ANALYSIS OF PREFERENCES AND DETERMINING FACTORS IN CHOOSING A TOURIST DESTINATION A CASE STUDY ON TOURISTS VISITING WEST SUMATRA

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Article Information	Abstract
	Tourism plays a vital role in the economic growth and cultural exploration of a region. This study aims to examine the implementation of the VIKOR method (Multicriteria Decision Making-VlseKriterijumska Optimizacija I Kompromisno Resenje) in analyzing tourist preferences and crucial factors in the selection of tourist destinations in West Sumatra. This research was conducted through a survey with the use of questionnaires to tourists who were visiting various tourist destinations in West Sumatra. The collected data were analyzed qualitatively by considering the dimensions of VIKOR which include value assessment, importance, selection process, order of preference, and response to choices. Aspects such as cultural uniqueness, stunning natural beauty, accessibility of facilities, as well as interaction with local communities, become intrinsic values favored by tourists. The VIKOR method provides an effective approach to unearthing the intrinsic values that shape travelers' preferences.

INTRODUCTION

Tourism has an increasingly important role in the economic and social development of a region.[1]. The demand for unique and memorable travel experiences encourages governments and stakeholders in the tourism industry to understand travelers' preferences and the factors that influence their decisions in choosing travel destinations. West Sumatra, as one of the provinces in Indonesia with natural beauty, rich culture, and interesting historical heritage, has great potential to be developed as an attractive tourist destination. [2].

In this context, analytical methods that allow a deeper understanding of travelers' preferences and motivations are crucial. One method that can be used is the VIKOR method (Multicriteria Decision Making - VlseKriterijumska Optimizacija I Kompromisno Resenje), which is an analytical approach to address multi-criteria decision-making problems. [3]

However, despite much research on tourist preferences, the use of the VIKOR method in the context of tourist destination preferences in West Sumatra has not been fully explored. Therefore, this study aims to fill this knowledge gap by analyzing the VIKOR method in the context of preferences and determining factors in choosing tourist destinations in West Sumatra.[4]

By adopting the VIKOR method, this study is expected to provide deeper insight into what tourists actually prioritize when choosing tourist destinations in West Sumatra. The results of this study are expected to provide valuable input for local governments and tourism stakeholders in designing tourism development strategies that are more effective and sustainable, and better able to attract tourists in visiting West Sumatra.

RESEARCH METHODS

Tourism is an industry related to travel and people's visits to various destinations or places that have appeal, be it natural beauty, culture, history, or other uniqueness. The purpose of tourism is to

provide a positive experience for tourists and at the same time support the economic, social, and cultural development of the area visited.

The tourism industry covers various aspects, including accommodation, transportation, food and beverage, tourist attractions, and recreational activities. Tourism can be an important source of income for a region or country, as well as can create jobs and revive the local economy. In addition, tourism also has the potential to preserve the culture, traditions, and historical heritage of a place.

Tourism also has social and environmental impacts, both positive and negative. Positive impacts include economic improvement, preservation of culture and heritage, and cultural exchanges between tourists and local communities. However, the development of tourism can also cause problems such as environmental damage, cultural damage, and social problems if not managed properly.

VIKOR

The VIKOR method (VlseKriterijumska Optimizacija I Kompromisno Resenje) is a multi-criterion decision-making technique used to overcome situations where one must choose the best alternative from a variety of competing criteria.[5]. This method was first introduced by Zavadskas and Kaklauskas in 1994 as an aid in complex and multi-dimensional decision-making.

VIKOR combines aspects of compromise and optimization to assist decision-makers in evaluating and selecting the best solution from several different alternatives.[6]. This approach addresses the problem of uncertainty and conflict between criteria that often arise in real decision-making.

