JOURNAL LA MULTIAPP

VOL. 05, ISSUE 02 (078-088), 2024
DOI: 10.37899/journallamultiapp.v5i2.1180

Selection of Photocopy Business Branch Locations Using the Cut Off Point, AHP and Topsis Methods

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Article Info

Article history:
Received 14 March 2024
Received in revised form 16 May 2024
Accepted 3 June 2024

Keywords:
AHP
Business Cut Off Point
Location
TOPSIS

Abstract

In order to develop and expand business expansion, the photocopy business owner plans to open a new business branch by renting a shophouse. The choice of location requires careful consideration of several factors because it will affect revenue and business strategy to get maximum profit and have an impact on business continuity. The purpose of this study is to analyze the decision to choose the location of the photocopy business branch with four alternative locations. Location selection was carried out using the Cut Off Point method to determine important criteria to consider, Analytical Hierarchy Process (AHP) was used to weight the selected criteria and Technique for Order Performance by Similarity to Ideal Solution (TOPSIS) as a complement in determining the location selection. The results with a Cut Off Point from five competent business experts, selected 8 criteria from 20 criteria such as rental prices, proximity to consumers, and market opportunities. Weighting criteria with AHP obtained three criteria with the highest weight, namely the price of renting a place, market opportunities, and cleanliness of the place. TOPSIS calculation results obtained preference values of 0.704 (Cipayung), 0.647 (Cakung), 0.477 (Cimanggis), and 0.297 (Ciputat). So, the shophouse in Cipayung was chosen as the best alternative.

Introduction

Business development and expansion is one of the business strategies for MSMEs to expand market reach and increase sales. Business location is one of the elements that plays an important role in supporting business continuity. Location is the place for every business and is an important decision, as a wrong decision can result in failure before the business starts (Rija, 2018; Adhiarta et al., 2021).

Determining the location of the business is considered an investment decision that has a strategic purpose. Location selection is an important key to business continuity because it will affect income and business strategies to get maximum profit. This research focuses on selecting the location of new business branches for *photocopy businesses (*Nugroho & Utami, 2020). The purpose of this study is to analyze decisions in choosing the location of new business branches , *photocopying* from several alternative locations available. To avoid errors in determining the selection of locations, it will be done by considering criteria that can support the smooth running of the business.

The choice of business premises or location requires careful consideration of the following factors: Access, Visibility, Traffic, Parking Lots, Expansion, Environment, Competition, and Government Regulations. Factors that influence the selection of business locations, such as

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labor, consumers, environmental conditions, infrastructure, suppliers, and legal and socioeconomic conditions. There are 20 factors of location determination including proximity to consumers, proximity to schools and universities, proximity to competitors, proximity to settlements, market opportunities, cleanliness of the place, adequate parking, proximity to suppliers, image of the place, proximity to highways, level of security, rental prices, complete infrastructure, layout, availability of access, community environment, transportation costs, expansion, traffic, and electric power. Based on the literature above, it can be concluded that site selection will be influenced by several factors or criteria (Tjiptono, 1995; Fuskova et al., 2018; Siagian et al., 2020).

The *Cut Off Point method* is considered very helpful to be able to find the main factors that influence the determination of location. *Cut Off Point* is used in terms of selecting criteria based on the opinions of a number of respondents / decision makers by providing an index of the degree of importance of each criterion and is used as a building component of the AHP hierarchy structure (Septiani, 2009).

The AHP method is used to calculate priorities and weighting criteria with three priority principles, namely the principle of hierarchy arrangement, the principle of prioritization and the principle of logical consistency. In previous studies, the AHP method has been used in location decision making, one of which is for determining the location of office facilities. However, the AHP method still has a drawback, which is that it has the risk of losing information due to the use of additive aggregation (Septiani & Triwulandari, 2022; Chadawada et al., 2015; Abdulvahitoglu & Kilic, 2022).

