



UDC 332

SUSTAINABLE ANALYSIS OF AGRITOURISM-BASED TOURIST VILLAGES IN SLEMAN DISTRICT, INDONESIA

Zulfadli Muhamad Misbach, Handayani Sugiharti Mulya, Setyowati

University of Sebelas Maret, Surakarta, Indonesia

*E-mail: fadlimisbach17@gmail.com

ABSTRACT

Agritourism-based tourist villages can provide economic benefits to local communities. However, developing sustainable agritourism-based tourist villages must also consider economic, ecological, and socio-cultural benefits. So that tourist villages can meet current needs without sacrificing future needs. Sleman Regency has the most significant tourist villages in the Special Region of Yogyakarta Province. This study aims to determine the sustainability status of agritourism-based tourist villages in Sleman Regency. The primary method used in this research is descriptive analysis, and the number of agritourism-based tourist villages studied is 14. In-depth information was obtained from key informants, including policymakers, associations, and heads of agritourism-based tourist village managers. Data were analyzed using Multi-Dimensional Scaling (MDS). The results of this study show that the economic dimension (69.95) is entirely sustainable, the ecological dimension (90.45) is sustainable, the socio-cultural dimension (70.94) is entirely sustainable, and the facilities and infrastructure dimension (73.07) is entirely sustainable.

KEY WORDS

Sustainability, tourist villages, agritourism, public services.

The tourism and creative economy sector has a significant role in the Indonesian economy through added value, foreign exchange earnings, job creation, and community empowerment (Kementerian Pariwisata and Ekonomi Kreatif RI, 2023). The tourism sector also provides opportunities for the growth of various economic businesses carried out by the community and opens formal and informal employment opportunities for the community (Paputungan et al., 2017). The development and improvement of the tourism sector carried out by stakeholders should not be oriented towards economic interests alone but must also pay attention to efforts to preserve the environment and the socio-cultural life of the community (Alvi et al., 2018). On the other hand, sustainable tourism is tourism that takes into account economic, social, and environmental impacts in the present and future, meets the needs of visitors, industry, the environment, and local communities, and can be applied to various forms of tourism activities in all types of tourist destinations (Firdausyah et al., 2021).

Now, there has been a shift in tourist orientation from mass tourism to individual/small group visits that are interested in the daily lives of the community (Handayani et al., 2023). Changes have also occurred in consumer/tourist demand, from buying products to buying experiences and responsible tourism development in creativity-based or creative tourism (Swesti, et al., 2020). Consumers are looking for new types of tourism in rural areas to know the lives and activities of farmers (Petroman et al., 2016).

Agricultural development in rural areas plays a significant role in the community's environmental and economic development (Djuwendah et al., 2023). Sustainable rural development is also widely discussed in the face of several challenges, such as environmental degradation, poverty, and cultural decline (Saputro et al., 2023). Rural tourism has been proven to benefit the community by diversifying livelihoods, improving people's quality of life, promoting cultural values, and encouraging awareness of environmental conservation (Nordbø, 2022). The shift in visitor interest to rural tourism has led to the growth of tourist villages in various regions. According to the Table below, one of the regions with the most tourist villages is Sleman Regency, Yogyakarta Special Region Province, which has 80 tourist villages.



Table 1 – Tourist Village DIY 2022

No	District/City	Total
1	Sleman Regency	80
2	Bantul Regency	47
3	Gunungkidul Regency	38
4	Kulon Progo Regency	22
5	Yogyakarta City	18
Total Tourist Village in DIY Province		205

Source: Dinas Pariwisata DIY 2022.

The data above show that the Special Region of Yogyakarta Province has 205 tourist villages. Sleman Regency has the most significant number of tourist villages, with 80 tourist villages.

In the evaluation of the category of tourist villages periodically every two years by the Government, it can be seen that some tourist villages are upgraded, some remain, but some are dormant (Handayani et al., 2023). Meanwhile, the reality in the field shows that not all agritourism-based tourist villages in Sleman Regency can develop well, and some even have to stop operating. This is indicated by the existence of some tourist villages that still need to be made more accessible to attract tourists and the need for adequate facilities and infrastructure. Therefore, this study aims to determine the sustainability status of agritourism-based tourist villages in Sleman Regency.

LITERATURE REVIEW

Rural development is based on local development, but its influence is significant for national development (Gebre & Gebremedhin, 2019). Rural development is sustainable if it can accommodate the needs of the present while maintaining the capacity to accommodate the needs of future generations (Mensah, 2019). The ideal tourism development minimizes adverse impacts so as not to burden future generations (Mehta et al., 2022).

