Jurnal Mantik, 6 (3) (2022), ISSN 2685-4236 (Online)

Published by:Institute of Computer Science (IOCS)

Jurnal Mantik

Journal homepage: www.iocscience.org/ejournal/index.php/mantik

Application of the WP-Topsis-Moora SPK Method in the Feasibility Assessment of Hotels in Medan

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A R T I C L E I N F O

Article history:

Received Nov 03, 2022
Revised Nov 16, 2022
Accepted Nov 30, 2022

Keywords:

Decision Support System
Moora
Weight Product
Topsis

ABSTRACT

Decision Support System In evaluating the feasibility of hotels using the Moora method for hotel management, WP for service assessment and transportation assessment topsis, the condition of the strategic location of the hotel with the criteria in each method greatly determines the calculation of the desired results. In this study, the method was very helpful in helping to analyze the problems faced by hotel management in making decisions. The method in this study is to input the criteria value in each method of the formula, normalizing the matrix to the results of ranking the entire data.

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1. INTRODUCTION

Hotel ratings are listed in the Ministerial and Creative Economy regulation Number PM.53/HM.001/MPEK/2013 of 2013 concerning Hotel Business Standards in article 1 Hotel Business Services is a process that provides convenience through service standard procedures, in article 2 guarantees product quality , service and management in order to meet the needs and satisfaction of guests; and provide protection to guests, hoteliers, workers, and the public, both for safety, health, comfort, security, and convenience and environmental preservation, (Alvita et al., 2018).

The problems faced by hotel entrepreneurs today are regarding the strategic positioning of hotel development, customer service management, and hotel employee performance appraisal management. Hotels are objects of the tourism sector, so the manager must cooperate with other supporters so that guests can recognize them, (El Orbani, 2010). The existence of this strategy will increase the hotel service business and become the main choice of consumers to stay and rest in peace, (Solihin et al., 2021) Consumer behavior is an individual activity that is directly related to the acquisition and use of goods or services and involves the decision-making process of preparing and making decisions for that activity, (Yakub et al., 2021), (Ardhiyanto et al., 2019)

A decision support system is a group of elements that are interrelated to form a unit in the process of selecting various alternative actions to solve a problem, so that the problem can be solved effectively and efficiently. In selecting the eligibility of the hotel, it is necessary to pay attention to several criteria, including in terms of guest arrival services, parking locations, hotel rooms, food to online ordering, (Lim et al., 2022). From the observations of researchers so far, the use of decision support system methods has been classified into several hotel research cases, including investment, feasibility evaluation, room qualifications, guest services and many other examples. Therefore researchers, Responding to the problems above the researchers formulated a research topic "Application of the WP-Topsis-Moora SPK Method in Evaluating the Feasibility of Medan Hotels". The purpose of this study is to analyze the feasibility, management and hotel facilities in Medan City to provide the best service to customers using the SPK MOORA, WP and Topsis methods after the Covid health emergency,(Mnr, 2021). The benefit of this research is to assist hotel entrepreneurs in developing a decision support system for feasibility, management, hotel room facilities to serve customers in the city of Medan.

As with the researchers (Alvita et al., 2018), (Harmaja et al., 2022; Suparyanto dan Rosad (2015, 2020), it has not been seen that there is significant data processing in calculating the feasibility of hotel management for customers. Data input uses 1 method of decision support system whose analysis cannot be compared with other methods. Therefore the authors in this study divide the calculation of decision support systems into 3 methods, namely WP for guest room services, topsis for analysis of hotel establishment locations and Moora for hotel service management services. Research related to decision support systems for determining the level of customer satisfaction in hotel services,(Harmaja et al., 2022), (Gusrianty, Dwi Oktarina, 2019), (Yakub et al., 2021),(Mnr, 2021) (Lim et al., 2022), (Suparyanto dan Rosad (2015, 2020) and Selection of Hotel Locations on investment, (Miandri et al., 2020), (Darma et al., 2018), (Suprina, 2022), (Saputro & Nita, 2021), (Atsari et al., 2020), (Kaesmetan & Nawa, 2017)

2. RESEARCH METHOD

In this study, several settlement methods were used in the decision-making system for assessing the feasibility of hotels for customers in the city of Medan including Moora, Awp, Topsis. Translation of formulations on certain variables, alternative variables and input criteria in data collection in the form of questionnaires, data analysis in response by hotel management, hotel guests and some online to support the completion of this research.