The TOPSIS method is used as a multi-criteria decision support system and is used for alternative ranking based on *the output* of criteria weighting results using AHP. The TOPSIS method aims to select the best alternative based on the shortest distance from the positive ideal solution and also the farthest distance from the negative ideal solution. TOPSIS considers both so as to produce the best alternative priority arrangement over *the Euclidean* distance (Septiani & Triwulandari, 2022). The TOPSIS method has been used for decision making on the selection of landfill sites in Klaten Regency. However, in the use of the TOPSIS method has drawbacks, which are difficult to weight and maintain consistency of assessment (Fauzi & Eko Setiawan, 2020; Abdulvahitoglu & Kilic, 2022).

Based on the description above, the combination of the AHP-TOPSIS method is considered to be able to eliminate the shortcomings of AHP and TOPSIS so that the AHP-TOPSIS method was used in this study. Several previous studies have used the AHP-TOPSIS combination to make decisions including supplier selection (Marzouk & Sabbah, 2021), plant selection for biodiesel production, and site selection of wind farm installations. Therefore, based on previous studies, the combination of (Abdulvahitoglu & Kilic, 2022; Konstantinos et al., 2019) *the Cut Off Point* method, *Analytical Hierarchy Process* (AHP), and *Technique for Order Performance by Similarity to Ideal Solution* (TOPSIS) is considered very suitable to solve this location decision making problem.

Methods

Research methods carried out through several stages can be seen in Figure 1. The data collected and will be used in site selection decision making are primary and secondary data. The primary data used is in the form of data from interviews with resource persons who have a background as small and medium entrepreneurs related to the level of importance of criteria and comparisons between criteria. The secondary data used is in the form of shop rental price data, the distance of shophouses to consumers, and so on. The background of the five speakers or experts in this study can be seen in Table 1.

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Table 1. Resource Person Data

No	Sources	Background
1	*Expert* 1	SME Business Owner - Consultant
2	*Expert* 2	SME Business Owners – *Food*
3	*Expert* 3	SME Business Owners - Information Technology
4	*Expert* 4	SME Business Owners - *Fashion*
5	*Expert* 5	SME Business Owner - *Photocopy*

The five experts gave a value of importance criteria from 20 criteria based on literature to determine the most influential criteria in choosing a business location. In addition, the five experts also provide paired importance values between criteria to be used as *input for* AHP calculations. The assessment data is made in the form of questionnaires. Then, continued with a questionnaire in the form of the level of importance of each criterion to the performance of alternatives as *input* for TOPSIS calculation. The questionnaire is assessed by only one expert, namely *the photocopy* business owner because the business owner has expertise on the condition or performance of alternative business locations used in this study through direct surveys to the location and *the photocopy business owner* already has experience in assessing and choosing a business location or business branch.