Agritourism-based tourist village development attempts can utilize agricultural potential and involve village communities; this can function as community empowerment (Sembiring et al., 2020). Sustainable tourism development should also be based on developing relationships between the tourism industry, the environment, and society (Djuwendah et al., 2023). Support for sustainable rural tourism is based on tangible benefits such as creating jobs, increasing community awareness of environmental conservation, and promoting local cultural values (Eslami et al., 2019).

A tourist village is a rural area with several unique characteristics to become a tourist destination (Sugiarti et al., 2016). Village tourism is a type of tourism in which a small group of tourists live in or near traditional life or remote villages and study village life and the local environment (Inskeep, 1991). Village tourism is an object and attraction of human work in the form of local village culture that gives an attractive impression to visiting tourists; there are also tourist villages that utilize natural resources to be exposed and can provide education for visitors on how to preserve nature according to the village community (Setiawati, R. and Aji, P, S, 2020)

Agritourism is a concept that combines agriculture with tourism and agricultural products as the primary commodity (Handayani, S, 2021). It is a series of tourism activities that utilize the potential of agriculture as a tourist attraction, both in the form of the natural scenery of the agricultural area and the uniqueness and diversity of production activities, agricultural technology, and the culture of the agricultural community (Palit et al., 2017).

METHODS OF RESEARCH

This research was conducted in Sleman Regency, Yogyakarta Special Region (DIY) Province. The determination of this location was chosen deliberately in Sleman Regency because this area has the first most significant number of tourist villages in DIY Province,



which has a total of 80 tourist villages. The tourist villages to be studied are agritourism-based tourist villages totaling 14 agritourism-based tourist villages.

The primary method of this research is the descriptive analysis method. The descriptive analysis method aims to explain the characteristics of a situation and describe systematically and accurately to find out the facts of what is happening in the field (Karma, et al. 2020). The data collection method consists of primary data (interviews, observations, documents/records) and secondary data (Central Bureau of Statistics, DIY Provincial Tourism Office, Sleman Regency Tourism Office, journal literature, and others). The data collection technique used was purposive sampling. Research respondents were addressed to expert judgment consisting of experts and people who understand the research topic, such as the Head of the Human Resources and Tourism Business Development Division, the Head of the Sleman Tourism Promotion Agency, and the Head of the Agrotourism-Based Tourist Village Management.

Table 2 – Sustainability Status Based on the Rap-tourism Index

Index Value	Category
0,00 - 25,00	Not sustainable
25,01 - 50,00	Less Sustainable
50,01 - 75,00	Moderately Sustainable
75,01 - 100,00	Sustainable

Source: Fauzi et al., 2024.

Table 3 – Dimensions and attributes used in the sustainability of agritourism-based tourist villages in Sleman Regency

No	Dimension	Attributes	Bad	Good	Source
1	Economy	1. Local labor absorption rate	0	2	Sukwika et al, 2018 and Purwaningsih et al, 2021
		2. Provide convenience to local entrepreneurs	0	2	Kementerian Pariwisata Republik Indonesia, 2019
		3. Number of tourist visits	0	2	Marhesa et al, 2022 and Yolanda, 2023
		4. New source of income for farmers	0	2	Handayani, 2021
		5. Tourist package deals	0	2	Marhesa et al, 2022
2	Ecology	1. Amount of waste generation	0	2	Dwikorawati, 2012
		2. Waste Management	0	2	Puwrningsih et al, 2021
		3. Utilization of agricultural waste	0	2	Irianto et al, 2020
		4. Environmental optimization instead of exploitation	0	2	Kementerian Pariwisata Republik Indonesia, 2019
		5. Clean water availability	0	2	Mujio et al, 2023
		6. Agricultural cultivation and farming activities	0	2	Handayani, 2021
		7. Community support for environmental conservation activities	0	2	Marhesa et al, 2022
3	Socio-cultural	1. Development must involve local communities	0	2	Kementerian Pariwisata Republik Indonesia, 2019
		2. Formal education level of the community	0	2	Marhesa et al, 2022
		3. Relationship with the local community	0	2	Puwrningsih et al, 2021
		4. The existence of community attempts to maintain the tourist attraction	0	2	Marhesa et al, 2022
		5. Community participation and empowerment	0	2	Marhesa et al, 2022
		6. Village community harmony	0	2	Handayani, 2021
		7. Local wisdom	0	2	Putera et al, 2013 and Mujio et al, 2023
		8. Safety and comfort of tourists	0	2	Firdausyah et al, 2021
4	Facilities and Infrastructure	1. Availability of waste handling facilities	0	2	Dwikorawati, 2012 and Yolanda, 2023
		2. Road conditions to the location	0	2	Supriadi et al, 2017 and Mujio et al, 2023
		3. Availability of rest houses (homestay)	0	2	Dwikorawati, 2012 and Yolanda, 2023
		4. Availability of toilets for tourists	0	2	Marhesa et al, 2022
		5. Availability of shopping centers	0	2	Elvira et al, 2022



