Decision Support System for Thesis Session Pass Recommendation Using AHP (Analytic Hierarchy Process) Method

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Abstract

The background this time is how the scoring system is still objective in the thesis trial system, therefore with this decision support system, the objective assessment will become a definite scoring system, and will be able to help examiners provide the best advice to take. decisions to be taken during the student thesis trial. The method used in this research is to use quantitative methods, by conducting a librarian study and then combined with data taken from student participants in the thesis examination, with the library study method, it will be possible to explore this research and data processing will also be maximized. Many systems use the AHP algorithm method to make decisions that are difficult to make, using the AHP method can be taken into consideration in making decisions, because data processing using the AHP method will provide the best advice for making an important decision. This research will produce a system proposal and how the data is obtained, then how the data is processed to produce a system proposal, which is best for making decisions about students who are currently passing their thesis exams or not, with the proposed system will greatly help the examiner take decisions that were previously objective.

Keywords: *Decision Support System, Thesis Session, Pass, AHP.*

I. INTRODUCTION

In making a decision, sometimes humans can make objective decisions according to humans, sometimes the decisions are in favor of one part, with this, by making a system this can be eliminated, by taking absolute decisions, it cannot be changed through any process**[1]**, definite decision-making is needed because it can provide confirmation of a decision taken, in this case a graduation decision from a thesis trial that students do, with a definite decision, graduation can be ascertained if all elements are sufficiently fulfilled.The current system is using a manual system, namely by collecting direct scores from the examiners based on the assessment of each examiner, with this manual system the assessment is still objective, with the system, this assessment can be firmer against all existing assessments**[2]**.

The problem raised in this research is how to make a decision support system in making student thesis graduation decisions, with this system it is hoped that it will be able to help students get maximum results, because the system is no longer objective in making a decision**[3]**.The method used in this research is to conduct a literature study. by referring to previous studies. thus producing a new study. and this study uses existing data in a university to be processed and converted into a decision support system, which can maximize decisions in determining student thesis trial graduation**[4]**.

This research will produce a proposed system that can assist student thesis examiners in making graduation decisions, with this system it will greatly assist universities in making graduation decisions for students who have conducted a thesis trial**[5]**.

II. METHODS

This section will discuss how the research was carried out and what methods were carried out in this research, with the research method, the direction of the research will not be biased and will be able to focus on doing research that is right on target, as for the pictures and explanations of the research methods**[6]**. will be seen below:

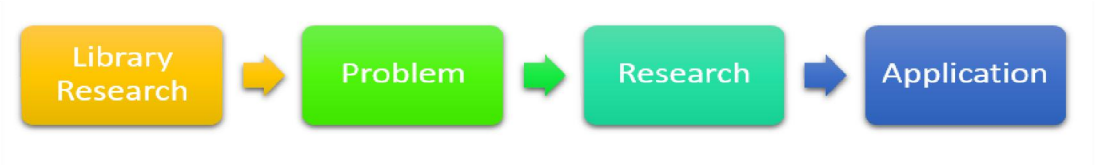

Fig 1. Research Method

Based on the image of the research method above, the explanation will be given below:

A. Literature Study

The first part of this research method is to conduct a study in the library, by conducting a review of previous research studies in order to find new research directions, and also to determine the issues that can be raised in this research**[7]**.

B. Problem

In the second part of the research method this time is to find a problem that will be raised in this research, the problem is found based on a review of previous studies, by conducting a review, the problem raised in this research can be a problem that did not exist before so it can be a basis future research**[8]**.

C. Research

In the third part of the research method this time is to conduct research, by carrying out data collection and data processing using the AHP algorithm method, with the data, the problem solving process raised in this research will be maximized, by finding the results it can be seen the use of the method. AHP maximized**[9]**.

D. Application

The last part of the research method this time is implementing a system in a decision support system, which will help in deciding the graduation of a student's thesis trial, with this system the results will be known more quickly and conclusions from graduation are not objective**[10]**.

AHP algorithm is a method used to make a difficult decision, because a decision is influenced by several things, with this, the decision support system must be absolute and cannot be influenced by anything, with a definite system this system will be very help those in need**[11]**.