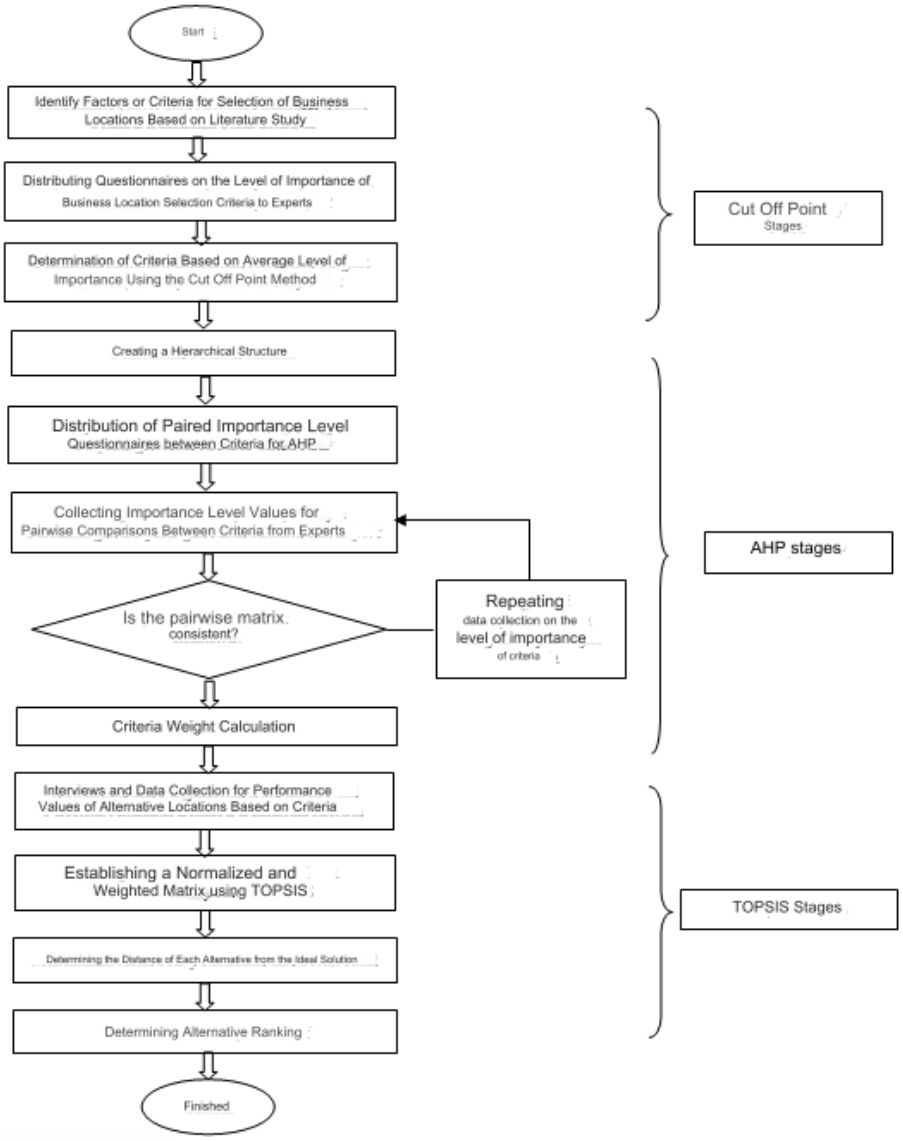

Figure 1. Research Methodology

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Calculation of Criteria Weights with AHP Method

Here are the steps of the AHP method (Septiani & Triwulandari, 2022): (1) Define the problem and define the desired solution; (2) Create a hierarchical structure; (3) Determine the priority of the criteria: a) Create a pairwise comparison matrix. b) Normalize data; c) Calculates the eigenvector values of each pairwise comparison matrix; d) Test consistency to find out whether the resulting matrix is consistent or not. By calculating the Consistency Ratio (CR).

$$CR = \frac{\text{CI}}{\text{RI}} \quad (1)$$

Where:

CR : Consistency Ratio

CI : Consistency deviation ratio (*Consistency Index*)

RI : Random Index

Determination of Alternative Business Location with TOPSIS Method

Here are the stages of the TOPSIS method (Marzouk & Sabbah, 2021):

Create a normalized decision matrix

$$r_{ij} = \frac{x_{ij}}{\sum_{i=1}^{m} x_{ij}^2} \quad (2)$$

Weighting the normalized decision matrix. The normalized and weighted values of vij are obtained from the formula:

$$v_{ij} = r_{ij}\ x\ w_j \quad (3)$$

Determine the positive ideal solution matrix (A+) and the negative ideal solution matrix (A-).

