

Decision Support System For The Best Employee Selection Recommendation Using Ahp (Analytic Hierarchy Process) Method

Rudi Hermawan¹, Muhammad Tri Habibie², Danang Sutrisno³,
Arman Syah Putra^{4*}, Nurul Aisyah⁵

^{1,2,3} Faculty of Computer, Indraprasta PGRI University, Jakarta, Indonesia

⁴ Faculty of Computer, STMIK Insan Pembangunan, Banten, Indonesia

⁵ Faculty of Computer, Bina Sarana Informatika University, Jakarta, Indonesia

*Corresponding author:

Email: armansp892@gmail.com

Abstract.

The background of this research is how to create a system that can help humans in deciding something, without taking sides with one party, and deciding something to the maximum, with this system it can be done using a decision-making system and using the AHP method which is applied to selection of the best employees in a company. The method used in this research is to use the literature review method, and read a lot of books, so that journals can be the basis of this research, with this basis, they can find the latest research problems and can be raised in this study, so finding novelty in this research, so that it can be used for future research. The problem raised in this research is how to create a system that can help decide without having to side with anyone and can help company leaders in deciding who is the best employee in their company. This research produces an output that can be known who is the best employee in a company, the best employee in a company to Bambang Wijaya with a point value of 440, which is given directly by the company's leaders so that this value is an absolute value and cannot be changed by anyone.

Keywords: Decision Support System, Employee, Recommendation, AHP.

I. INTRODUCTION

In selecting the best employees must be accompanied by adequate decisions because a decision must reflect the freedom of opinion of all those who make decisions, therefore by making this decision system it will be able to help many parties, especially the company in determining who the best employees in the company are by Therefore, the AHP method is the method used in this study [1].The research method used in this paper is to use a literature review and use trial data which is directly applied to the decisions to be taken in the selection of the best employees in a company. The company will determine directly who the best employees are [2].The problem raised in this study is how to create a system that can assist in making decisions about selecting the best employees in a company. With a system, the leaders only provide value and the system processes it so that it can be known directly who has the highest value after being rated by the leaders [3].The results of implementing a decision support system for determining thesis topics using the fuzzy AHP method in this study have two rights (guidance commission and students). The guidance commission has access rights to several main features, namely viewing criteria data, updating criteria comparison data weights, viewing comparison data between criteria, viewing sub-criteria data, updating comparison weight data between sub-criteria, viewing comparison data between sub-criteria, viewing sub-sub-criteria data, updating data comparison weights between sub-sub-criteria, see comparison data between sub-criteria, update administrator data, and view user data.

Meanwhile, on student access rights, there are features of thesis topic recommendations, updating user data, displaying user data, and user registration. The implementation of the fuzzy AHP method in this study is in the features of updating the comparison weights of the criteria, updating the weights of the sub-criteria comparisons, and updating the weights of the sub-sub-criteria comparisons. The criteria data used in the system will then be weighted [4].The weighted values that have been inputted will then be processed using the fuzzy

AHP method so that the values of lamda max, CI, CR, AHP priority and local weights (Wlokal) are obtained. The results of the calculation of the pairwise comparison matrix criteria using the fuzzy AHP method. Testing of thesis topic recommendations aims to assess the performance of the system. Testing is done by making recommendations by making one of the thesis topics with high, medium, and low value, this aims to determine the level of system accuracy. Results of thesis topic recommendations. Based on the results of the tests carried out on the thesis topic recommendation feature, the results of the thesis topic recommendations that are given a high score (Genaphography) will produce a high score, the results of the thesis topic recommendations are of moderate value (Accounting, Information system security, computer networks, and data mining) as well. Will produce recommendations that are of moderate value, and the results of recommendations for thesis topics that are rated low (mutimedia) will produce low recommendations so that the results of thesis topic recommendations using the fuzzy AHP method are accurate [5].