Data analysis method through the analysis of the sustainability of agro-tourism-based tourist villages in Sleman Regency, analysis of the sustainability of agro-tourism-based tourist villages in Sleman Regency using Multi-Dimensional Scaling (MDS) analysis using the Rap-tourism approach. In this study, sustainability analysis was carried out in four dimensions: (1) ecological dimension, (2) economic dimension, (3) social and cultural dimension, and (4) facilities and infrastructure. In each dimension, attributes will be assessed and analyzed to determine the sustainability index of each dimension. The attributes assessed are based on a literature study of previous studies and modified to fit the scoring requirements.

RESULTS AND DISCUSSION

The economic dimension is one of the critical factors in the sustainability of tourist villages, where the economy can provide benefits in the form of income for people living in the tourist village. One of the principles of sustainable tourist development is to ensure an equal distribution of economic benefits for all actors involved, exploring the growth of employment and business opportunities (Buckley, 2011). The results of the sustainability data analysis, which includes five attributes in the economic dimension show a value of 69.95 which means it is included in the moderately sustainable category. In addition, the economic dimension has an S-Stress value of 0.152, R^2 of 0,933, and a Monte Carlo value of 67.51. The economic dimension has an S-Stress value of 0.152, R^2 of 0,933, and a Monte Carlo value of 67.51. In these results it can be said that the ecological dimension obtained an S-Stress value below 0.25 and R^2 which is close to 1 (100%).

Based on the leverage analysis in the economic dimension, three attributes are considered sensitive to the level of sustainability of the economic dimension, which are the number of visitor arrivals (11.30), new sources of income for farmers (9.31), and providing convenience to local entrepreneurs (7,86). The number of tourist visits positively affects the income of tourist villages; the high number of tourist visits fills homestay residents, and the fulfillment of basic needs for tourists, such as daily consumption, shopping for souvenirs, and exceptional food, also increases. The following sensitive attribute is a new source of income for farmers: the existence of a tourist village; the community gets additional income such as houses rented for homestays, becoming tour guides, and providing food / special items in tourist villages. Providing convenience to local entrepreneurs, tourist villages in Sleman Regency make local residents the main actors in developing their tourist villages.