2.1 Moora method

Stages of completion of the Moore Method

a. Determine the target in identifying related assessment attributes
b. Creating a Decision Matrix
   Representative data can be presented in each attribute of a process matrix conditions, (Asrul & Zuhriyah, 2020)

$$X = \begin{pmatrix} X_a1 & X_a2 & X_an \\ X_b1 & X_b1 & X_bn \\ X_c1 & X_c1 & X_cn \end{pmatrix}$$

c. Matrix normalization
   Making a conclusion on the denominator, the prime determination is the square root of the sum of the squares and each attribute alternative.

$$X^{*}ij = \frac{x_{ij}}{\sqrt{\sum_{i}^{m} x_{ij^2}}} \quad , \text{j= 1,2.....n} \tag{1}$$

d. Increase Attributes

In increasing the number of objects, the criterion of normalization can add to the problem of maximization (attributes do not provide benefits).

$$y_i = \sum_{j=1}^{g} = 1 \quad - \sum_{j}^{n} = g + 1 \, x_{ij}{}^{x} \tag{2}$$

If g is the total attribute that can maximize, n-g is the total attribute that can be minimized, Yi is the number that has been normalized in alternative 1 with other attributes. When attribute values are considered, equation 3 is:

$$y_{i=\sum_{j}^{g}-1} \quad w_j \, x^{*} \, {}_{1j} \; - \sum_{j}^{n}{=}g{+}1 \, w_j \; w_i^j \tag{3}$$

e. Yi numerals

$$y_{i=\sum_{j}^{g}-1}$$

The Yi number is either positive or negative related to the results of the maximum and minimum in the conditions matrix. A sequence of ranks and Yi denotes the final suitability. The best alternative shows the highest Yi number and the lowest alternative shows the lowest number.

3. RESULTS AND DISCUSSIONS

3.1 Determining Criteria, Subcriteria, Weights, and Alternatives

The criteria obtained based on interviews conducted by hotel management researchers

Table 1. Data input criteria Moora Moora

Criteria	Information	Sub-Criteria	Value
C1	Core Values	Service Hotel Location Convenience	0,18
C2	Job Responseibility	Room Service Food Service Management Service	0,15
C3	Attitude / Morale	Courteus Location Description	0,12

3.2 Determining Criteria Weight

After determining the criteria, the next step is to weight each criterion based on the number company-defined sub-criteria.

Table2. Criteria Value Table

Criteria	Information	Value
C1	Core Values	1
C2	Job Responseibility	3
C3	Attitude / Morale	2

3.3 Data input to Excel

Table 3. Hasil Input data dan Perangkingan Metode Moora

	C 1	**C 2**	**C 3**	**A21-A214**		**A31-A314**	**Matriks Xij**		**Xij*Bobot**				Rangk
A1	1	3	2	0,366508	A31	0,260378	0,141421	0,366508	0,260378	0,025456	0,054976	0,031245	0,111677	y1
A2	1	2	3	0,244339	A32	0,390567	0,141421	0,244339	0,390567	0,025456	0,036651	0,046868	0,108975	y2
A3	1	2	1	0,244339	A33	0,130189	0,141421	0,244339	0,130189	0,025456	0,036651	0,015623	0,077729	y3
A4	3	3	2	0,366508	A34	0,260378	0,424264	0,366508	0,260378	0,076368	0,054976	0,031245	0,162589	y4