For *benefit criteria*, decision makers derive the maximum value from each alternative. As for *cost criteria*, decision makers need to obtain a minimum value among all alternatives.

$$A+= \left\{\left(\max v_{ij} \mid \in J\right), \left(\min v_{ij} \mid \in \mathrm{J}'\right), i = 1, 2, 3 \ldots M\right\} = v+_1, v+_2 \ldots v+_n \quad (4)$$

$$A-= \left\{\left(\max v_{ij} \mid \in J\right), \left(\min v_{ij} \mid \in \mathrm{J}'\right), i = 1, 2, 3 \ldots M\right\} = v-_1, v-_2 \ldots v-_n \quad (5)$$

Where:

J = { j = 1, 2, 3....N | j Relating to *Benefit* Criteria }

J' = { j = 1, 2, 3....N | A Relating to *Cost* Criteria }

Calculating distance measurements (*separation measure*) between the value of each alternative to a positive ideal solution and a negative ideal solution. D+ describes the distance separating each alternative from the positive ideal solution in a Euclidean way. In contrast, D- describes the separation distance between each alternative in the Euclidean way of negative ideal solutions.

$$D+= \sqrt{\left(\sum_{j=1}^{n} \left(v_{ij} - v+_j\right)^2\right)} \quad (4)$$

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$$D-= \sqrt{\left(\sum_{j=1}^{n} \left(v_{ij} - v -_j\right)^2\right)} \quad (5)$$

5. Specifies the preference value (Vi) and ranking for each alternative.

$$V_i = \frac{s_i}{(s+_i) + (s-_i)} \; dan \; 0 \leq c +_i \leq 1 \quad (6)$$

Results and Discussion

Alternative Business Branch Location

Business owners already have four alternative business branch locations obtained by conducting surveys. The selected alternatives are Shophouse in Cipayung (Location A), Shophouse in Cakung (Location B), Shophouse in Cimanggis (Location C), and Ruko in Ciputat (Location D).

Business Branch Location Selection Criteria

Based on the journal, 20 factors can be used for choosing the location of *the copy business branch*, namely:

Table 2. Reference Criteria for Business Branch Location Selection

No	Criterion	Reference
1.	Proximity to consumers	[4] , [5]
2.	Proximity to schools and universities	[5]
3.	Proximity to competitors	[5] , , [13] [14]
4.	Proximity to settlements	[5] , [14]
5.	Market opportunities	[4] , , [5] [13]
6.	Cleanliness of the premises	[5]
7.	Adequate parking space	[5] , [14]
8.	Proximity to suppliers	[4] , , [5] [13]
9.	Imagery of the place	[5] , [13]
10.	Proximity to highways	[3] , [5]
11.	Security level	[5] , [13]
12.	Venue rental price	[5] , , [13] [14]
13.	Complete infrastructure	[4] , [5]
14.	Layout	[3] , [5]
15.	Access availability	[3] , [5]
16.	Community environment	[4] , , [5] [13]
17.	Transportation costs	[5]
18.	Expansion	[3] , , [5] [13]
19.	Traffic	[3] , [5]
20.	Power	[5]

Determination of factors or criteria is done by distributing questionnaires to *experts*. The questionnaire will be used to determine the priority of the criteria to be used in decision making. The number of respondents of business owners or experts is five respondents. Experts will assign importance to the 20 factors on a scale of "Very Important", "Moderately Important", and "Not Important". The results of the questionnaire will be processed using the *Cut Off Point method.*

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After the questionnaire is conducted, the questionnaire data will be collected and averaged for each element of the criteria. Then determine the *cut off point value* with the formula (Chadawada et al., 2015):

Natural cut-off point = (*Maximum Score* + *Minimum Score*) / 2 (7)

The maximum average value is 3 and the minimum average value is 2, so the *natural cut off point* value is 2.5. So that factors with an average value below the *natural cut off point* of 2.5 will be eliminated or not used for the next stage of calculation. In Table 3 can be seen the results of criteria that have been sorted by the largest average value to the smallest average value.