This decision support system uses the fuzzy AHP method. The AHP method is used to create a comparison matrix between criteria, a comparison matrix between sub-criteria, and a comparison matrix between sub-criteria and to test the consistency of the pairwise comparison matrix. If the matrix is consistent or the CR value is 0.1, the matrix will be converted into a triangular fuzzy number scale using the fuzzy method, so that the weights of each criterion, sub-criteria, and sub-criteria will be obtained which will be used in the thesis topic recommendation process [6]. AHP for software selection is called Multi-media Authorizing System (MAS). They used a group decision-making technique, which included six software engineers. There were three MAS products evaluated. A hierarchy of pairwise comparisons is formed which consists of four levels. Criteria at level three are evaluated. The criteria are: development interface, graphics support, multi-media support, data file support, cost effectiveness, and vendor support. Using AHP to select the best foundry supplier from the group of suppliers evaluated. The authors developed user-friendly web pages for virtually evaluating zero-page work. The evaluation procedure takes care of about 18 different criteria. They are separated into four groups namely: product development capabilities, manufacturing capabilities, quality capabilities, and cost and delivery capabilities. Of the 18 different criteria, six are of the objective type and twelve are of the subjective type. The author claims to use most of the important criteria and they state that any criteria can be added/removed according to the needs of the webpage user. Use AHP for two basic purposes.

They formulate a model to evaluate success factors, and to develop strategies for implementing an ISO14001-based environmental management system. This model is used to evaluate the benefit/cost ratio of implementing an ISO-based EMS, and to decide whether to implement it or not. In the first part of this paper, management attitudes, organizational change, external and social aspects, and technical aspects are identified as important success factors. These factors focus on strategic factors, which are further defined on operational attributes [7]. Health is one of the most complex problems in today's modern world. According to Blum, there are four main factors that determine the degree of public health, namely behavior, environment, health services and heredity, which can be further broken down into secondary and tertiary factors. The Analytic Hierarchy Process is an approach model that provides opportunities for planners and program managers in the health sector to be able to build ideas or ideas and define existing problems by making assumptions and then getting the solutions they want. By using the AHP model, each health program priority is clearly determined, compared to using the Hanlon, Delbeq and PEARL methods that have been used by health program managers in Ternate City and in Indonesia. Decision Support System can explain alternative choices to decision makers. Whatever and however the process, one of the most difficult advanced stages that decision makers will face is in terms of implementation. Likewise with AHP which will be used to construct models for simplification of problems. AHP is a mathematically based procedure that is very good and suitable for the evaluation conditions of qualitative attributes.

These attributes are mathematically quantified in 1 set of pairwise comparisons. The advantages of AHP compared to others are because of the hierarchical structure, as a consequence of the selected criteria, down to

the most detailed sub-criteria. Take into account the validity up to the tolerance limit for the inconsistency of various criteria and alternatives chosen by decision makers [8]. The results of the study are expected to be used to facilitate the selection of interior designs for certain rooms for the owners of the room, especially for room owners who are less experienced in managing certain room designs [9]. DSS is an interactive, flexible and adaptable computer-based information system, which was specifically developed to support the resolution of unstructured problems to improve decision making. Unstructured problems require much more creativity and consideration. The solution is hardly a choice between right or wrong, but rather what often happens is a choice between what is almost right and what may be wrong. Unstructured decision making is made in response to problems that are unique, rare, and cannot be precisely defined [10].

DSS provides support for several interdependent and/or sequential decision states. Model capabilities can be tried with different strategies under different configurations. The number of cellular card operators provided by telecommunications makes it difficult for consumers to make the right choice, according to the desired criteria. The reason is because there are still many consumers who do not understand the right and economical cellular card operator. In this case, a decision-making system to determine the best cellular card operator using the ahp method is made in which there are several criteria such as price, tariff, promo and active period with alternatives such as Kartu As, Simpati, Loop, Axis and Im3. Cellular cards already know which ones are suitable or not suitable for completeness and economy. The concept of a Decision Support System was first expressed in the early 1970s by Michael S. Scott Morton with the term Management Decision System. The system is a computer-based system that is intended to assist decision makers by utilizing certain data and models to solve various unstructured problems. The term DSS refers to a system that utilizes computer support in the decision-making process. Man and Watson DSS is an interactive system, which helps decision makers through the use of data and decision models to solve semi-structured and unstructured problems. Hasan The concept of Decision Support System is characterized by an interactive computer-based system that helps decision-making by utilizing data and models to solve unstructured problems.

