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SELECTION OF POSYANDU CADRES IN LUBUK KILANGAN DISTRICT USING THE OPTIMAL HYBRID AHP–TOPSIS METHOD

Tika Christy[1*], Sayendra Safaria[1]
[1]Bisnis Digital, Universitas Nahdlatul Ulama Sumatera Barat
email:*tikachristy.royal@gmail.com

Abstract: Posyandu cadres play a vital role in community health, yet their selection is often subjective and lacks standardization, risking a decline in service quality and motivation. This study aims to optimize cadre selection in Lubuk Kilangan District through a Decision Support System (DSS) based on the Hybrid AHP-TOPSIS method. The AHP method is used to determine criteria weights through pairwise comparisons, while TOPSIS ranks candidates based on their proximity to the ideal solution. Data were collected through literature reviews, interviews, and questionnaires with community health centers (Puskesmas) and village officials. The results demonstrate that this method successfully creates an accurate and transparent assessment. Afni was identified as the best cadre (Rank 1) with a score of 1.008, followed by Sepniati and Pitna Sari. This objective system is expected to serve as a sustainable assessment standard, motivating cadres to improve their discipline, experience, and participation in supporting future healthcare services.

Keywords: AHP, Cadre, Decision Support System, Posyandu, TOPSIS,

Abstrak: Kader Posyandu berperan vital dalam kesehatan masyarakat desa, namun pemilihannya seringkali subjektif dan kurang terstandarisasi. Hal ini berisiko menurunkan kualitas pelayanan serta motivasi kerja. Penelitian ini bertujuan mengoptimalkan seleksi kader di Kecamatan Lubuk Kilangan melalui Sistem Pendukung Keputusan (SPK) berbasis metode Hybrid AHP-TOPSIS. Metode AHP digunakan untuk menentukan bobot kriteria melalui perbandingan berpasangan, sementara TOPSIS melakukan pemeringkatan berdasarkan kedekatan dengan solusi ideal. Data dikumpulkan melalui studi literatur, wawancara, dan kuesioner kepada pihak puskesmas serta perangkat desa. Hasil penelitian menunjukkan bahwa metode ini berhasil menciptakan penilaian yang akurat dan transparan. Afni ditetapkan sebagai kader terbaik (Peringkat 1) dengan skor 1,008, disusul oleh Sepniati dan Pitna Sari. Sistem objektif ini diharapkan menjadi standar penilaian berkelanjutan yang mampu memotivasi kader untuk meningkatkan disiplin, pengalaman, serta keaktifan mereka dalam mendukung layanan kesehatan di masa depan.

Kata kunci: AHP, Kader, Posyandu, Sistem Pendukung Keputusan, TOPSIS

INTRODUCTION

Posyandu (Integrated Service Post) is a community-based health service run by health cadres under the guidance of Community Health Center (Puskesmas) officers[1]. This facility plays a role in providing basic health services for mothers, infants, and toddlers, as well as serving as a health education center for the community. Posyandu has several main goals in improving the quality of public health. One of the goals is to improve health services for mothers and children to reduce the maternal mortality rate (MMR) and infant mortality rate (IMR). The Posyandu in Lubuk Kilangan District, Padang City, West Sumatra, plays an important role in community health services, especially for mothers and children. Based on data from the Posyandu leaders in Lubuk Kilangan District, there are 45 Posyandu units spread throughout the district with 225 cadre members on duty. The presence and active role of Posyandu cadres are crucial in the implementation of health programs at the community level. They not only assist in routine activities such as weighing infants and toddlers but also play a role in health education, immunization, and disease prevention programs.

The selection of the best Posyandu cadres faces various challenges that can affect the quality of the selected cadres [2]. One major obstacle is the unclear selection criteria, where each village or sub-district sets different standards without uniform guidelines. The selection process is often subjective, relying only on experience and proximity to village officials without measurable assessment methods. Additionally, the absence of cadre performance records hinders objective assessment. The lack of technology utilization, minimal training and development, and low incentives also reduce cadre motivation, while difficult cadre regeneration further exacerbates the condition.

