

IMPLEMENTATION OF THE AHP METHOD TO DETERMINE PRIORITIES IN PUBLIC COMPLAINT HANDLING

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Abstract: The Ombudsman of the Republic of Indonesia is an institution tasked with supervising the administration of public services and handling community complaint reports related to allegations of maladministration. The purpose of this research is to create a decision support system using the Analytic Hierarchy Process (AHP) method, which facilitates the determination of priority handling of community complaint reports at the Ombudsman of the Republic of Indonesia Bengkulu Representation. This decision support system is built on a web-based platform using PHP programming language with a MySQL database that can be accessed offline by the admin of the Ombudsman. With the existence of this priority recommendation, it is expected that work will become more effective and efficient, as resources can be focused on reports that most need attention. Based on the test data used, which consists of 12 Community Complaint Reports from July 2024, it was found that the priority handling recommendations for community complaint reports were derived from 3 reports with the highest final AHP values. The recommended priority handling reports are registration number 0021/LM/VII/2024/BKL with a final AHP value of 2.074, registration number 0020/LM/VII/2024/BKL with a final AHP value of 1.964, and registration number 0018/LM/VII/2024/BKL with a final AHP value of 1.866.

Keywords: decision support system; priority recommendation; public complaint report; AHP Method (analytic hierarchy process method)

Abstrak: Ombudsman Republik Indonesia merupakan lembaga yang memiliki tugas mengawasi penyelenggaraan pelayanan publik sekaligus menangani laporan masyarakat terkait dugaan maladministrasi. Penelitian ini bertujuan untuk membangun sebuah sistem pendukung keputusan berbasis metode Analytic Hierarchy Process (AHP), yang berfungsi membantu dalam menentukan prioritas penanganan laporan pengaduan masyarakat pada Ombudsman RI Perwakilan Bengkulu. Sistem tersebut dikembangkan dalam bentuk aplikasi berbasis web menggunakan bahasa pemrograman PHP dan basis data MySQL, serta dapat diakses secara luring oleh petugas internal Ombudsman RI Bengkulu. Dengan adanya rekomendasi prioritas ini, diharapkan proses penanganan laporan menjadi lebih efektif dan efisien karena sumber daya dapat difokuskan pada laporan yang bersifat paling mendesak. Berdasarkan pengujian menggunakan 12 data laporan pengaduan masyarakat pada Juli 2024, diperoleh tiga laporan dengan nilai akhir AHP tertinggi sebagai prioritas utama, yaitu: laporan bernomor registrasi 0021/LM/VII/2024/BKL dengan nilai akhir AHP 2,074; laporan bernomor 0020/LM/VII/2024/BKL dengan nilai akhir AHP 1,964; dan laporan bernomor 0018/LM/VII/2024/BKL dengan nilai akhir AHP 1,866.

Kata kunci: sistem pendukung keputusan; rekomendasi prioritas; laporan pengaduan masyarakat; metode AHP



INTRODUCTION

In today's digital era, the use of information technology has become a crucial part of various aspects of life, including the provision of public services. The presence of information technology enables administrative processes and decision-making to be carried out more quickly, efficiently, and accurately. One widely used application of information technology is decision support systems, which play a role in helping decision-makers make more objective and structured choices in various fields.

The Ombudsman of the Republic of Indonesia is an institution authorized to oversee the implementation of public services and follow up on public complaints regarding alleged maladministration. At the Bengkulu Representative Office of the Indonesian Ombudsman, complaints can be received through various channels, such as social media, WhatsApp, direct reports to the office, or through on-the-spot activities to reach the public directly. Each incoming report will be input by the report reception assistant team into the Sempel4 application, then forwarded to the inspection team for analysis. After the analysis process, the inspection team will coordinate with the relevant Regional Apparatus Organization (OPD), and then the results will be returned to the reporter via notification letter.

Despite the use of a computerized system, the process of determining priority for handling public complaints is still done manually. Officers must consider various aspects, such as the urgency of the report, the substance of the problem, the time span of the incident, the impact, the type of maladministration, and the agency being reported. The large number of reports received often makes this pro-

cess ineffective and has the potential to delay the handling of urgent reports.

