Kampoeng Lama Village.

No	Criteria	Max Score	Score Achieved	Percentage
1	Natural/Biological Resources	32	10	31%
2	Environmental and Physical Conditions	37	24	65%
3	Cultural Assets (Arts, Cuisine, Healing, Sites)	38	25	66%
4	Amenities/Infrastructure	19	13	68%
5	Institutional Support	16	5	31%
6	Human Resources	18	15	83%
7	Community Attitudes and Social Values	18	15	83%
8	Accessibility (Transport and Connectivity)	20	11	55%
	<b>Total</b>	<b>198</b>	<b>118</b>	—

The greatest capacity was found in human resources, and community values with score of 83% in each, show that the high local participation and good social behavior. Accessibility (55%) is average, emphasizing that the village was well prepared to cater for tourism in terms of physical infrastructure and cultural interpretation. Whereas the minimum value was observed for natural/biological resources (31%) and institutional support (31%), indicating the need for more investment and utilization of environmental resource. Accessibility (55%) is average, emphasizing the need for better transport infrastructure support for the smooth travel of tourists.

In addition to its numerical strengths, Kampoeng Lama offers three distinct and innovative tourism attractions:

#### 3.1.1. Sanggar Lingkaran

Established in 2011, Sanggar Lingkaran is a Social Foundation which focus on empowering children and adolescents through education, art, and vocational skills. Situated in Pantai Labu subdistrict by the coast, it was established in response to widespread school dropout and lack of access to education. By its cultural performance, character education, and youth development programs, Sanggar Lingkaran has been greatly involved in initiating the birth of Kampoeng Lama as a tourism village since 2018. Its people-focused methodology has been acknowledged on a national level, and the 2021 Minister of Tourism even paid a visit.

#### 3.1.2. Paloh Naga Agrotourism

This is the site of the agricultural landscape of Kampoeng Lama providing a beautiful view among the green rice fields. There, visitors can unwind in old-style huts, eat locally produced food, and experience real village life. The area is also “Instagrammable,” drawing in millennial and Gen Z types. Students from Sanggar Lingkaran also perform, and a special wooden currency system (“Uang Kayu”) is used for transactions, reflecting local character. The facilities feature a children’s pool, food vendors, and outdoor cultural performance stages, to support the combination of environmental and socio-cultural tourism.

#### 3.1.3. PASAR KAMU (Kawan Lama Sunday Market)

PASAR KAMU was held on August 9, 2020, and is a traditional-themed market initiated by the youth community of Denai Lama Village. It runs from 6am to 10am every Sunday with hundreds local MSMEs offering traditional snacks people yearn for, such as lupis, klepon, tiwul, apem and many more. transactions are conducted with “tempu” (coconut shell currency) thus cultural experience become richer. Weekly events and art performances on its premises are organized to help draw visitors and to keep them engaged. The market is a unique blend of youth business, cultural survival, and community economic development.

Taken together, these facilities represent the multi-faceted tourism potential of Kampoeng Lama, which is distinguished by strong community involvement, creative local development and a clear target in the field of sustainability. However, the relatively low scores in institutional support and accessibility suggest the need for strategic partnerships and improved governance mechanisms to fully unlock the village's potential.

### *3.2. Tourist Characteristics in Kampoeng Lama Tourism Village, Deli Serdang*

This study identified both sociodemographic and psychographic characteristics of tourists who visited Kampoeng Lama Tourism Village, based on questionnaire responses from 94 respondents. The findings help to profile the target market for sustainable tourism strategies in the village.

#### *3.2.1. Sociodemographic Profile of Tourists*

The majority of visitors were aged 18–24 years old (66%), representing a productive and tech-savvy demographic, followed by those aged 35–44 (15%), 25–34 (7%), 55–64 (6%), and 45–54 (4%), with only 1% of visitors being 13–17 years old. This indicates that younger visitors, particularly university students or early-career individuals, dominate tourist traffic to Kampoeng Lama.

In terms of gender, the distribution was relatively balanced: 51% male and 49% female, suggesting that tourism activities in the village appeal equally to both genders.