Table 3. Average Importance Results with *Cut Off Point Method*

Criterion	Very Important (3)	Enough Importan (2)	Not Important (1)	Jmlh Resp.	Total	Average
Rental Price	15	0	0	5	15	3
Proximity to Consumers	12	2	0	5	14	2,8
Market Opportunities	12	2	0	5	14	2,8
Adequate Parking	12	2	0	5	14	2,8
Complete Infrastructure	12	2	0	5	14	2,8
Cleanliness of the premises	9	4	0	5	13	2,6
Imagery of the Place	9	4	0	5	13	2,6
Community Environment	9	4	0	5	13	2,6
Proximity to the Highway	9	2	1	5	12	2,4
Security Level	9	2	1	5	12	2,4
Layout	6	6	0	5	12	2,4
Access Availability	6	6	0	5	12	2,4
Traffic	6	6	0	5	12	2,4
Power	9	2	1	5	12	2,4
Proximity to Schools and Universities	6	4	1	5	11	2,2
Proximity to Suppliers	3	8	0	5	11	2,2
Transportation Costs	3	8	0	5	11	2,2
Expansion	6	4	1	5	11	2,2
Proximity to Competitors	0	10	0	5	10	2
Proximity to Settlements	0	10	0	5	10	2

Based on the results of the calculation of the average level of importance of the criteria, the criteria used in making the decision of this study consist of eight criteria, namely Rental Price, Proximity to Consumers, Market Opportunities, Adequate Parking, Complete Infrastructure, Cleanliness of the Place, Image of the Place, and Community Environment. So that the hierarchy of determining the location of the *photocopy* business branch can be seen in Figure 2.

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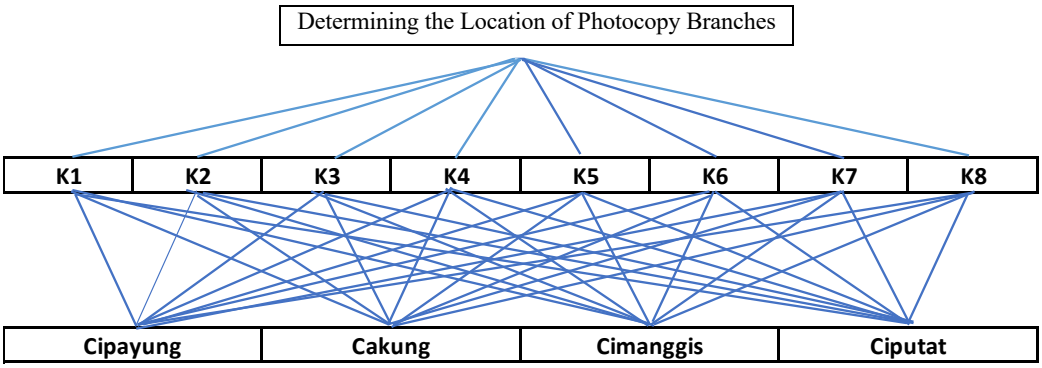

Figure 2. Hierarchy of Location of Photocopy Business Branches

In Table 4, we can see the selected criteria that will be used in the next stage, namely weighting criteria using the *Analytical Hierarchy Process method*.

Table 4. Business Branch Location Selection Criteria

Code	**Criterion**
K1	Proximity to consumers
K2	Market opportunities
K3	Cleanliness of the premises
K4	Adequate parking space
K5	Imagery of the place
K6	Venue rental price
K7	Complete infrastructure
K8	Community environment

Calculation of Criteria Weights with Analytical Hierarchy Process

At the initial stage of weighting the criteria, a questionnaire survey was carried out filled out by five experts. In the questionnaire, experts give a value of importance between one criterion and another on a scale of 1-9. After the experts fill out the questionnaire, the results of each expert's questionnaire will be tested for consistency to be able to determine whether the results of the questionnaire filled out by the experts are consistent or not. The results of each expert's consistency test showed that it was consistent, so the results of each expert's assessment were combined using geometric averages. The results of combining using geometric mean are shown in the form of a *pairwise comparison* matrix in Table 5.