A5	1	1	2	0,122169	A35	0,260378	0,141421	0,122169	0,260378	0,025456	0,018325	0,031245	0,075027	y5
A6	1	2	3	0,244339	A36	0,390567	0,141421	0,244339	0,390567	0,025456	0,036651	0,046868	0,108975	y6
A7	2	2	1	0,244339	A37	0,130189	0,282843	0,244339	0,130189	0,050912	0,036651	0,015623	0,103185	y7
A8	3	3	1	0,366508	A38	0,130189	0,424264	0,366508	0,130189	0,076368	0,054976	0,015623	0,146966	y8
A9	3	2	2	0,244339	A39	0,260378	0,141421	0,244339	0,260378	0,025456	0,036651	0,031245	0,093352	y9
A10	1	1	2	0,122169	A310	0,260378	0,141421	0,122169	0,260378	0,025456	0,018325	0,031245	0,075027	y10
A11	2	2	3	0,244339	A311	0,390567	0,282843	0,244339	0,390567	0,050912	0,058585	0,046868	0,156365	y11
A12	1	3	2	0,366508	A312	0,260378	0,141421	0,366508	0,260378	0,025456	0,039057	0,031245	0,095758	y12

Next is done by ranking the result data:

Tabel 4. Table of MOORA Ranking Results

	Rangking	
y1	0,111677433	11
y2	0,108974685	5
y3	0,077729347	12
y4	0,162589121	1
y5	0,075026599	13
y6	0,108974685	5
y7	0,103185191	7
y8	0,146966452	3
y9	0,093352016	11
y10	0,075026599	13
y11	0,156364706	2
y12	0,095757856	10
y13	0,100482444	9
y14	0,103185191	7

From the results of the ranking of the Employee Salary Increase Decision Support System the best is the y4 alternative on behalf of "Servics" with a value of 0.162589121, y11 on behalf of management with a value of 0.156364706

3.4 Weight product method

Wrong a decision-making method more efficient and time consuming in shorter calculations and used to complete a problem with using multiplication to link the criterion value, that is where a value of 4 for each criterion should be first raised to the weight of the criterion concerned.

Table 5. Management Ranking and Customer Satisfaction

Alternatif	Value	Rangking
A1	0,25641912	2
A2	0,245091427	3
A3	0,265267741	1
A4	0,233221712	4

From the feasibility analysis of customer satisfaction in the WP ranking method, the results obtained are the highest data on A3, Room Service and Hospitality. It can be realized that hotel management requires the best customer service from the arrangement and design of hotel rooms and the friendliness of the waiters in providing the best service with a smile, greeting and providing clarity of hotel information.

3.5 Topsis Method

Analysis of the data taken on the topsis method is the location of hotels that can be reached by clear transportation services and good road access, in order to accelerate the improvement of hotel services

Table 6. Topsis Method Data Input

Posisi Jalan	LOKASI	LUAS TANAH(m^2)	RESIKO
s	4	2000	1
Jalan B	2	5000	4
Jalan C	3	4000	3

Table 7. Hotel Position Analysis Ranking Results

Alternatif	Preferensi (V)	Rangking
Jalan A	0,527524843	1
Jalan B	0,472475157	3
Jalan C	0,519775196	2

From the description of the analysis of the condition of the hotel's position, the result is that Alternative on Road C is the condition of the road which has a location with a land size of 4000 m2 with Risk category 3 at the highest value.

4. CONCLUSION

From the discussion above on data on the use of decision support systems for the Moora method for hotel management, the Wp method for hotel services and road conditions, it can be concluded that the feasibility assessment must be supported by criteria including hotel management in the field of price information, supporting facilities are needed, for good service in terms of room service, food and the strategic position of the hotel must be supported, namely road conditions close to transportation access.

Some of the input data are criteria and ranking, the researchers did not complete the numbers functionally and further research needs to be done on other hotel management cases.

ACKNOWLEDGEMENTS

This research did not escape the assistance of the Budi Darma University Foundation in providing support dan Yayasan Akademi Pariwisata Medan Hotel School.

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