Regarding education level, most visitors held a Diploma (45.7%), followed by high school graduates (34%), and Bachelor's degree holders (20.3%). This supports the idea that formal education influences travel behavior, with more educated tourists seeking meaningful cultural or nature-based experiences.

With respect to marital status, 68% were unmarried, 31% married, and 1% widowed, indicating that the majority of visitors are single and likely to travel more flexibly.

As for ethnicity, 76.6% of visitors were Javanese, aligning with the cultural identity and culinary offerings of Kampoeng Lama. Other ethnic groups included Melayu (7.4%), Batak (5.3%), and various minorities such as Banjar, Minang, and Sunda.

In terms of occupation, the largest group was students (44.7%), followed by entrepreneurs (22.3%), housewives (10.6%), private employees and school students (each 5.3%), and a small proportion of public servants, teachers, and informal workers.

When asked about monthly income, most respondents preferred not to disclose exact figures, though a few indicated earnings ranging from IDR 300,000 to IDR 5,000,000. The lack of income data reflects the sensitive nature of financial disclosure among tourists.

Tourists predominantly came from areas within 20–30 km (63.1%) and 5–10 km (31.1%), indicating strong appeal among nearby urban residents, especially from Medan. This supports the role of Kampoeng Lama as a short-distance rural retreat.

For transportation, the majority of tourists (79.8%) used motorcycles, while others used cars (19.4%) and only one respondent reported using a pedicab. This reflects the dominance of private vehicles, particularly among young and unmarried visitors.

#### *3.2.2. Psychographic Profile of Tourists*

In terms of travel companions, 60.6% of tourists came with family, while 39.4% traveled with friends. This shows that Kampoeng Lama attracts group visitors who value shared experiences, particularly family-oriented ones.

As for motivation, the primary reasons for visiting were to seek tranquility (38.3%), enjoy culinary experiences (25.5%), leisure tourism (13.8%), education (7.4%), relaxation (6.4%), as well as curiosity and cultural engagement (each 4.3%). The tranquil environment, green rice fields, and traditional ambiance serve as key attractions for visitors seeking peaceful getaways.

**Table 6.**  
Summary of Tourist Characteristics in Kampoeng Lama.

Characteristic	Dominant Category	Percentage
Age	18–24 years	66%
Gender	Male	51%
Education	Diploma	45.70%
Marital Status	Unmarried	68%
Ethnicity	Javanese	76.60%
Occupation	Student	44.70%
Travel Distance	20–30 km	63.10%
Transportation Mode	Motorcycle	79.80%
Travel Companion	Family	60.60%
Travel Motivation	Seeking Tranquility	38.30%

These findings suggest that the target market of Kampoeng Lama Tourism Village is young, educated and unmarried local tourists who are dominantly coming from surrounding urban area. Their drivers are all about relaxation, culture, and local food. An understanding of this profile is crucial to the development of marketing strategies and tourist services that cater in a responsible manner with sustainable development.

### 3.3. Sustainable Tourism Development in Kampoeng Lama Tourism Village, Deli Serdang

In order to measure the existence of sustainability in Kampoeng Lama Tourism Village, multidimensional scaling (MDS) and Monte Carlo analysis was used with regard to three aspects of sustainability (economic, social, and environmental). Summary of the analysis is presented in the following table:

**Table 7.**  
Sustainability Index of Kampoeng Lama Tourism Village.

Sustainability Dimension	MDS Index	Monte Carlo	Difference	Stress Value	R <sup>2</sup> (Determination Coefficient)	Category
Economic	73.37	71.1	2.27	0.16	0.93	Fairly Sustainable
Social	75.7	75.41	0.29	0.14	0.95	Sustainable
Environmental	75.23	73.76	1.47	0.16	0.93	Sustainable
Multidimensional Average	74.76	73.61	1.15	0.15	0.94	Fairly Sustainable

The results of the sustainability assessment indicate that Kampoeng Lama Tourism Village is currently fairly sustainable, with an overall index score of 74.76. In conclusion, while Kampoengs, the social dimension scored the highest (75.70), followed by the environmental (75.23) and economic (73.37) dimensions. These values reflect strengths in community participation, land use compatibility, and natural aesthetics, but also highlight economic areas requiring further development, particularly in income diversification and institutional support.