A Decision Support System (DSS) is an interactive information system that uses data, analytical models, and knowledge to process information in the process of solving a problem[3]. One method suitable for addressing the problems above is the AHP and TOPSIS methods. AHP is a method used in solving problems involving many criteria and alternatives that transform human qualitative perception into quantitative values that can be measured mathematically. AHP provides consistent, flexible, and more realistic weighting assessments[4].

Meanwhile, TOPSIS is a method most often used in Decision Support Systems (DSS) to solve multi-criteria decision-making (MCDM) problems. TOPSIS is a robust method because it is relatively simple, computationally efficient, and provides clear and accountable results[5].

In short, the combination of AHP-TOPSIS provides a stronger decision because AHP can consistently determine criteria weights, thereby reducing subjectivity, while TOPSIS evaluates alternatives based on their proximity to the ideal solution. This approach is flexible and adaptive, making it applicable to various sectors such as employee selection, location selection, development prioritization, health diagnostics, and risk management[6].

To overcome these problems, a Decision Support System model is designed using the hybrid method Analytical Hierarchy Process (AHP) and Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) which can assist in cadre performance evaluation. AHP is used to determine the weights of

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the evaluation criteria based on their level of importance through pairwise comparisons, thus providing a more objective assessment of the factors affecting cadre performance. Meanwhile, TOPSIS is used to rank individuals based on their proximity to the ideal solution, considering the pre-determined weights.

With the combination of these two methods, organizations can obtain an evaluation system that is more accurate, systematic, and data-driven, thereby improving the effectiveness of human resource management. Another advantage of this research is that it offers novelty through the integration of the AHP and TOPSIS methods in the Posyandu cadre assessment system, which has not been widely applied in the context of community-based public health. By combining objective criteria weighting and ranking based on the ideal solution, as well as developing data-based prototype software, this research not only introduces a new evaluation approach that is more transparent and standardized but also provides a practical contribution to improving the quality of health services and human resource management [7]

The application of the AHP-TOPSIS method has been widely used in various problems. In several studies, this method was designed as a data-based procedure, where weights were determined from accident data, not expert opinions, thus reducing bias and exaggerated weighting. In another study, AHP-TOPSIS was applied for optimizing Electric Discharge Machining (EDM) parameters on tungsten carbide-cobalt material. Its novelty lies in its first-time application in the EDM process, the integration of AHP for criteria weights, TOPSIS for alternative ranking, and its proof through comparison with other MCDM methods. Meanwhile, another study combined AHP with fuzzy-TOPSIS to prioritize location-determining factors. AHP provides more definite weights, while fuzzy-TOPSIS maintains the advantage of handling uncertainty, resulting in a more stable and accurate approach[8].

METHOD

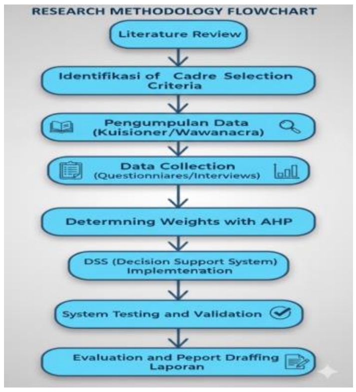

Figure 1. Research steps

1. Literature Study related to the problem of character selection and the application of AHP and TOPSIS methods in decision-making. Data was collected from various sources, including reviewing journals, theses, books, and relevant sources as a basis for developing the cadre selection system.
2. The cadre selection criteria identification process was carried out by determining criteria systematically through candidate selection, interviews/tests, and team discussions.
3. The data collection process was carried out using questionnaires validated by experts; the researchers distributed, interviewed, and documented the results. In this study, questionnaires were distributed to 150 respondents as sample data, but for the purpose of writing the journal, 10 data samples were used and analyzed.
4. Determination of AHP weights for cadre selection was done by setting