Table 5. Pairwise Comparison Matrix

	K1	**K2**	**K3**	**K4**	**K5**	**K6**	**K7**	**K8**
K1	1,00	1,12	2,95	1,72	2,72	0,47	1,25	3,39
K2	0,89	1,00	2,95	1,53	2,95	0,47	1,93	3,32
K3	0,34	0,34	1,00	0,58	0,90	0,21	0,37	1,72
K4	0,58	0,65	1,72	1,00	1,72	0,30	0,72	2,63
K5	0,37	0,34	1,11	0,58	1,00	0,24	0,42	1,25
K6	2,14	2,14	4,83	3,32	4,15	1,00	2,37	4,66
K7	0,80	0,52	2,67	1,38	2,37	0,42	1,00	3,32
K8	0,30	0,30	0,58	0,38	0,80	0,21	0,30	1,00

Next, the calculation of the weight of the criteria is carried out using the combining of paired comparison matrices. The normalization of the matrix is obtained from the geometric average per line. Furthermore, the weight is obtained from the result of the geometric average per line

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divided by the total number of geometric averages. The result of the criterion weights is shown in Table 6. The criteria with the greatest weight are owned by K6 (rental price of the place), followed by K2 (market opportunity), K1 (cleanliness of the place), K7 (complete infrastructure), K4 (adequate parking space), K5 (image of the place), K3 (cleanliness of the place). Then the lowest weight value belongs to K8 (community environment).

Table 6. Results of Criterion Weight Calculation

Criterion	Weight
K1	0,1604
K2	0,1634
K3	0,0572
K4	0,099
K5	0,0589
K6	0,2886
K7	0,1281
K8	0,0443

Determination of the Best Alternative with TOPSIS

Alternative ranking using TOPSIS begins with conducting interviews with experts, namely *photocopy* business owners. Experts were asked to rate the performance of location alternatives based on each criterion. For qualitative criteria will be assessed on a scale of 1 to 5 (Likert scale). The results of the expert assessment can be seen in Table 7.

Table 7. Results of the assessment criteria of each alternative

	Location A	Location B	Location C	Location D
K1	100	250	300	200
K2	4	4	3	4
K3	4	2	2	3
K4	3	3	4	5
K5	5	3	4	3
K6	24	17	25	40
K7	3	3	4	4
K8	5	4	3	4

Criterion 1 (proximity to consumers) and criterion 6 (rental price) are quantitative criteria that are respectively expressed in meters and million rupiah per year. Criteria 2, 3, 4, 5, 7, and 8 are qualitative criteria so that the assessment uses the Likert scale. Table 8 describes the Likert scale and importance values for criterion 2.

Table 8. Scale and Value of Importance Criterion 2

Scale	Value of Market Opportunity Importance
1	Very Small
2	Small
3	Quite Large
4	Big
5	Very Large

Based on the criteria decision matrix in Table 7, a normalized decision matrix is then created which is obtained from the value of the decision matrix divided by the value of the number of

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decision matrices per row (criteria). After that, a nomalized and weighted decision matrix is created which is obtained from the values on the normalized decision matrix multiplied by the weight of the criteria from the AHP calculation results. In Table 9, we can see the results of the normalized and weighted decision matrix for TOPSIS calculations.