A key to enhancing sustainability lies in innovation. Kampoeng Lama possesses rich tourism assets local wisdom, traditional arts, culinary heritage, education, and handicrafts that can be packaged more effectively. Current tourism products like the PAK POENG package are underutilized in extending visitor stay. To address this, longer and more varied tour packages (ranging from 1–7 days) should be developed, supported by community-managed homestays and local transportation.

Collaboration with neighboring villages such as Binjai Bakung and Denai Kuala can expand attraction diversity and distribute economic benefits regionally. Such partnerships would support the shift from mass tourism to quality tourism, targeting fewer but higher-spending visitors. This aligns with Sapta Pesona principles and with the view that sustainable tourism must emphasize visitor experience quality over quantity.



Despite promising social sustainability, several areas require improvement. Facilities such as toilets, seating, signage, and accessibility infrastructure remain inadequate, especially at high-traffic spots like PASAR KAMU and Paloh Naga. Cleanliness, visitor comfort, and inclusivity are essential to delivering a satisfying experience. Issues like dusty eating areas, lack of structured seating, and insufficient waste management negatively impact perceptions.

The economic dimension can be improved through stronger marketing, active promotion on social media, and collaboration with influencers and content creators. Enhancing destination visibility and integrating local products and experiences into tourism packages can boost spending and length of stay. As Abenayake, et al. [29] note, sustainable economies must meet community needs without exploiting natural resources, supported by inclusive governance.

According to Li [30] rural revitalization depends on sustainable tourism as it promotes industrial prosperity, ecological balance, effective governance, and livability. This unique culinary culture, spiritual spaces and community enterprises are the main features that Kampoeng Lama can offer. Markets such as the PASAR KAMU that utilizes traditional wooden tokens (TEMPU) showcase local creative economy while stimulating local economic flow.

However, the environmental sustainability is still pending. Conversion of rice fields to tourism areas requires clear policy direction as to prevent a damage on the ecosystem. There's also the issue of waste, which is more prevalent with greater foot traffic, particularly on the weekends. Much is achieved through initiatives such as centralized parking and shuttle service, but the long-term response should involve waste reduction, zoning enforcement and community environmental monitoring.

Mihai [31] highlights that disproportionately, rural regions become much more susceptible to ecological degradation due to waste contamination. To this end, Kampoeng Lama needs to heighten awareness and cultural runs based on eco-tourism, conservation of natural resources, and pollution management. As Abenayake, et al. [29] emphasise, environmental sustainability involves minimizing waste and emissions and preserving ecosystems for future generations.

In summary, although Kampoeng Lama exhibits cohesive social and physical features, its further development must now concentrate upon pursuing an economically viable base and reinforcing environmental safeguards to the point where tourism development is matched more closely to sustainability principles.

### 3.4. Descriptive Statistics

The results of the descriptive statistical analysis provide an overview of the research variable, namely Sustainable Tourism, as shown below:

**Table 8.**  
Results of Descriptive Statistical Analysis.

Description			Statistic	Std. Error
Sustainable Tourism	Mean		66.1845	1.16347
	95% Confidence Interval for Mean	Lower Bound	63.8767	
		Upper Bound	68.4922	
	5% Trimmed Mean		67.5394	
	Median		65.0000	
	Variance		139.426	
	Std. Deviation		11.80790	
	Minimum		20.00	
	Maximum		80.00	
	Range		60.00	
	Interquartile Range		14.00	
	Skewness		-2.005	.238
	Kurtosis		6.508	.472

### Model Collaborative Governance for Sustainable Tourism Development in Kampoeng Lama Tourism Village

The transformation of Kampoeng Lama from a rural farming village to a tourism village originated from a comparative study visit to Pujon Kidul tourism village in 2017. This resonates with Ansellhead started consulting with the community to put into action aspects of the visit. Though there were difficulties in the early stages, such as the low level of attention from the public, poor management ability in tourism, and unbalanced support from organizational background, there were also some common livelihood experiences between local initiators and villagers, forming the conditions for cooperation.