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the main criteria, compiling the decision hierarchy, and comparing the criteria in pairs using the Saaty scale (1-9). After that, the priority weights were calculated and tested for consistency through the consistency ratio (CR). The resulting weights are then used to assess candidates objectively, so that the cadre selection is more systematic and measurable[9].

$$Wi= \frac{\sum_{j}^{n}=1aij}{n} \ldots..(1)$$

Information:
Wi = Priority weight of the i-th criterion
aij= Comparison value between criterion i and j
n = Number of criteria

Measuring consistency

$$CR= \frac{C1}{Ri} \ldots.(2)$$

5. The TOPSIS method in cadre selection was carried out by determining criteria, compiling the decision matrix, normalizing the data, and weighting it54. Subsequently, the positive and negative ideal solutions were calculated, as well as the distance of each candidate to these solutions55. The preference value Ci was obtained, and then sorted to determine the best cadre objectively[10].

$$rij = \frac{xij}{\sum_{ij}^{m}=1x^2ij} \quad (3)$$

Information:
rij = represents the Normalized Matrix
xi = refers to the Value on the-i row and j column

6. System Implementation was developed in the form of a web-based or desktop application that allows data input, automatic calculation, and display of ranking results in real-time[11].

7. System trials and validation were carried out to compare the analysis process in selecting the best cadres using the AHP and TOPSIS methods with real conditions in the field or research location

8. Evaluation in this study aimed to measure the effectiveness of the system in terms of accuracy, speed, reliability, and user satisfaction; the results were compiled in a scientific report as a reference for the development of technology-based DSS.

RESULTS AND DISCUSSION

In the pairwise comparison method, criteria and alternatives are presented in pairs from one criterion to another. This process is carried out to evaluate the alternative values obtained, the weight values, and to build the overall alternative value to produce the desired data. The comparison scale in AHP consists of nine numbers where each value has an assessment that can be seen in Table 1. To determine the priority level of each cadre criterion, the pairwise comparison process with the AHP method was carried out. At this stage, each criterion is compared with one another based on its level of importance according to the decision maker. The results of the comparison are presented in the form of a pairwise comparison matrix as shown in Table 2.

The next step after determining the comparison scale table is to calculate the matrix normalization value. Where each element in each matrix is divided by the total of its respective column. The matrix normalization value can be seen in Table 3. After the normalization process is carried out, the next step is to determine the weight value. The weight value is obtained by calculating the average of the values in the row of the normalization results, which can be seen in Table 4.

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Table 1. Saaty's Comparison Scale Table

Intensity of Importance	Description
1	Equal Importance (Both elements are equally important.)
3	Slightly More Important (One element is slightly more important than the other.)
5	More Important (One element is more important than the other.)
7	Clearly/Absolutely More Important (One element is clearly and absolutely more important than the other.)
9	Absolutely Most Important (One element is absolutely critical/most important than the other element.)
2,4,6,8	Compromise Values (Intermediate values between two adjacent judgment values.)

Table 2. Pairwise Comparison Scale

Criteria	Experience	Activity	Communication	Responsibility	Discipline	Domicile
Experience	1	3	2	3	3	2
Activity	0.33	1	0.5	0.33	0.5	2
Communication	0.50	2	1	0.33	0.5	2
Responsibility	0.33	3	3	1	2	2
Discipline	0.33	2	2	0.5	1	2
Domicile	0.50	0.5	0.5	0.5	0.5	1
Experience	3	11.5	9	5.67	7.5	11