Basically, DSS is designed to support all stages of decision making, from identifying problems, selecting relevant data, determining the approach used in the decision-making process, to evaluating the selection. Decision Support Systems are designed to assist decision makers in solving semi-structured or unstructured problems by adding human wisdom and computerized information. The Decision Support System is designed by emphasizing the aspects of flexibility and high adaptability. Every parent wants their child to enroll in the right school. Parents do not want to make the wrong choice in choosing a school for their children. In choosing a good and appropriate school, of course, is not an easy thing, this is due to the many considerations made to get the right school choice, as well as the many choices of schools that confuse the public, both students and their parents. The existence of this decision support can be a solution to provide consideration in helping the community in the school selection process. The Analytical Hierarchy Process (AHP) method is a method that has a hierarchical structure and provides convenience in simplifying a problem from complex criteria with various alternative options, so that it can speed up the decision-making process in school selection. This AHP method is able to produce more consistent results and the result is based on the ranking order of each alternative. In this study the method used is AHP (Analytical Hierarchy Process). AHP (Analytical Hierarchy Process) is a general theory of measurement that is used to find the ratio scale, both from discrete and continuous pairwise comparisons. AHP is a method of breaking down complex or complicated problems in unstructured situations into component parts. Arrange these parts or variables into a form of hierarchical arrangement, then assign a numerical value for subjective assessment of importance.

II. RESEARCH METHOD

This chapter will discuss how this research took place and what methods were used in this research so that this research was in line with the path and not biased. Therefore, with the research method made through

pictures and explanations, it will clarify everything. The first stage in this research is to conduct a literature study by reading a lot of books and journals so that this content research can be in-depth and can find something new novelty based on the understanding of previous research, the second stage is how to do research and find research problems with research problems the latest, this research can find novelty so that it can be the basis of future research. Therefore, the literature review is the basis of this research so that the last stage in this research will be able to answer the problems that existed in the initial research.

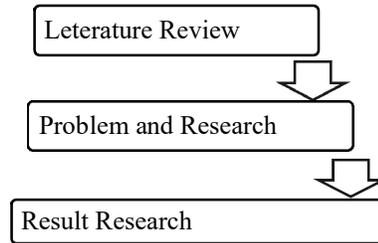


Fig 1. Research Method

III. RESULT AND DISSCUSION

In this section, we will discuss how cellphones work and analyze data so that it can produce new data that has been processed. The images and explanations will be explained below.

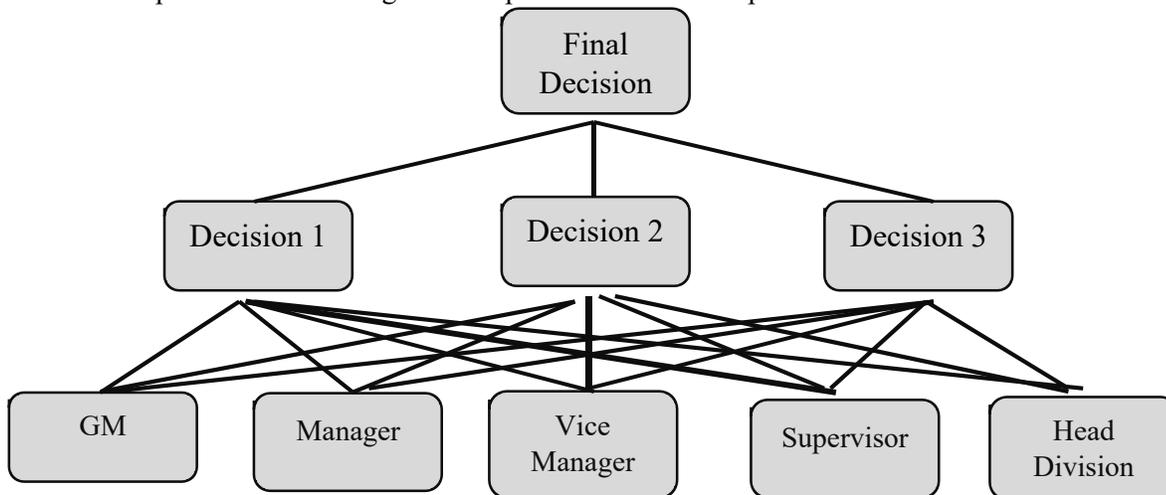


Fig 2. AHP Concept

Based on Figure 2 above, it will be explained as follows: the picture of the AHP method above explains that the final decision was taken based on previous decisions and the previous decision was taken based on 5 decision makers, namely GM, Manager, Vice Manager, Supervisor and Head Division, so everyone can make decisions and processed through the system to produce a final decision that cannot be contested by anyone.