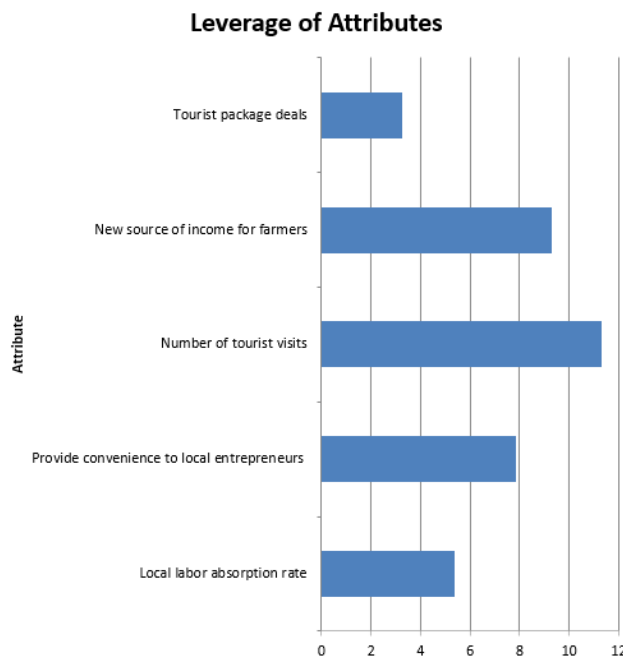


Figure 1 – Sustainability status of the economic dimension

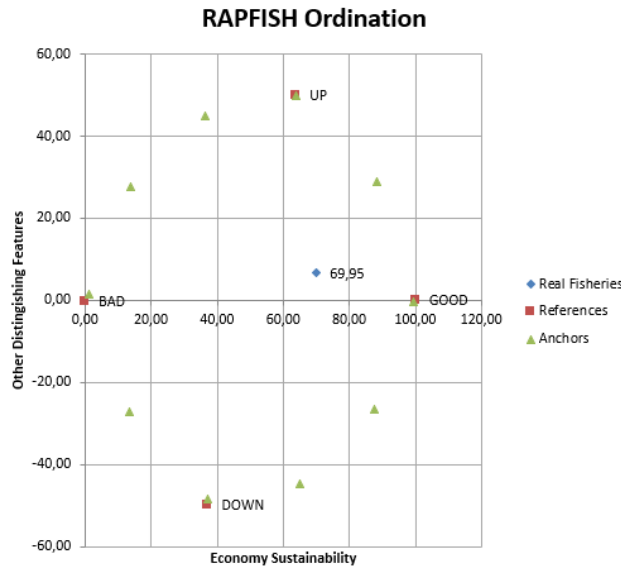


Figure 2 – Results of economic dimension leverage analysis

The ecological dimension is a dimension that is closely related to the sustainability of the environment and its management. In this case, the ecological dimension is used to see how the environment supports the operational activities of the tourist village. That the ecological dimension is used to see how environmental conditions can support activities carried out sustainably (Elvira et al., 2022). The results of the analysis of sustainability data covering seven attributes in the ecological dimension show a value of 90.45, which means that it falls into the very sustainable category. The ecological dimension has an S-Stress value of 0.139, R^2 of 0,945, and a Monte Carlo value of 86.64. In these results it can be said that the ecological dimension obtained an S-Stress value below 0.25 and R^2 which is close to 1 (100%).

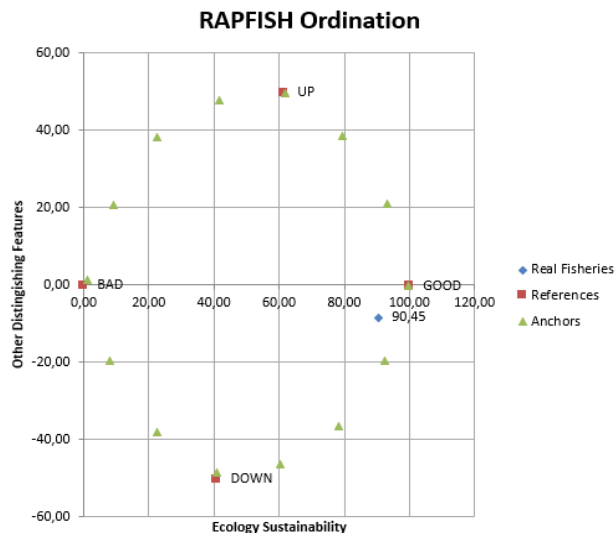


Figure 3 – Sustainability status of the ecological dimension

Leverage analysis in the ecological dimension has three attributes with the highest RMS values: waste management (9.55), clean water availability (2.25), and agricultural cultivation and farming activities (2.22). Waste management in agro-tourism-based tourist villages in Sleman Regency is quite good because managers collaborate with waste banks to collect plastic waste or anorganic waste. In contrast, organic agricultural waste will be collected and reused for compost. The availability of clean water in this tourist village is



relatively abundant due to good natural conditions that allow the existence of springs. Agricultural cultivation and farming activities are the activities of the tourist village community, which grows rice, raises livestock, and cultivates freshwater fish.