Table 3. Matrix Normalization Table

Criteria	Experience	Activity	Communication	Responsibility	Discipline	Domicile
Experience	0.333	0.261	0.222	0.529	0.4	0.182
Activity	0.111	0.087	0.056	0.059	0.067	0.182
Communication	0.167	0.174	0.111	0.059	0.067	0.182
Responsibility	0.111	0.261	0.333	0.176	0.267	0.182
Discipline	0.111	0.174	0.222	0.088	0.133	0.182
Domicile	0.167	0.043	0.056	0.088	0.067	0.091

Table 4. Criteria Weights Table

Criteria	Total	Bobot
Experience	1.928	0.321
Activity	0.561	0.093
Communication	0.759	0.126
Responsibility	1.330	0.222
Discipline	0.911	0.152
Domicile	0.512	0.085

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To validate the criterion weighting results, the matrix consistency value test was carried out, where after the calculation process, the value of $CI = 0.101$ and the consistency ratio value $CR = 0.08$ were obtained. Thus, the comparison performed is declared consistent. In the TOPSIS calculation process, the alternative value is determined from the established criteria. The alternative value is obtained from the comparison scale value of 1-5. This can be seen in Table 4.

After the alternative values for each criterion are determined, the next step is to calculate the decision matrix normalization value, where the calculation process is obtained from the division value of each criterion, including: Experience 11.53, Activity 12.21, Communication 10.91, Responsibility 11.27, Discipline 11.63, and Domicile 12.08, then divided by the alternative value. The results of the decision matrix value calculation can be seen in Table 5.

The next step is to calculate the weighted normalized matrix value, where the weights used are based on Table 3 and then divided by the decision matrix value. The weighted matrix value results can be seen in Table 6.

After all the processes are carried out, the ranking process is performed, which can be seen in Table 7.

Table 4. Alternatives and Criteria Table

Alternative	Experience	Activity	Communication	Responsibility	Discipline	Domicile
Rita Kamelia Sari	4	4	5	2	5	5
Gustina	5	4	5	3	5	5
Syafina	5	4	5	4	5	5
Jasmanini	4	3	4	4	5	5
Yunita	4	3	3	3	4	5
Yuliar	4	3	5	3	4	5
Dewi Tirta Segara	5	4	5	5	3	5
Pitna Sari	5	4	4	5	4	5
Nondot	5	2	4	3	3	5
Kamidar	4	2	3	4	4	5
Yulastri	5	4	5	5	3	3
Ninik Mulyani	4	3	5	5	3	5
Meri Anggraini	4	4	5	3	3	4
Afni	5	5	5	5	4	5
Dwi Rani Afilia	5	5	4	3	5	5
Fitri Yeni	5	5	4	4	5	4
Yusnidar Sidik	5	5	5	3	4	5
Mardalena	5	5	4	4	5	4
Rita Rosianti	5	4	4	4	5	4
Sepniati	5	4	4	5	5	4

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Table 5. Decision Matrix Value

Alternative	Alternative	Alternative	Alternative	Alternative	Alternative	Alternative
Rita Kamelia Sari	0.191	0.226	0.251	0.113	0.261	0.239
Gustina	0.239	0.226	0.251	0.170	0.261	0.239
Syafina	0.239	0.226	0.251	0.226	0.261	0.239
Jasmanini	0.191	0.170	0.201	0.226	0.261	0.239
Yunita	0.191	0.170	0.151	0.170	0.209	0.239
Yuliar	0.191	0.170	0.251	0.170	0.209	0.239
Dewi Tirta Segara	0.239	0.226	0.251	0.283	0.157	0.239
Pitna Sari	0.239	0.226	0.201	0.283	0.209	0.239
Nondot	0.239	0.113	0.201	0.170	0.157	0.239
Kamidar	0.191	0.113	0.151	0.226	0.209	0.239
Yulastri	0.239	0.226	0.251	0.283	0.157	0.143
Ninik Mulyani	0.191	0.170	0.251	0.283	0.157	0.239
Meri Anggraini	0.191	0.226	0.251	0.170	0.157	0.191
Afni	0.239	0.283	0.251	0.283	0.209	0.239
Dwi Rani Afilia	0.239	0.283	0.201	0.170	0.261	0.239
Fitri Yeni	0.239	0.283	0.201	0.226	0.261	0.191
Yusnidar Sidik	0.239	0.283	0.251	0.170	0.209	0.239
Mardalena	0.239	0.283	0.201	0.226	0.261	0.191
Rita Rosianti	0.239	0.226	0.201	0.226	0.261	0.191
Sepniati	0.239	0.226	0.201	0.283	0.261	0.191