Table 9. Normalized and Weighted Matrices

	Normalized Matrix					**Normalized and Weighted Matrices**				**A+**	**A -**
	Location A	**Location B**	**Location C**	**Location D**		**Location A**	**Location B**	**Location C**	**Location D**		
K1	0,222	0,556	0,667	0,444		0,035	0,088	0,106	0,071	0,035	0,106
K2	0,530	0,530	0,397	0,530		0,087	0,087	0,065	0,087	0,087	0,065
K3	0,696	0,348	0,348	0,522		0,040	0,020	0,020	0,030	0,040	0,020
K4	0,391	0,391	0,521	0,651		0,039	0,039	0,051	0,064	0,064	0,039
K5	0,651	0,391	0,521	0,391		0,038	0,023	0,031	0,023	0,038	0,023
K6	0,432	0,306	0,450	0,720		0,125	0,088	0,130	0,208	0,088	0,208
K7	0,424	0,424	0,566	0,566		0,055	0,055	0,073	0,073	0,073	0,055
K8	0,616	0,492	0,369	0,492		0,028	0,022	0,017	0,022	0,028	0,017

In Table 9, a positive ideal solution (A+) and a negative ideal solution (A-) are presented for each criterion. For K1 and K6 are *cost criteria* so that positive ideal solutions are obtained from the minimum values of the normalized matrix and weighted among all alternatives and vice versa for negative ideal solutions. For K2, K3, K4, K5, K7 and K8 are *benefit criteria* so that positive ideal solutions are obtained from the maximum value of the normalized and weighted matrix among all alternatives and vice versa for negative ideal solutions.

Next, the calculation of the distance between the weighted value of each alternative with the matrix of positive ideal solutions and negative ideal solutions is denoted by D+ and D-. From the calculation results, alternative Location A has the closest distance to a positive ideal solution with a value of 0.048 and alternative 2 has the farthest distance with a negative ideal solution with a value of 0.121. After that, proceed to calculate the proximity distance of each alternative to the ideal solution or called the preference value. An alternative with a greater preference value than others indicates that it is the chosen alternative. The final results of alternative rankings can be seen in Table 10.

Table 10. Final Results of *Business Branch Location* Ranking

	Location A	**Location B**	**Location C**	**Location D**
D+	0,048	0,067	0,089	0,126
D-	0,114	0,122	0,081	0,053

ISSN: 2716-3865 (Print), 2721-1290 (Online)

Preference Value (V)	0,704	0,647	0,477	0,297
Rating	1	2	3	4

In Table 10, it can be seen that Location A, namely Ruko in Cipayung, is the selected business branch location with the highest preference value compared to other alternative locations with a value of 0.704. Based on Table 8 alternative Location A excels at K1 (proximity to consumers), K2 (market opportunities), K3 (cleanliness of the place), K5 (image of the place), and K8 (community environment). Alternative Location B, namely the shophouse in Cakung, is in second place with a preference value of 0.647 and excels at K2 (market opportunity) and K6 (venue rental price). Alternative Location C, namely Shophouse in Cimanggis, is in third place with a preference value of 0.477 and excels at K7 (complete infrastructure. Alternative Location D, namely Shophouses in Ciputat is in last place with a preference value of 0.297 and excels in K2 (market opportunities), K4 (adequate parking lots), and K7 (complete infrastructure).

Conclusion

This study identifies factors that influence the selection of business branch locations to select the best business branch locations. Based on several literatures, as many as 20 factors were obtained that influenced the selection of business locations. Then a questionnaire was filled out by five experts who have expertise in choosing business locations based on the level of importance and data processing using the Cut off Point method. The results obtained as many as eight factors or criteria for choosing a business location that will be used in this study.

In the Analytical Hierarchy Process (AHP) method, criteria are weighted with matrix values obtained from the results of the questionnaire in the form of the importance of criteria compared to other criteria. The questionnaire was assessed by five experts. The AHP method is used to obtain the weight of business branch site selection criteria by considering the consistency test required to validate the AHP model. The weighted criteria obtained sequentially from K1 to K8 are 0.1604, 0.1634, 0.0572, 0.099, 0.0589, 0.2886, 0.1281, and 0.0443. The final result of the AHP will be used to support the calculation of the TOPSIS method. The TOPSIS method is used to rank alternative business branch locations according to distance from positive ideal solutions and negative ideal solutions. Four alternative locations of business branch locations were considered in this study and the final results of the TOPSIS method revealed that Location A (Ruko di Cipayung) was the highest ranked location with a preference value of 0.704 with advantages in the criteria of proximity to consumers, market opportunities, cleanliness of the place, image of the place, and community environment.