Resource limitations, particularly in financial, technical, and human aspects, initially hindered development. However, consistent tourist visits fostered informal interactions that evolved into structured collaboration through community discussions. Over time, tourism roles were distributed among Sanggar Lingkaran and Paloh Naga Agrotourism under the village-owned enterprise (BUMDes), while PASAR KAMU operated as a foundation. This dualism required careful alignment of interests and management to preserve the village's integrity as a unified tourism entity.

Institutionally, Kampoeng Lama established a clear management structure involving Pokdarwis (Tourism Awareness Group) and BUMDes Sastro 3-16. These institutions were entrusted with the formal mandate to manage tourism operations. Governance was rooted in trust, transparency, and shared goals, with both formal and informal negotiations ensuring mutual accountability. This reflects principles of collaborative partnership: shared aims, trust, reciprocity, equity, and joint funding.

Facilitative leadership played a vital role in maintaining stakeholder engagement. Each tourism spot developed its own work plan and conducted weekly evaluations, but all operations were accountable to BUMDes. Regular evaluations helped track progress and address operational challenges, ensuring alignment with the village's collective tourism vision.

Collaboration was initiated through face-to-face dialogue between stakeholders. When the village council initially rejected tourism proposals, the village head continued engaging with the district government, especially the Department of Youth, Culture, and Tourism. Joint planning meetings were held with multiple agencies to define responsibilities, followed by the appointment of managers for BUMDes, Paloh Naga, and community-based production units.

Building trust among villagers—most of whom were originally farmers—required targeted outreach. Through workshops with local government and academics, residents were educated on the tourism concept and how it could coexist with their existing livelihoods. This led to stronger community commitment and full participation in tourism activities, including volunteering labor, resources, and creative contributions.

The collaboration produced tangible results: jointly organized events like the Independence Day Festival, Festival Turun Sawah, 1000 Tents Festival, and Zapin Cultural Camp. Tourism packages such as PakPoeng now offer culinary and educational experiences across three tourism sites. Revenues are funneled through BUMDes and redistributed to the community in the form of programs and services. Tourism has diversified the local economy, creating new income sources for residents as traders, food vendors, and accommodation providers.

Unlike in Kampung Wisata Praijing, the collaborative governance does not work yet [32] the case of Kampoeng Lama constitutes a functioning instead of emerging and/or an evolving collaborative model. The village's inclusive participatory, decision-making process, and community-initiated tourism contribute to the advancement of environmentally sustainable rural tourism.

## 4. Discussion

The conceptual of the formation of Kampoeng Lama tourism village in Deli Serdang represents a change of direction of the development of sustainable tourism based on cultural and community participatory. The village were also presenting an emerging potential from its agricultural land, cultural phenomenon and localized tourism practiced by several tourism destinations including Sanggar

Lingkar, Paloh Naga agrotourism, and PASAR KAMU. They serve as a concoction of economic innovation and cultural conservation, based on the visions of the Ministry of Tourism and Creative Economy [1] and the international sustainable tourism framework.

From a sustainability perspective, Kampoeng Lama scores highest in the social and environmental dimensions. The Multidimensional Scaling (MDS) index indicates strong community engagement (75.7) and ecological sensitivity (75.23), highlighting the effectiveness of local governance structures and community-based management. These outcomes are reinforced by findings from Puspitasari, et al. [26] showing that social cohesion and environmental consciousness form the backbone of sustainable tourism villages.

However, the economic index (73.37) suggests areas for growth. While markets like PASAR KAMU support local MSMEs and use creative tools like coconut shell currency (TEMPU), challenges persist in income diversification and infrastructure funding. This aligns with concerns raised by the World Bank [16] regarding rural tourism limitations, including poor infrastructure and inadequate institutional support.