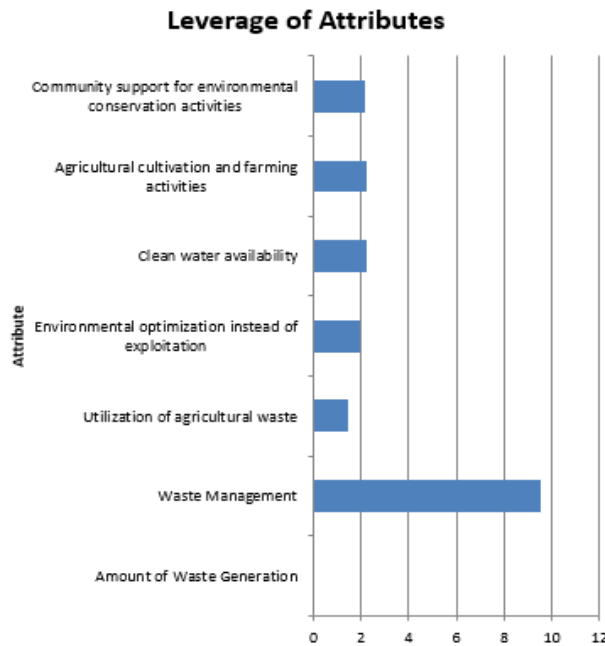


Figure 4 – Results of ecological dimension leverage analysis

The socio-cultural dimension represents the carrying capacity of the local community and culture towards the tourist village. Social aspects are part of the three main perceptions of sustainability, a social definition aimed at continuously meeting basic needs for security, justice, freedom, education, employment, and recreation (Nasdian, 2015). The sustainability analysis results that include eight attributes in the socio-cultural dimension show a score of 70.94, which means it is categorized as moderately sustainable. The socio-cultural dimension has an S-Stress value of 0.140, R^2 of 0,944, and a Monte Carlo value of 68.60. In these results it can be stated that the socio-cultural dimension obtained an S-Stress value below 0.25 and R^2 which is close to 1 (100%).

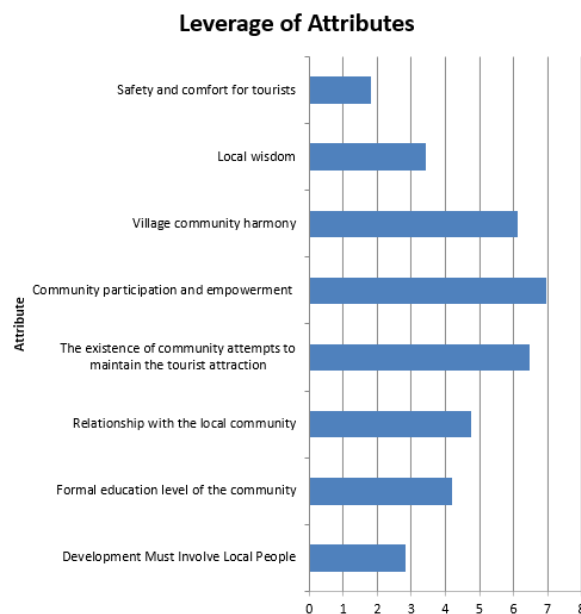


Figure 5 – Sustainability status of the socio-cultural dimension

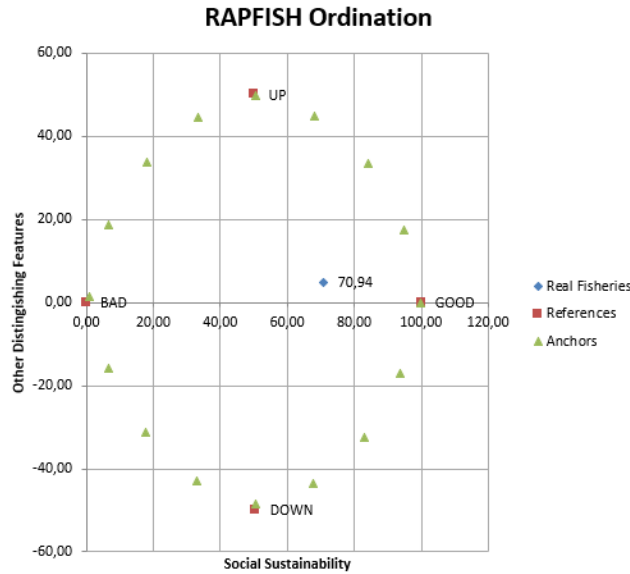


Figure 6 – Leverage analysis result of socio-cultural dimension

The results of the leverage analysis on the socio-cultural dimension there are three sensitive attributes they are the existence of community participation and empowerment (6.97), the existence of community efforts in maintaining tourist attractions (6.48), and the harmony of the village community (6,14). Community participation and empowerment are essential in developing tourist villages because tourist villages come from the participation of people who are aware of the village's potential, starting from the beginning of planning to the management of the village community, which is actively involved there. In community efforts to maintain tourist attractions, people in tourist villages still maintain a rural atmosphere and protect the environment by not cutting down trees excessively and carrying out existing norms. The harmony of the village community and the lack of conflict in the community can further develop the tourist village because the community has one goal in developing a tourist village in its place.