Table 6. Weighted Matrix Value

Alternative	Alternative	Alternative	Alternative	Alternative	Alternative	Alternative
Rita Kamelia Sari	0.061	0.021	0.032	0.025	0.040	0.020
Gustina	0.077	0.021	0.032	0.038	0.040	0.020
Syafina	0.077	0.021	0.032	0.050	0.040	0.020
Jasmanini	0.061	0.016	0.025	0.050	0.040	0.020
Yunita	0.061	0.016	0.019	0.038	0.032	0.020
Yuliar	0.061	0.016	0.032	0.038	0.032	0.020
Dewi Tirta Segara	0.077	0.021	0.032	0.063	0.024	0.020
Pitna Sari	0.077	0.021	0.025	0.063	0.032	0.020
Nondot	0.077	0.011	0.025	0.038	0.024	0.020
Kamidar	0.061	0.011	0.019	0.050	0.032	0.020
Yulastri	0.077	0.021	0.032	0.063	0.024	0.012
Ninik Mulyani	0.061	0.016	0.032	0.063	0.024	0.020
Meri Anggraini	0.061	0.021	0.032	0.038	0.024	0.016
Afni	0.077	0.026	0.032	0.063	0.032	0.020
Dwi Rani Afilia	0.077	0.026	0.025	0.038	0.040	0.020
Fitri Yeni	0.077	0.026	0.025	0.050	0.040	0.016
Yusnidar Sidik	0.077	0.026	0.032	0.038	0.032	0.020
Mardalena	0.077	0.026	0.025	0.050	0.040	0.016
Rita Rosianti	0.077	0.021	0.025	0.050	0.040	0.016
Sepniati	0.077	0.021	0.025	0.063	0.040	0.016
nilai max	0.077	0.026	0.032	0.063	0.040	0.020

Table 7. Ranking Table

Alternative	Ranking	Rank
Rita Kamelia Sari	1.041	20
Gustina	1.026	14
Syafina	1.014	4
Jasmanini	1.023	10
Yunita	1.035	19
Yuliar	1.032	16
Dewi Tirta Segara	1.017	8
Pitna Sari	1.011	3
Nondot	1.034	18
Kamidar	1.029	15
Yulastri	1.019	9
Ninik Mulyani	1.024	11
Meri Anggraini	1.034	17
Afni	1.008	1
Dwi Rani Afilia	1.026	13
Fitri Yeni	1.015	5
Yusnidar Sidik	1.026	12
Mardalena	1.015	6
Rita Rosianti	1.016	7
Sepniati	1.009	2

Based on the assessment results, it was found that Cadre Afni is the best cadre among all Posyandu cadres in the Lubuk Kilangan District. The presence of this best cadre selection system is expected to motivate other cadres to continue to improve their experience, activity, and discipline in carrying out Posyandu activities held every month in their respective domiciles.

CONCLUSION

The Hybrid Analytical Hierarchy Process (AHP) and Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) methods have proven effective in building an accurate, consistent, and transparent decision support system for the selection of the best Posyandu cadres. Based on the system's calculations, cadre Afni was designated as the best cadre (Rank 1) for obtaining the lowest Ranking value (1.008), indicating her optimal proximity to the ideal solution, followed by Sepniati (1.009) and Pitna Sari (1.011) in subsequent positions. This system is expected to serve as a sustainable and objective assessment basis for cadres, while simultaneously encouraging future improvements in experience, activity, and discipline in Posyandu activities.