III. RESULT AND DISCUSSION

This section will discuss how the data is obtained and how the data processing takes place, and the flow of a research that will be carried out in this research**[12]**, the explanations and pictures will be explained below:

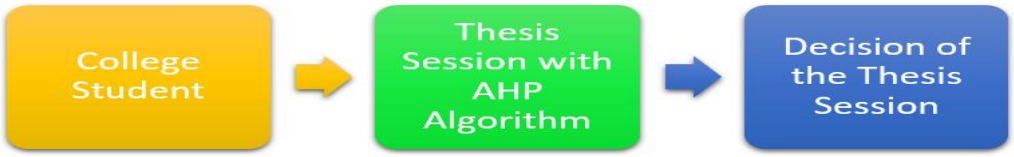

Fig 2. Research Direction

Based on the picture of the research direction above, the explanation will be given below:

A. Student

Students are the object of this research because students are people who conduct a thesis trial, with the presence of students, data will be obtained from these students, the data is obtained based on the results of thesis research conducted by students, with testing, the conclusions will be known**[13]**.

B. Thesis Session

A thesis trial is a process that a student must go through if he wants to graduate from his education, with this trial, the education taken will be tested and the research carried out by students can be justified, with the AHP algorithm, the decision to pass a student thesis trial can be more absolute, and not. influenced by objective decisions**[14]**.

C. Decision

The decision taken in this research is the result of data processing carried out by the AHP algorithm, with this decision it will ensure that the decision is not influenced by things that can influence the decision, so the decision is certain and cannot be changed anymore because it is already carried out the analysis process based on the system**[15]**.

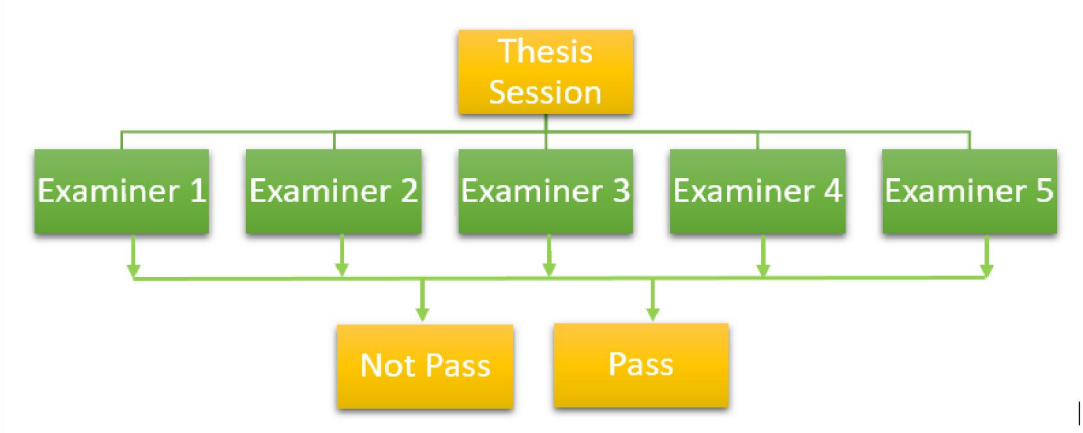

Fig 3. AHP method

Participants in the thesis trial will be tested by 5 examiners and the results of the data from the examiner's assessment will produce a data that will be processed by the AHP algorithm method, with this data it will produce a decision in the form of passing or not passing, with the AHP algorithm method the decision will be certain and cannot in the fox again**[14]**.

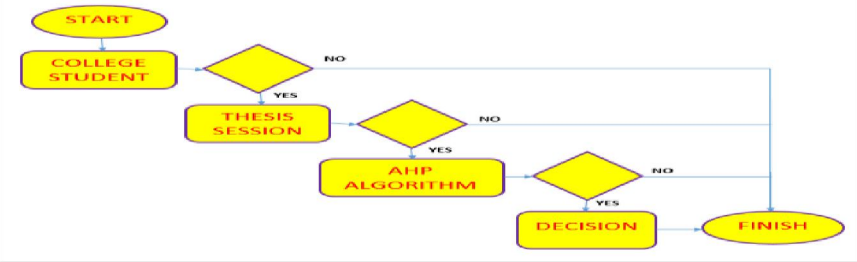

Fig 4. Data Processing Flowchart

Based on the flowchart image above, the explanation will be given below:

Students as research objects in this research conduct a thesis trial in front of the examiners, and data processing will be carried out through the AHP algorithm method, with the test results given by the examiner will produce data, and the data will be processed to determine the best decision for students, this decision can make students graduate and can make students fail, student graduation has been determined based on the system so that the examiner cannot change the system that has been set**[14]**.

D. Data Processing

Table 1. Examiners Table

No	Examiner	Examiner Parameters	Code
1	Examiner 1	Chapter Writing	A1
2	Examiner 2	Neatness	A2
3	Examiner 3	Manners	A3
4	Examiner 4	Delivery of Materials	A4
5	Examiner 5	Mastery of Materials	A5

Based on the table above, the following explanation will be given, there are 5 examiners, and the test parameters are 5 types of hours consisting of chapters of writing, tidiness, manners, delivery of materials and mastery of materials, each of which is given the code A1 A2 A3 A4 and A5.