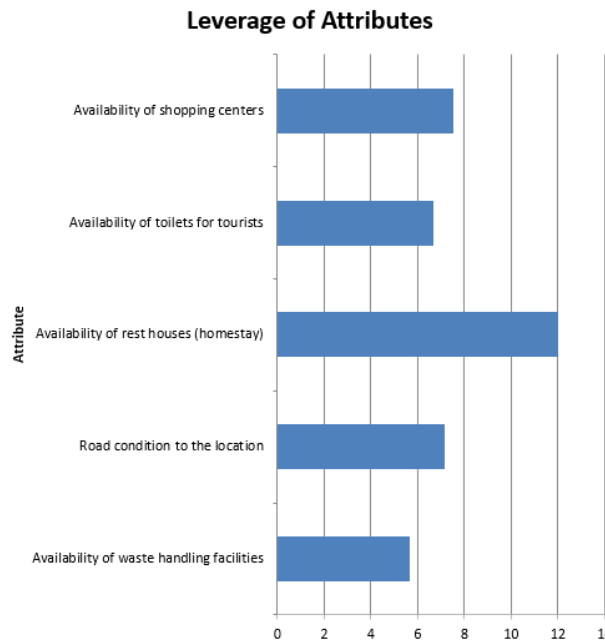


Figure 7 – Sustainability status of facilities and infrastructure dimension

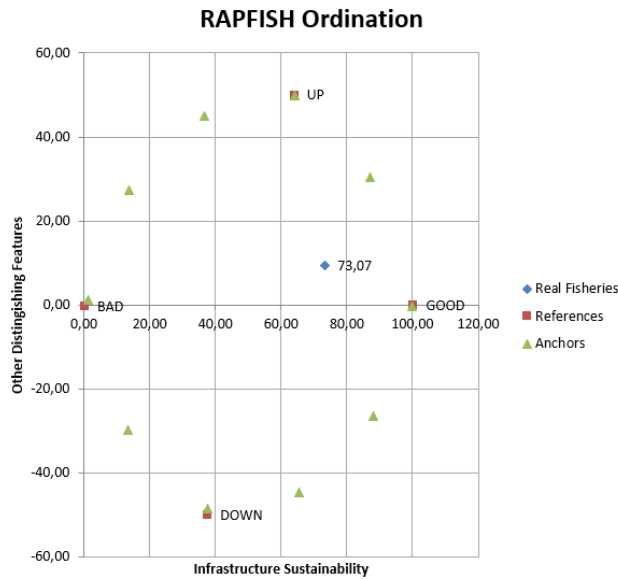


Figure 8 – Leverage analysis result of facilities and infrastructure dimension

The facilities and infrastructure dimension is the availability of tourist support facilities in tourist villages. The sustainability analysis results covering five attributes in the facilities and infrastructure dimension show a score of 73.07, which means it is pretty sustainable. The facilities and infrastructure dimension has an S-Stress value of 0.151, R^2 of 0,938, and a Monte Carlo value of 70.59. In these results it can be stated that the facilities and infrastructure dimension obtained an S-Stress value below 0.25 and R^2 which is close to 1 (100%).

The results of the leverage analysis on the dimension of facilities and infrastructure there are three sensitive attributes, which are: availability of rest houses (homestay) (11.98), availability of shopping centers (7.52), and road conditions to the location (7.16). The availability of homestays is one of the characteristics of a tourist village, and these facilities support interaction between tourists/visitors and villagers. The availability of shopping centers encourages the involvement of the surrounding community and the promotion of local products to tourists; in addition, the existence of shopping centers can develop the local economy because of the money circulation that occurs in tourist villages. All types of vehicles can pass road conditions in agro-tourism-based tourist villages, making it easier for tourists to access and save time when getting to the location of the tourist village.

Analysis of the sustainability of agritourism-based tourist villages in Sleman Regency can be assessed using Rapid Appraisal for Status Tourism or Rap-Tourism. The sustainability status in this study uses four dimensions: economic, ecological, socio-cultural, and facilities and infrastructure. The four dimensions consist of five economic attributes, seven ecological attributes, eight socio-cultural attributes, and five facilities and infrastructure attributes. The four dimensions and 25 attributes will describe the sustainability status of agritourism-based tourist villages in Sleman Regency.