Table 1. Decision Making Table

No	Tester	Parameter Tester	Parameter Tester
1	GM	Leadership	A1
2	Manager	Responsibility	A2
3	Vice Manager	Ethics	A3
4	Supervisor	Association	A4
5	Head Division	Honesty	A5

Based on table 1 above, an explanation will be given as follows. Table 1 is a decision-making table consisting of the first 5 GM, Manager, Vice Manager, Supervisor, Head Divisio, each of which gives the parameters of Leadership, Responsibility, Ethics, Association, Honesty and coded A1, A2, A3, A4, and A5.

Table 2. Parameter Table

No	Parameter	Code	Scale
1	Leadership	A1	10 - 100
2	Responsibility	A2	10 - 100
3	Ethics	A3	10 - 100
4	Association	A4	10 - 100
5	Honesty	A5	10 - 100

Based on table 2 above, gives the parameters of Leadership, Responsibility, Ethics, Association, Honesty and coded A1, A2, A3, A4, and A5, and give scale 10-100.

Table 3. Decision Table

No	Best Student Scale Score	Rating Letter	Decision
1	1 - 100	E	Not Good
2	101 -200	D	Not Good
3	201 - 300	C	Not Good
4	301 - 400	B	Good
5	401 -500	A	Good

Based on table 3 above, it can be concluded that the decision value has a score of 1 to 100 has an e rating with a bad decision, a score of 101 to 200 has a rating at with a bad value, 201-300 has a bad rating, the decision is not a good value, 301-400 has a B rating. with a good decision 401-500 has a rating of A with a good decision therefore if you want to be the best student you must have a minimum rating of A or a rating of B.

Table 4. Table of the Best Student Candidates

No	Name of Session
1	Thomas Adiguna
2	Simson Simanjuntak
3	Awal Sinaga
4	Frans Sams
5	Anjar Ago
6	Ahmad Ishaq
7	Lican Lilian
8	Agus Suherman
9	Bambang Wijaya
10	Nurul Aisyah

Based on table 4 above, the names of the best prospective students will be nominated to be the best employee, with results that will show who is the best among them before they are tested by the examiners.

Table 5. Table of Point Results

No	Name of Session	A1	A2	A3	A4	A5	Total
1	Thomas Adiguna	81	86	90	81	88	426
2	Simson Simanjuntak	92	89	86	87	83	437
3	Awal Sinaga	87	88	87	86	87	434
4	Frans Sams	85	89	80	85	89	428
5	Anjar Ago	80	89	86	80	89	424
6	Ahmad Ishaq	88	88	87	86	87	435
7	Lican Lilian	85	80	85	85	86	421
8	Agus Suherman	89	86	80	89	85	429
9	Bambang Wijaya	89	85	88	89	89	440
10	Nurul Aisyah	86	89	85	80	87	427

Based on table 5 above, it can be concluded that there is a value for each value coded A1, A2, A3, A4, and A5, then the five values will be totaled so as to produce the maximum value of the five appraisers. If that is added, it can be seen which employee with the highest score can be made the best employee.

Table 6. Table of Decision Results

No	Name of Student	Total	Rating Letter	Decisions
1	Thomas Adiguna	426	A	Baik
2	Simson Simanjuntak	437	A	Baik
3	Awal Sinaga	434	A	Baik
4	Frans Sams	428	A	Baik
5	Anjar Ago	424	A	Baik
6	Ahmad Ishaq	435	A	Baik
7	Lican Lilian	421	A	Baik
8	Agus Suherman	429	A	Baik
9	Bambang Wijaya	440	A	Baik
10	Nurul Aisyah	427	A	Baik

Based on table 6 above, it can be concluded that there is a total score that has been given by the examiners, namely, the highest score is the value of Bambang Wijaya with number 9, the value is 436, with an A rating with good decisions, therefore humans are chosen as the best employee.

Table 7. Testing Table

No	Parameters Tested	Test result
1	Input	OK
2	Data Verification	OK
3	Processing	OK
4	Value Verification	OK
5	Output	OK

Based on table 7 above, the results of the parameter testing are the input, OK, data verification, OK, process, OK, value verification, OK, and output, OK, the conclusion is that all process inputs and outputs have been running smoothly good.

IV. CONCLUSION

Based on the results of the research above, it can be concluded that the AHP method is the right method in determining the best employees, therefore this method can be applied in companies, so that it can help many parties in determining the selection of the best employees, in order to give awards to employees who has given all his time to the company, in this study it can be seen that the best employee fell to Bambang Wijaya, with number 9, with a total of 440 points, with an A rating, with a good decision, Bambang Wijaya is the owner of the highest score based on the results of data processing by the leaders company.

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