Here are the main stages in the VIKOR method:

1. Criteria Normalization: The first step is to convert all criteria data into a uniform scale, thus allowing a fair comparison between the criteria. This normalization is often done by converting each criterion into a range of values between 0 and 1.[7].

$$R_{ij} = \frac{X_{ij} - X_{\min j}}{X_{\max j} - X_{\min j}} \qquad (1)$$

Where:
- R_{ij} is the normalized value of alternative I against criterion J.
- X_{ij} is the initial value of alternative I against criterion J.
- $X_{\min j}$ is the minimum value of all

alternatives against criterion J.

- $X_{\max j}$ is the maximum value of all alternatives against criterion j.

2. Giving Weight to Criteria: Decision makers give relative weight to each criterion, reflecting the degree of importance of each in the final decision. This weight reflects the preference or priority given to each criterion.[8].

3. Determination of Positive and Negative Ideal Solutions: Positive ideal solutions are the alternatives with the highest score on each criterion, while negative ideal solutions are the alternatives with the lowest scores on each criterion. Positive ideal solutions are the most desirable for the criteria to be maximized (profit), while negative ideal solutions are the most desirable for the criteria to be minimized (sacrifice).[9]

4. VIKOR Score Calculation: For each alternative, VIKOR calculates a composite value reflecting the distance between a positive ideal solution and a negative ideal solution, taking into account the weight of the criterion. This score measures the degree to which each alternative approaches a positive ideal solution and to what extent it is far from a negative ideal solution.([10],[11])

$$S_i = W_j \left(R_{ij} \frac{R_j^* - R_j}{R_j^* - R_j^{**}} \right) \qquad (2)$$

Where:
- S_i is Vikor's score for alternative i.
- R_{ij} is the normalized value of alternative i against criterion j (calculated in Step 1).
- R_j^* is the positive ideal solution (maximum value) of criterion J.
- R_j^{**} is the negative ideal solution (minimum value) of criterion j.

5. Ranking and Selection of Optimal Solutions: The alternative that has the highest VIKOR score is considered the optimal solution or the best choice. This score reflects the degree of compromise between preferences and conflicts present in the criteria data.[12]

$$V_i = \frac{S_i - S_{min}}{S_{max} - S_{min}} \qquad (3)$$

Where:

- V_i is Vikor's index for alternative i.

- S_i is Vikor's score for alternative i (calculated in Step 3).
- S_{min} is the minimum Vikor score among all alternatives.
- S_{max} is the maximum Vikor score among all alternatives.

The VIKOR method is suitable for use in the context of multi-criteria decision-making, such as site selection, product evaluation, project development, and preference studies such as in research on tourist destination preferences in West Sumatra. This approach helps map the preferences and interests of decision-makers more systematically, thus facilitating a more effective and data-driven decision-making process.

RESULT

The data used was obtained after conducting research at the West Sumatra Provincial Tourism Office. The data variables obtained are data on Facilities, Prices, and Distances calculated from the capital of West Sumatra province which can be seen in the table below:

Table 1. Attraction Data

No	Nama Objek Wisata	Jarak	Fasiltas	Harga
		Variabel Penilaian		
1	Pantai Mutiara Tiku	78 km	8	Rp 20000
2	Puncak Lawang	98 km	9	Rp 25000
3	Pantai Caroline	26 km	6	Rp 5000
4	Kebun Binatang	82 km	9	Rp 25000
5	Ngarai Sianok	81 km	7	Rp 25000
6	Mifan	75 km	8	Rp 35000
7	PDIKM	78 km	6	Rp 10000
8	Pantai Tiram Ulakan	38 km	5	Rp 10000
9	Pulau Pagang	41 km	5	Rp 35000
10	Danau Ajaib Tarusan Kamang	98 km	5	Rp 5000
11	Lembah Harau	128 km	8	Rp 30000
12	Pulau Angsso Duo	55 km	6	Rp 30000
13	Pulau Kasiak	57 km	5	IRp 30000
14	Pulau Belibis dan Taman Pramuka	68 km	5	Rp 10000
15	Museum Goendang Ransoum	92 km	4	Rp 10000
16	Waterbourm Muara Kalaboum	90 km	7	Rp 15000
17	Istano Pagaruyuang	103 km	7	Rp 15000
18	Pantai Carocok	79 km	7	Rp 5000
19	Pulau Pamutusan	41 km	7	Rp 35000
20	Pulau Swardinapa	40 km	6	Rp 30000
21	Pulau Sirandah	40 km	6	Rp 35000