Table 4 – MDS and Monte Carlo analysis results

Dimension	Sustainability Index	Monte Carlo	Difference	S-Stress	R^2	Sustainability Status
Economy	69,95	67,51	2,44	0,152	0,933	Moderately Sustainable
Ecology	90,45	86,64	3,81	0,139	0,945	Very Sustainable
Socio-cultural	70,94	68,60	2,34	0,140	0,944	Moderately Sustainable
Facilities and Infrastructure	73,07	70,59	2,48	0,151	0,938	Moderately Sustainable

Based on the results of the analysis using MDS (Multi Dimensional Scaling) analysis with the Rapfish software, the sustainability index value of the economic dimension is 69.95 (entirely sustainable), the ecological dimension is 90.45 (very sustainable), the socio-cultural dimension is 70.94 (entirely sustainable), and the dimension of facilities and infrastructure is



73.07 (entirely sustainable). The leverage analysis of the four dimensions shows that the dimension of facilities and infrastructure on the attribute of the availability of resting places (homestay) is the most sensitive attribute.

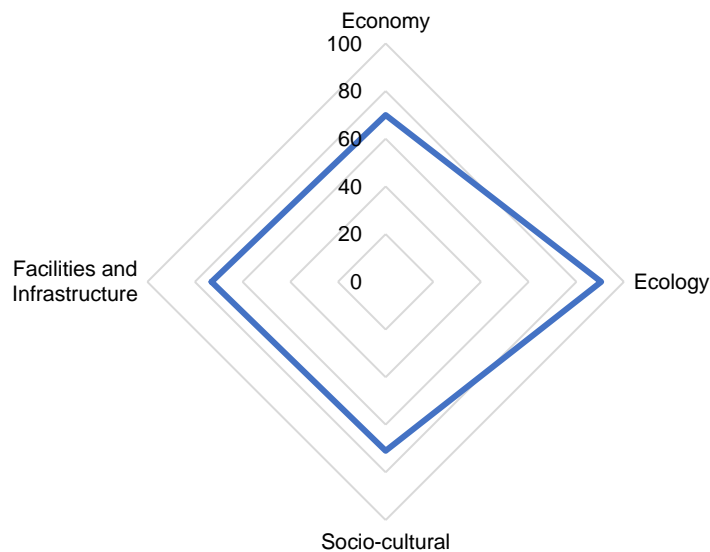


Figure 9 – Multi-dimensional sustainability status of agritourism-based tourist villages in Sleman Regency

Monte Carlo analysis is conducted to detect the error of diversity (Fauzi, A. 2019). In this case, Monte Carlo analysis is used to detect uncertainty in the sustainability of agritourism-based tourist villages in Sleman Regency. Based on Table (), the difference between the sustainability index value and the Monte Carlo value is less than 5 (< 5%). This is in line with research (Djuwendah et al., 2023) which states that the difference between MDS and Monte Carlo at the 95% confidence level is less than 5%, so it can be interpreted that the impact of scoring errors in the analysis is relatively small.

CONCLUSION

Based on the analysis of the sustainability of agro-tourism-based tourist villages in Sleman Regency in each dimension, among others, the economic dimension falls into the category of moderately sustainable, the ecological dimension is very sustainable, the socio-cultural dimension is entirely sustainable, and the dimension of facilities and infrastructure is entirely sustainable. The most sensitive main attributes that can affect sustainability include the availability of homestays, the number of tourist visits, waste management, new sources of income for farmers, and providing convenience to local entrepreneurs.

REFERENCES

1. Alvi, N. N., Nurhasanah, I. S., & Persada, and C. (2018). Evaluasi Keberlanjutan Wisata Bahari Pulau Pahawang Kabupaten Pesawaran. *Plano Madani: Jurnal Perencanaan Wilayah and Kota*, 7(1), 59–68. <https://doi.org/10.24252/planomadani.v7i1a6>
2. Buckley, R. (2011). Tourism and environment. *Annual Review of Environment and Resources*, 36, 397–416. <https://doi.org/10.1146/annurev-environ-041210-132637>
3. Djuwendah, E., Karyani, T., Wulandari, E., & Pradono, P. (2023). Community-Based Agro-Ecotourism Sustainability in West Java, Indonesia. *Sustainability (Switzerland)*, 15(13). <https://doi.org/10.3390/su151310432>
4. Elvira, S., Putra, R. E., & Rahman, H. (2022). Analisis Status Keberlanjutan Agrowisata Berbasis Pertanian Berkelanjutan: Studi Kasus Kebun Strawberry Upang. *JSEP (Journal of Social and Agricultural Economics)*, 15(2), 123.