Based on these conditions, this study developed a decision support system to help provide priority recommendations for handling public complaints. To generate recommendations that align with the assessment aspects, the Analytic Hierarchy Process (AHP) method was used, as this method allows for the assessment of each criterion based on its level of importance on a specific scale. The presence of this system is expected to make the decision-making process within the Ombudsman environment more objective, structured, and efficient, thereby improving the quality of service to the public.

Based on the current situation at the Bengkulu Representative Office of the Indonesian Ombudsman, although the Sempel4 application is available to manage public complaints, the process of determining the priority of handling these complaints is still carried out manually by officers. This situation causes several issues. First, there is a limitation in objectivity, as the assessment of report priorities depends on the subjectivity of the officers, which potentially leads to inconsistencies in decision-making. Additionally, the high volume of incoming reports results in longer processing times for manual analysis, especially in urgent cases. Furthermore, the existing application only functions as a medium for recording and distributing reports and is not yet equipped with an analysis mechanism based on a systematic decision-making method. Finally, there has been no implementation of a decision-making method such as the Analytic Hierarchy Process (AHP), which can measure the importance level of various criteria including urgency, substance, impact, time span, and type of maladministration to

produce more appropriate priority recommendations.

Several previous studies relevant to this theme demonstrate that the AHP method can provide solutions to these challenges. For instance, the combined application of AHP and the Simple Additive Weighting (SAW) method in financing decisions for KSPPS TAM members resulted in more structured decision-making outcomes. Similarly, the use of the AHP method in determining scholarship recipients showed that it can assist the selection process by systematically considering multiple criteria and producing more objective decisions. Another example is the application of AHP in selecting CCTV brands, where the method helped users choose the best alternative based on the weighting of predetermined criteria. Moreover, the use of AHP in selecting materials for manufacturing work aids illustrated the advantage of breaking down complex problems into hierarchies that are easier to analyze.

Therefore, implementing the AHP method holds great potential to improve the quality of decision-making in determining complaint handling priorities at the Bengkulu Ombudsman Office, making the process more objective, efficient, and structured.

METHOD

The Waterfall method has stages as seen in Figure 1.

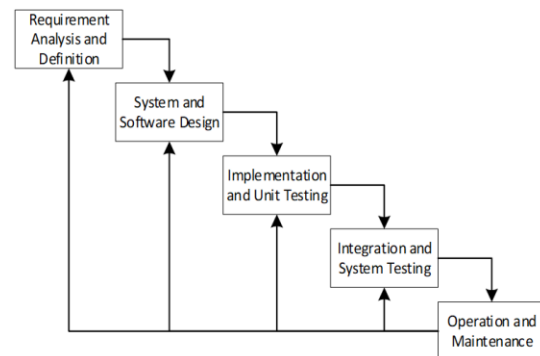


Figure 1. Stages of the Waterfall Method

Information:

- 1) Requirement analysis and definition
This stage involves analyzing needs and defining the problems at the Bengkulu Representative Office of the Indonesian Ombudsman in determining priorities for handling public complaint reports.
- 2) System and software design
This stage involves designing the system based on the results of the needs analysis through Data Flow Diagrams, Entity Relationship Diagrams, File Designs, Menu Structure Designs, and Application Designs..
- 3) Implementation and unit testing
This stage is the implementation of the system design created into an application using the PHP programming language and MySQL database.
- 4) Integration and system testing
At this stage, testing is carried out on the application that has been developed to determine whether the functionality of the application is in accordance with expectations.
- 5) Operation and maintenance

This stage involves operating the application and making periodic improvements to improve the performance of the application

A Decision Support System (DSS) is a computer-based system designed to assist interactive decision-making by utilizing data and models to solve unstructured and semi-structured problems. Essentially, a Decision Support System (DSS) is designed to assist the entire decision-making process, from problem identification and selection of relevant data to evaluation of available decision alternatives. [2].

A Decision Support System (DSS) is a computer-based system designed to assist leaders or managers in making informed decisions, both within a company and within a specific organization. DSS can be used to support various types of decisions, such as determining which potential customers are eligible for credit at a cooperative or assessing employee performance. For a decision support system to function optimally, several key components are required: Database Management, User Interface Management, and Model Management. [4].