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BIBLIOGRAPHY

[1] N. I. Zuliyanti and R. Pangestuti, "Pengaruh Pengetahuan Dan Pelatihan Kader Posyandu Terhadap Pelayanan Kesehatan Ibu Dan Anak Di Kabupaten Purworejo," *J. Kebidanan*, vol. 11, no. 02, p. 214, 2020, doi: 10.35872/jurkeb.v11i02.407.

[2] F. S. W. Galih Aditya Baskara, Ali Mahmudi, "RANCANG BANGUN APLIKASI SISTEM PENDUKUNG KEPUTUSAN UNTUK SELEKSI PENERIMAAN KADER POSYANDU MENGGUNAKAN METODE AHP DAN TOPSIS," *JATI (Jurnal Mhs. Tek. Inform.*, 2021.

[3] M. Tyagi, P. Kumar, and D. Kumar, "A hybrid approach using AHP-TOPSIS for analyzing e-SCM performance," *Procedia Eng.*, vol. 97, pp. 2195–2203, 2024, doi: 10.1016/j.proeng.2014.12.463.

[4] V. Rajput, N. K. Sahu, and A. Agrawal, "Integrated AHP-TOPSIS methods for optimization of epoxy composite filled with Kota stone dust," *Mater. Today Proc.*, vol. 50, pp. 2371–2375, 2021, doi: 10.1016/j.matpr.2021.10.251.

[5] M. Shabbir, R. K. Yadav, and M. W. Khan, "Evaluating the Impact of Security Risks through Fuzzy AHP- TOPSIS Method," vol. 10, 2025.

[6] J. H. Ccatamayo-Barrios *et al.*, "Comparative Analysis of AHP and TOPSIS Multi-Criteria Decision-Making Methods for Mining Method Selection," *Math. Model. Eng. Probl.*, vol. 10, no. 5, pp. 1665–1674, 2023, doi: 10.18280/mmep.100516.

[7] A. Alharbi *et al.*, "Selection of data analytic techniques by using fuzzy AHP TOPSIS from a healthcare perspective," *BMC Med. Inform. Decis. Mak.*, vol. 24, no. 1, 2024, doi: 10.1186/s12911-024-02651-8.

[8] D. P. Sari, P. A. Wicaksono, N. U. Handayani, and Y. E. Siahaan, "Integrating AHP, Cluster Analysis, and Fuzzy TOPSIS to Evaluate Emergency Warehouse Locations of Mount Merapi Eruption Victims," *Int. J. Adv. Sci. Eng. Inf. Technol.*, vol. 10, no. 5, pp. 1839–1845, 2020, doi: 10.18517/ijaseit.10.5.6923.

[9] K. S. Mehra, V. Goel, S. Singh, G. Pant, and A. K. Singh, "Materials Today : Proceedings Experimental investigation of emission characteristics of CI engine using biodiesel-diesel blends and best fuel selection : An AHP-TOPSIS approach," *Mater. Today Proc.*, no. xxxx, pp. 10–11, 2023, doi: 10.1016/j.matpr.2023.02.237.

[10] N. Yesilcayir, G. Ayvazoglu, S. Celik, and I. Peker, "Transit warehouse location selection by IF AHP- TOPSIS integrated methods for disaster logistics: A case study of Turkey," *Res. Transp. Bus.*

JURTEKSI (Jurnal Teknologi dan Sistem Informasi) ISSN 2407-1811 (Print)
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Manag., vol. 57, no. September, p. 101232, 2024, doi: 10.1016/j.rtbm.2024.101232.

[11] J. Teguh Santoso and Mk. Migunani, *Sistem Berorientasi Obyek dengan UML*. 2021. [Online]. Available: https://penerbit.stekom.ac.id/index.php/yayasanpat/article/view/158/180