Table 2. Parameter Table

No	Parameter	Code	Scale
1	Chapter Writing	A1	10 - 100
2	Neatness	A2	10 - 100
3	Manners	A3	10 - 100
4	Delivery of Materials	A4	10 - 100
5	Mastery of Materials	A5	10 - 100

Based on the parameter table above, the following explanation will be given, the parameters will be given a scale of 10 to 100, with this scale, a score will be given from each examiner who tests the student's thesis.

Table 3. Decision Table

No	Graduation Session Scale Value	Session Graduation Letter	Decision
1	1 - 100	E	Not Pass
2	101 -200	D	Not Pass
3	201 - 300	C	Not Pass
4	301 - 400	B	Pass
5	401 -500	A	Pass

Based on the decision table above, an explanation will be given as follows, the value of the 1-100 graduation scale will be given an E value and the decision does not pass, 101-200 letters of trial graduation are D and are declared not passed, 201-300 letters of trial graduation are C and are declared no passed, the grade of 301-400 letters of graduation at the trial was B and passed, 401-500 letters of the entire trial were A and passed.

Table 4. Table of Thesis Examination Participants

No	Name of Participants at the Session
1	Jamal Arifin Putra
2	Rama Sayartin
3	Iranto Jamaludin
4	Syamsir Alam
5	Tomi abdullah
6	Sari Puspita Ningsih
7	Lia Amalia
8	Eko Nurmahdin
9	Nur Syah Dana
10	Awal Sinaga

Based on the exam participant table above, it contains the names of the participants who took the thesis trial, while the list of trial participants can be seen in the table above.

Table 5.Table of Thesis Examination Results

No	Name of Participants at the Session	A1	A2	A3	A4	A5	Total
1	Jamal Arifin Putra	80	85	89	80	87	421
2	Rama Sayartin	90	89	86	87	83	435
3	Iranto Jamaludin	86	87	85	86	87	431
4	Syamsir Alam	85	89	80	85	89	428
5	Tomi abdullah	80	89	86	80	89	424
6	Sari Puspita Ningsih	86	85	86	86	87	430
7	Lia Amalia	85	80	85	85	86	421
8	Eko Nurmahdin	89	86	80	89	85	429
9	Nur Syah Dana	87	85	86	89	89	436
10	Awal Sinaga	86	89	85	80	87	427

Based on the thesis test results table above, the following explanation will be given, the trial participants have taken the thesis trial, then the examiners have given the values in columns A1, A2, A3, A4 and A5, the results of the thesis exam will be total, and total this will be able to produce a decision whether the student will graduate or not.

Table 6. Table of Session Decision Results

No	Name of Participants at the Session	Total value	Session Graduation Letter	Decision
1	Jamal Arifin Putra	421	A	Lulus
2	Rama Sayartin	435	A	Lulus
3	Iranto Jamaludin	431	A	Lulus
4	Syamsir Alam	428	A	Lulus
5	Tomi abdullah	424	A	Lulus
6	Sari Puspita Ningsih	430	A	Lulus
7	Lia Amalia	421	A	Lulus
8	Eko Nurmahdin	429	A	Lulus
9	Nur Syah Dana	436	A	Lulus
10	Awal Sinaga	427	A	Lulus

Based on the table of trial decisions that have been followed by trial participants, with the total score obtained based on the examiners' assessment, the letter of passing the trial can be seen, and the court decision can also be known at that time, with the results of this trial decision, it is absolute and inviolable.

Table 7. Testing Table

No	Parameters Tested	Test result
1	Input Test Values	OK

2	Verification of Session Participant Data	OK
3	Data processing	OK
4	Verification of Trial Participants' Values	OK
5	Decision Output	OK

Based on the test table above, the test results are the maximum, from the input data processing value, to the output of the graduation decision, the results are positive and OK, so this test table is a checklist of the system created and shows good results.

IV. CONCLUSION

The use of the AHP method has been able to maximize decisions in student thesis sessions, with the existence of a decision support system based on the AHP method, the decision is absolute and cannot be contested and this decision is not objective based on the examiner. Based on the results of testing all systems can maximize decisions, the AHP method is a very appropriate method to be applied in making a decision to pass a student thesis trial.

Future research is how to combine several algorithms into one algorithm, which can support decisions in the student thesis trial, with comparisons it can be seen which method will be very effective in helping make decisions.

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