- <https://doi.org/10.19184/jsep.v15i2.30767>
5. Fauzi, A., Rendrarpoetri, B. L., Rustiadi, E., & Pravitasari, A. E. (2024). Sustainability Assessment of the Upstream Bengawan Solo Watershed in Wonogiri Regency, Central Java Province, Indonesia. *Sustainability (Switzerland)*, 16(5). <https://doi.org/10.3390/su16051982>
 6. Firdausyah, I., Setiawan, B., & Tjahjono, A. (2021). Sustainability Analysis of Lombang Beach in Batang-Batang District, Sumenep City, Madura, East Java. *Economic and Social of Fisheries and Marine Journal*, 008(02), 239–252. <https://doi.org/10.21776/ub.ecsofim.2021.008.02.07>
 7. Gebre, T., & Gebremedhin, B. (2019). The mutual benefits of promoting rural-urban interdependence through linked ecosystem services. *Global Ecology and Conservation*, 20, e00707. <https://doi.org/10.1016/j.gecco.2019.e00707>
 8. Handayani, S, M. (2021). *Membangun Agrowisata, Membangun Ekonomi Masyarakat Desa*. UNS PRESS.
 9. Handayani, S. M., Rahayu, E. S., Irianto, H., Sundari, M. T., Setyowati, & Widadie, F. (2023). Analisis kinerja desa wisata berbasis pertanian pada berbagai kategori desa wisata di Kabupaten Bantul. *Agromix*, 14(1), 67–76. <https://doi.org/10.35891/agx.v14i1.3225>
 10. Kementerian Pariwisata and Ekonomi Kreatif RI. (2023). *Statistik Upah Tenaga Kerja Pariwisata and Ekonomi Kreatif 2018-2021*.
 11. Mehta, A., Yadav, P. K., & Sharma, S. (2022). *RJOAS*, 7(127), July 2022. 7(July), 104–110. <https://doi.org/10.18551/rjoas.2022-07.21>
 12. Mensah, J. (2019). Sustainable development: Meaning, history, principles, pillars, and implications for human action: Literature review. *Cogent Social Sciences*, 5(1). <https://doi.org/10.1080/23311886.2019.1653531>
 13. Nordbø, I. (2022). Female entrepreneurs and path-dependency in rural tourism. *Journal of Rural Studies*, 96(September), 198–206. <https://doi.org/10.1016/j.jrurstud.2022.09.032>
 14. Palit, I. G., Talumingan, C., & Rumagit, G. A. J. (2017). Strategi Pengembangan Kawasan Agrowisata Rurukan. *Agri-Sosioekonomi*, 13(2A), 21. <https://doi.org/10.35791/agrsosek.13.2a.2017.16558>
 15. Papatungan, H. F., Tamod, Z. E., & Pioh, D. D. (2017). Strategi Pengelolaan Agrowisata Kebun Kopi Di Desa Purworejo Timur, Kabupaten Bolaang Mongondow Timur. 13(November), 77–86.
 16. Petroman, C., Mirea, A., Lozici, A., Constantin, E. C., Marin, D., & Merce, I. (2016). The Rural Educational Tourism at the Farm. *Procedia Economics and Finance*, 39(November 2015), 88–93. [https://doi.org/10.1016/s2212-5671\(16\)30245-3](https://doi.org/10.1016/s2212-5671(16)30245-3)
 17. Saputro, K. E. A., Hasim, Karlinasari, L., & Beik, I. S. (2023). Evaluation of Sustainable Rural Tourism Development with an Integrated Approach Using MDS and ANP Methods: Case Study in Ciamis, West Java, Indonesia. *Sustainability (Switzerland)*, 15(3). <https://doi.org/10.3390/su15031835>
 18. Sembiring, Y. Y. R. B., Sunarso, S., & Roessali, W. (2020). Analisis Kepuasan Konsumen and Strategi Pengembangan Agrowisata Kebun Buah Cepoko Di Kecamatan Gunung Pati Kota Semarang. In *Agrisocionomics: Jurnal Sosial Ekonomi Pertanian (Vol. 4, Issue 1)*. <https://doi.org/10.14710/agrisocionomics.v4i1.5378>
 19. Setiawati, R. and Aji, P, S, T. (2020). Implementasi Sapta Pesona Sebagai Upaya Dalam Memberikan Pelayanan Prima Pada Wisatawan Di Desa Wisata Pentingsari. *Jurnal Administrasi Bisnis Terapan*, 2(2). <https://doi.org/10.7454/jabt.v2i2.98>
 20. Sugiarti, R., Aliyah, I., & Galing Yudana. (2016). Pengembangan Potensi Desa Wisata Di Kabupaten Ngawi Rara Sugiarti. *Cakra Wisata*, 17.