References

Abdulvahitoglu, A., & Kilic, M. (2022). A new approach for selecting the most suitable oilseed for biodiesel production; the integrated AHP-TOPSIS method. *Ain Shams Engineering Journal*, *13*(3), 101604. https://doi.org/10.1016/j.asej.2021.10.002.

Adhiarta, I. K. K., Witanti, W., & Sabrina, P. N. (2021). Pemilihan Lokasi Awal Usaha Bagi Usaha Mikro Kecil Dan Menengah Dengan Metode Analitycal Hierarchy Process. *J. Inf. Technol*, *3*(2), 43-46.

Chadawada, R., Sarfaraz, A., Jenab, K., & Pourmohammadi, H. (2015). Integration of AHP-QFD for selecting facility location. *Benchmarking: An International Journal*, *22*(3), 411-425. https://doi.org/10.1108/BIJ-06-2013-0064.

Fauzi, A., & Eko Setiawan, S. T. (2020). *Evaluasi Lokasi Tempat Pemrosesan Akhir (TPA) Sampah di Kabupaten Klaten Dengan Metode Technique for Order Preference by*

ISSN: 2716-3865 (Print), 2721-1290 (Online)

Similarity to Ideal Solution (TOPSIS) (Doctoral dissertation, Universitas Muhammadiyah Surakarta).

Fuskova, M., Hanáčková, D., & Gubáňová, M. (2018). Location factors and their importance in location decision making of enterprises (in conditions of Slovak republic) case study. *Ekonomika Management Inovace (EMI)*, *10*(1), 5-18.

Konstantinos, I., Georgios, T., & Garyfalos, A. (2019). A Decision Support System methodology for selecting wind farm installation locations using AHP and TOPSIS: Case study in Eastern Macedonia and Thrace region, Greece. *Energy Policy*, *132*, 232-246. https://doi.org/10.1016/j.enpol.2019.05.020.

Marzouk, M., & Sabbah, M. (2021). AHP-TOPSIS social sustainability approach for selecting supplier in construction supply chain. *Cleaner environmental systems*, *2*, 100034. https://doi.org/10.1016/j.cesys.2021.100034.

Nugroho, N. T., & Utami, I. W. (2020). Pengaruh Modal, Lokasi Usaha, dan Kondisi Tempat Berdagang terhadap Pendapatan Pedagang. *Journal Of Management, Business And Education*, *7*(1), 69-75. https://doi.org/10.36587/EXC.V7I1.627.

Rija, K. P. (2018). *Analisis Faktor-Faktor Yang Mempengaruhi Pemilihan Lokasi Terhadap Kesuksesan Usaha Jasa (Studi Pada Usaha Jasa Sekitran Kampus Unand Limau Manis)* (Doctoral dissertation, UNIVERSITAS ANDALAS).

Septiani, W. (2009). Pendekatan Kombinasi Metode AHP Dan Metode Cut Off Point Pada Tahap Analisis Keputusan Perancangan Sistem Informasi Penjualan PT. X. *J@ ti Undip*, *4*(3), 218-227.

Septiani, W., & Triwulandari, S. D. (2022). *Analisis keputusan: Teori dan implementasi*. Nas Media Pustaka.

Siagian, S. G., Lapian, J. S., & Wangke, S. J. (2020). ANALYSIS FACTOR OF LOCATION DECISION MAKING ON SME'S IN MANADO. *Jurnal EMBA: Jurnal Riset Ekonomi, Manajemen, Bisnis dan Akuntansi*, *8*(4).

Tjiptono, F. (1995). *Strategi pemasaran*. UM-Surabaya.

ISSN: 2716-3865 (Print), 2721-1290 (Online)