From the data above, the next step is to find the normalization value using equation (1)

Table 2. Data Normalization

Alternatif	Jarak	Fasilitas	Harga
Pantai Mutiara Tiku	0.51	0.20	0.50
Puncak Lawang	0.706	0.000	0.667
Pantai Caroline	0.000	0.600	0.000
Kebun Binatang	0.549	0.000	0.667
Ngarai Sianok	0.539	0.400	0.667
Mifan	0.480	0.200	1.000
PDIKM	0.510	0.600	0.167
Pantai Tiram Ulakan	0.118	0.800	0.167
Pulau Pagang	0.147	0.800	1.000
Danau Ajaib Tarusan Kamang	0.706	0.800	0.000
Lembah Harau	1.000	0.200	0.833
Pulau Angsso Duo	0.284	0.600	0.833
Pulau Kasiak	0.304	0.800	0.833
Pulau Belibis dan Taman Pramuka	0.412	0.800	0.167
Museum Goendang Ransoum	0.647	1.000	0.167
Waterbourm Muara Kalaboum	0.627	0.400	0.333
Istano Pagaruyuang	0.755	0.400	0.333
Pantai Carocok	0.520	0.400	0.000
Pulau Pamutusan	0.147	0.400	1.000
Pulau Swardinapa	0.137	0.600	0.833
Pulau Sirandah	0.137	0.600	1.000

Based on the results in Table 2, then the calculation is carried out by multiplying the weight of the criteria by normalizing using equation (2).

Table 3. Weight Multiplication

Alternatif	Jarak	Fasilitas	Harga
Pantai Mutiara Tiku	1.529	1.000	1.000
Puncak Lawang	2.118	0.000	1.333
Pantai Caroline	0.000	3.000	0.000
Kebun Binatang	1.647	0.000	1.333
Ngarai Sianok	1.618	2.000	1.333
Mifan	1.441	1.000	2.000

PDIKM	1.529	3.000	0.333
Pantai Tiram Ulakan	0.353	4.000	0.333
Pulau Pagang	0.441	4.000	2.000
Danau Ajaib Tarusan Kamang	2.118	4.000	0.000
Lembah Harau	3.000	1.000	1.667
Pulau Angsso Duo	0.853	3.000	1.667
Pulau Kasiak	0.912	4.000	1.667
Pulau Belibis dan Taman Pramuka	1.235	4.000	0.333
Museum Goendang Ransoum	1.941	5.000	0.333
Waterbourm Muara Kalaboum	1.882	2.000	0.667
Istano Pagaruyuang	2.265	2.000	0.667
Pantai Carocok	1.559	2.000	0.000
Pulau Pamutusan	0.441	2.000	2.000
Pulau Swardinapa	0.412	3.000	1.667
Pulau Sirandah	0.412	3.000	2.000

The next step is to calculate the vikor value using equation (3) with v = 0.5

Table 3. Vikor's Value and Ranking

Alternatif	Nilai (V)	Akhir	Rangking
Pantai Mutiara Tiku	0.064		20
Puncak Lawang	0.140		18
Pantai Caroline	0.214		17
Kebun Binatang	0.017		21
Ngarai Sianok	0.297		13
Mifan	0.238		15
PDIKM	0.431		11
Pantai Tiram Ulakan	0.555		6
Pulau Pagang	0.759		3
Danau Ajaib Tarusan Kamang	0.721		4
Lembah Harau	0.525		7
Pulau Angsso Duo	0.508		8
Pulau Kasiak	0.775		2
Pulau Belibis dan Taman Pramuka	0.657		5
Museum Goendang Ransoum	1.000		1
Waterbourm Muara Kalaboum	0.250		14
Istano Pagaruyuang	0.333		12
Pantai Carocok	0.135		19
Pulau Pamutusan	0.238		15
Pulau Swardinapa	0.456		10
Pulau Sirandah	0.495		9

Based on the ranking calculation above, the best ranking result from the ranking with v = 0.5 is Goendang Ransoum Museum.