The Analytic Hierarchy Process (AHP) is a decision-making method developed by Thomas L. Saaty in the 1970s. This method has proven effective and has been widely used in various strategic decision-making processes. In general, AHP helps solve complex problems by constructing a hierarchical structure from existing criteria, providing subjective assessments by stakeholders, and then processing these considerations to produce a weight or priority level for each assessed alternative. [5].

A hierarchy is defined as a representation of a complex problem in a multi-level structure where the first level is the objective, followed by the factors, criteria, sub-criteria, and so on down to the final level of alternatives. This process will make a problem appear more structured and systematic. [3].

The Analytic Hierarchy Process (AHP) is a method used to solve complex problems involving multiple criteria and alternatives, especially when the problem structure is not clearly defined. In this method, complex problems are broken down into a multi-level hierarchy. Each criterion and alternative are assessed through pairwise comparisons using a rating scale from 1 to 9 [1].

In general, the stages or procedures in implementing the Analytic Hierarchy Process (AHP) method include several main steps as follows: [3]:

1. Identify the problem and determine the desired solution, then organize it into a hierarchy. This hierarchy is created by establishing the primary objective as the overall goal of the system at the highest level.

2. Determine element priorities

The initial stage in determining the priority of each element is to carry out a pairwise comparison, namely comparing each element two by two based on the criteria that have been set. The pairwise comparison matrix is filled with numerical values used to represent the relative importance of one element to another.

3. Synthesis

Considerations from the pairwise comparison results are then synthesized to obtain an overall priority value. The steps taken in this step are as follows.: Add up all the values in each column in the matrix, Perform normalization by dividing each value in the column by the total value of that column, Add up all the values in each row, then divide by the number of elements to get the average value.

4. Measuring consistency

In the decision-making process, it is important to ensure a level of consistency in judgment, as the resulting

decision should not be based on considerations with low consistency. The steps taken at this stage are as follows: Multiply each value in the first column by the relative priority of the first element, the value in the second column by the relative priority of the second element, and so on, Add up the values for each row, Divide the sum of each row by the relative priority value of the element in question., Add up all the results of the division, then divide it by the total number of elements. The value obtained is called the maximum λ (lambda) value.

5. After that, calculate the Consistency Index (CI) using the formula:

$$CI = \frac{\lambda_{maks} - n}{n - 1} \quad (1)$$

Information:

n = many elements

6. Calculate the Consistency Ratio (CR) using the formula:

$$CR = \frac{CI}{IR} \quad (2)$$

Information :

CR = Consistency Ratio

CI = Consistency Index

RI = Indeks Random Consistency

7. Perform hierarchy consistency checks

If the consistency ratio (CR = CI/IR) exceeds 10%, the assessment or judgment data needs to be revised. However, if the consistency ratio is less than or equal to 0.1, the calculation results can be declared consistent and acceptable.

Table 1. Criteria Priority Weight

Criteria Code	Criteria Name	Criteria Priority Weight
C1	Urgency of the report	0.398
C2	Substance of the report	0.240
C3	Time period of	0.173

incident		
C4	The impact caused	0.100
C5	Types of maladministration	0.053
C6	Reported Institute	0.037

Table 2. Final Results of the AHP Method

No	Alternative	AHP Value	Rank
1	Report 4	2.075	1
2	Report 3	1.966	2
3	Report 10	1.867	3
4	Report 1	1.866	4
5	Report 5	1.767	5
6	Report 7	1.741	6
7	Report 12	1.730	7
8	Report 9	1.661	8
9	Report 2	1.331	9
10	Report 11	1.315	10
11	Report 8	1.294	11
12	Report 6	1.278	12

RESULTS AND DISCUSSION

A decision support system for determining the priority of handling public complaint reports at the Bengkulu Representative Office of the Indonesian Ombudsman using the Analytic Hierarchy Process (AHP) method can help provide recommendations on the appropriate priority for handling public complaint reports according to the criteria from the assessment results. With these priority recommendations, it is hoped that work will be more effective and efficient because resources can be focused on reports that require the most attention.

In the decision support system, the Analytic Hierarchy Process (AHP) method has been applied, which is used

to calculate the final value of the priority recommendations for handling each complaint report assessment data, which is then sorted from the highest value to the lowest value for ranking and providing recommendations for the 3 reports with the highest values.