Tourist demographic data reveals that Kampoeng Lama primarily attracts young, educated, unmarried domestic tourists from nearby urban areas, with 66% of visitors aged 18–24 and 45.7% holding diplomas. Their travel motivations—especially the search for tranquility, culinary experiences, and cultural immersion—support the idea that tourism development must cater to psychographic as well as geographic profiles [24].

Despite strong human resources and community enthusiasm (83%), accessibility and institutional backing remain moderate or weak. Institutional support scored only 31%, while transport infrastructure (55%) was noted as a barrier to expansion. These figures point to the need for enhanced collaboration between local governments, BUMDes, and regional tourism stakeholders, echoing the need for integrated tourism planning.

The integration of digital technologies remains limited, although the village has piloted creative approaches like thematic markets and digital storytelling. Lubis [21] noted the urgency of youth involvement and environmental education, particularly as plastic waste has increased by 45% since 2020. This points to the critical need for programs in digital marketing and environmental conservation to sustain both visibility and ecological integrity.

Model governance in Kampoeng Lama demonstrates a working example of collaborative partnership. By involving BUMDes Sastro 3-16, Pokdarwis, and Sanggar Lingkar, the village has created an ecosystem of shared management and accountability.

Progress has been achieved, but some tourism programmes such as the PAK POENG package have been under-exploited. Visitor stays could be extended by offering various packages (from 1 to 7 days), community-managed homestays and cooperation with neighboring villages such as Binjai Bakung and Denai Kuala. These approaches can enable tourism to progress from quantity to quality, in line with the Sapta Pesona philosophy and the UN SDGs.

The environment needs to stay a priority. Land use change, unsanitary waste disposal, and limited zoning enforcement jeopardize sustainability in the long-run. Mihai [31] and Abenayake, et al. [29] highlighted the susceptibility of rural destination to environmental degradation and the necessity of eco-tourism development that conserves natural assets and creates awareness among both tourists and the local destination communities.

To sum up, Kampoeng Asli is a prospective scheme for sustainable tourism development, in which social and culture enriched values, ecological preservation, and community-based economy are balanced perfectly. Yet for that potential to be realized, strategic investments in infrastructure, environmental governance, and digital capacity are required. As the village type of ST transforms like this, the village should be based on inclusive collaboration and adaptation innovation in the process of transforming, in order to achieve the long-term rural tourist competitiveness and sustainability.

## 5. Conclusion

This study describes that Kampoeng Lama Tourism Village is a promising area and has a basis to be developed into a sustainable tourism area with the cultural heritage, local community participation, and ecofriendly with the local wisdom resources. Kampoeng Lama has strong social and environmental sustainability, featuring local community involvement, an ecosystem-based approach and a well-managed landscape. Sanggar Lingkaran, Paloh Naga Agrotourism, and PASAR KAMU are underwritten by creative initiatives which represent the innovative practices of community engagement around culture, economy, and education. Nevertheless, economic sustainability still remains fair because of weak institutional capacity, poor infrastructure and limited digital capacity. According to tourist profiles, the majority of tourists are young, educated and local, which calls for effective marketing strategies and improved services to prolong tourist stays and boost spending. Participation of BUMDes, Pokdarwis, and local leadership in a collaborative governance framework have built trust and facilitated effective tourism management, however waste control, accessibility, and zoning enforcement still need enhancing. Kampoeng Lama in order to be sustainable should invest in infrastructure, be continually promote a package of tourism, increase environmental activities and increase collaboration partnerships. This research supports that economic innovation, environmental protection, and inclusive governance should be considered as core principles in rural tourism planning. Kampoeng Lama provides a useful prototype of how tourism villages might pursue sustainability based on community direction and responsive management.

### Institutional Review Board Statement:

This study had been reviewed and approved by the Research Ethics Committee of the Universitas Sumatera Utara, Indonesia. Informed consenting was obtained from all participants the study was conducted in line with institutional ethical regulations for human subject research, data protection and provision of such data.

### Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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