CONCLUSION

A decision support system using the Vikor method can help and facilitate determining the best tourist destinations among tourists. The VIKOR method is very useful for making decisions and ranking compromise alternatives from several available alternatives. Of the 21 alternatives tested, the largest value is Goendang Ransom Museum with a value of 1.

BIBLIOGRAPHY

[1] Sudini, Luh Putu., and Artanaya, I Wayan., "Pengembangan Pariwisata Berwawasan Pelestarian Lingkungan Hidup," *Jurnal Ilmu Hukum*, vol. 18, no. 1, pp. 65-76, 2022.

[2] Devy, Helln Angga., and Soemanto, R.B., "Pengembangan Objek dan Daya Tarik Wisata Alam Sebagai Daerah Tujuan Wisata Di Kabupaten Karanganyar," *Jurnal Sosiologi DILEMA*, vol. 32, no. 1, pp. 34-44, 2017.

[3] G. Suwardika, and I. K.P. Suniantara, "Penerapan Metode Vikor pada Pengambilan Keputusann Seleksi Calon Penerimaan Bidikmisi Universitas Terbuk," *Intensif*, vol. 2, no. 1, 2018.

[4] H. Tumanggor, M. Haloho. P. Ramadhani, and S. D. Nasution, "Penerapan Metode Vikor dalam Penetuan Penerima Dana Bantuan Rumah Tidak Layak Huni," *Jurna Riset Komputer (JURIKOM)*, vol. 5, no. 1, pp. 71–78, 2018.

[5] A. P. R. Pinem, A. Hendrawan, and M. S. Sari, "Sistem Pendukung Keputusan Pemilihan Bahan Baku Alumunium Menggunakan Metode Vikor," *JSil: Jurnal Sistem Informasi.*, vol. 9, no. 1, pp. 1–5, 2022.

[6] N.Purba, K. A. P. Sari, A. Trydillah M, and A.P Windarto, "SPK : Analisis Meode Vikor Dalam Merekomendasikan Kosmetik Terbaik Di Kalangan Masyarakat," *Jurnal Informatika,* vol. 18, no. 2, 2018.

[7] Wakidah, Nur., and Mufrodah, Ismi., "Penerapan Metode VIKOR untuk Seleksi Guru Terbaik Pada SMP Muhammadiyah Semarang" *Jurnal Pengembangan Rekayasa dan Teknologi*, vol. 18, no. 1, pp. 33-38, 2022.

[8] M. Handayani, and N. Marpaung, "Implementasi Metode Vikor Sebagai Pendukung Keputusan Penentu Karyawan Penerima Reward," *Journal of Science and*

Social Research, vol. 4, no. 2, pp. 171-179, 2021.

[9]   Sukamto, Y. Andriyani, and I. D. Id, "Aplikasi Metode Vikor untuk Menentukan Penerimaan Proposal Kegiatan desa," *Jurnal Komputer Terapan*, vol. 8, no. 2, pp. 336-345, 2022.

[10]   B. Kristianto, A. Suryadibrata, and S. Hansun, "Rekomendasi Pemilihan Mobil dengan Algoritma Vikor," *Jurnal Sains dan Informatika*, vol. 7, no. 1, 2021.

[11]   K. H Hanif, A. Yudhana, and A. Fadlil, "Analisa Penilaian Guru Memakai Metode VIKOE," *Jurnal Ilmiah Mndala Education*, vol. 6, no. 1, 2020.

[12]   Sukamto, Y. Amdriyni, and D. Oktaviani, "Penerapan Metode VIKOR untuk Penilaian Kinerja Karyawan (Studi Kasus : Rumah Sakit Permata Hati Duri," *Jurnal SISFOKOM*, vol. 11, no. 2, pp. 187–194, 2022