Based on the test data used for 12 Public Complaint Reports in July 2024, it was obtained that the results of the priority recommendations for handling public complaint reports were taken from the 3 reports with the highest final AHP Method scores. Where the priority recommendations for handling complaint reports are registration number 0021/LM/VII/2024/BKL with a final AHP score of 2.074, registration number 0020/LM/VII/2024/BKL with a final AHP method score of 1.964, registration number 0018/LM/VII/2024/BKL with a final AHP method score of 1.866.

To facilitate the process of assessing public complaints at the Bengkulu Representative Office of the Indonesian Ombudsman, a web-based application was developed using the PHP programming language and a MySQL database that can be accessed offline by the Bengkulu Representative Office's admin. This user-friendly application simplifies the input and assessment processes, as well as the AHP method for obtaining recommendations for priority handling of public complaints.

The main menu page is the web interface of a decision support system designed to help prioritize public complaint handling at the Bengkulu Representative Office of the Indonesian Ombudsman. This page serves as a navigation center so users can easily access various data processing features within the application. Within the main menu, several submenus facilitate the data management process, including a data input

menu, a calculation process using the Analytic Hierarchy Process (AHP) method, a display of calculation results, and a menu to log out of the system.

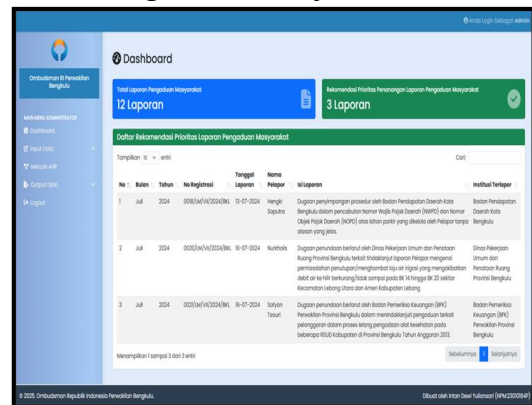


Figure 2. Main Menu

The Analytic Hierarchy Process (AHP) method page is part of the web interface of the decision support system used to determine the priority of handling public complaint reports at the Bengkulu Representative Office of the Indonesian Ombudsman. On this page, the admin can run the AHP calculation process by utilizing the public complaint report assessment data by month and year that has been previously entered through the data input page

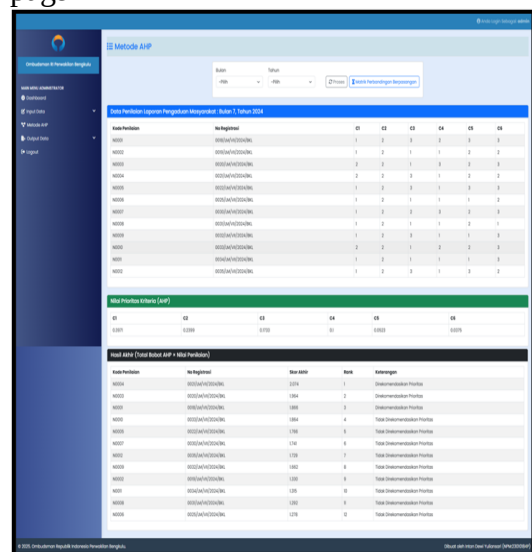


Figure 3. AHP method

Based on the test results, it can be concluded that the decision support system for determining the priority of handling public complaints at the Bengkulu Representative Office of the Indonesian Ombudsman has functioned well. This system is capable of running the Analytic Hierarchy Process (AHP) calculation process on public complaint report assessment data according to the selected month and year, and displays a recommended priority order for each complaint report.

CONCLUSION

Based on the results of discussions and testing, it can be concluded that the decision support system for determining the priority of handling public complaint reports at the Ombudsman RI Bengkulu Representative using the Analytic Hierarchy Process (AHP) method is able to provide accurate priority recommendations according to the evaluation criteria. The implementation of this system helps to improve work effectiveness and efficiency because resources can be focused on the reports that need the most attention. From trials on 12 public complaint reports in July 2024, the system successfully produced three reports with the highest final AHP scores, namely the reports with registration numbers 0021/LM/VII/2024/BKL, 0020/LM/VII/2024/BKL, and 0018/LM/VII/2024/BKL. These results indicate that the developed system has been functioning well in processing report evaluation data according to the selected period and is able to accurately display priority recommendations in line with the research objectives.

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