THE SUPPORT SYSTEM FOR THE SELECTION OF OUTSTANDING FOREIGN STUDENTS UIN WITH TOPSIS METHOD

UNDERGRADUATE THESIS

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JURUSAN TEKNIK INFORMATIKA
FAKULTAS SAINS DAN TEKNOLOGI
UNIVERSITAS ISLAM NEGERI MAULANA MALIK IBRAHIM
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UNDERGRADUATE THESIS

A Thesis is submitted to
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FAKULTAS SAINS DAN TEKNOLOGI
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2019

APROVAL PAGE

APPLICATION OF DECISION SUPPORT SYSTEM IN SELECTION PIONI R ATHLETE USING AHP-TOPSIS METHOD (CASE STUDY : SPORTS COMPETITIONS ON (PIONIR) UIN MALANG)

UNDERGRADUATE THESIS

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CONFIRMATION PAGE

THE SUPPORT SYSTEM FOR THE SELECTION OF OUTSTANDING FOREIGN STUDENTS UIN MALANG WITH TOPSIS METHOD

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States that an undergraduate thesis mentioned above is my original work except for the quotations and statements whose resources are acknowledged on the references. Any shortcoming in this present work, therefore, are entirely my own responsibility.

Moreover, this work is not plagiarism result and if it is found that this statement is false, my academic records will attest to invalidation and I will be responsible for that as well.

Malang, 27 September 2019

Signed by,

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MOTIVATION

وعن معاذ بن جبل ـــ رضي الله عنه ـــ أنه (صلى الله عليه وسلم) قال: «ليس من أخلاق المؤمن الملق إلا في طلب العلم

"Knowing Is Not Enough; We Must Apply. Wishing Is Not Enough; We Must Do."

"Gafkana bashar baad u tahee, Hadaad ka garowdo qalad. Gob bay caada deeda tahay, Hadaad Gorod diidan tahay, Ku koob dirirtaada Gorod, Ha nicin gobol kuu ka yimi. Ha giijin xargaha ha jarin, Ha goyn waxa laysku yahay, Mar baa jirta gumuc la riday, Galaafto ninkii ridee, Nin iin lahow daa gujada,"
- Abwaan Mohamed Xaashi Dhamac "Gariye "(AHU)

OFFERINGS PAGE

In This Chance I Want To Thank :

My Family :

AlhamduLillah thanks to the prayers, support and motivation of all sides, the pole can pass and get what is the dream of me. Hopefully it can be blessing and useful.

My Lecturers :

Thank you for all the knowledge and upbringing that has been given so far, as well as patience in guiding me. Hopefully blessing and become a charity for all the lecturers.

My Classmates :

Teknik Infromatika Angkatan 2015 All Students Thank you for encouraging and accompanying me in joy and sorrow, hopefully blessings and the benefits of their knowledge.

My Organizational Friends:

foreign friends especially (Somali brothers) i hope all of them hopeful and success life thanks all of them to help and supporting me in every aspect Lots of knowledge, experience and benefits that I receive from them. Hopefully it can be blessing and all the benefits.

PREFACE

بِسْمِ اللَّـهِ الرَّحْمَـٰنِ الرَّحِيمِ

Assalamu'alaikum Wr. Wb.

Praise be to God, the researchers pray for the presence of Allah SWT who bestows all His mercy and gifts, as well as prayers and greetings, hopefully they are still bestowed upon the Prophet Muhammad, who has brought guidance to all humanity, namely Islam. So this thesis can be completed with the title **: "The Support System For The Selection Of Outstanding Foreign Students Uin Malang With Topsis method, "**

With all humility, the author realizes that in completing this thesis can not be separated from the role of various parties who have provided much support, motivation, guidance, and guidance. On this occasion the authors would like to thank**:**

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3. Roro Inda Melani,M.T,M.Sc ,as the Supervisor II, who has provided guidance, input, and direction in the process of completing this thesis.
4. My Parents and all the family who always pray for me and provide moral and spiritual support. provide motivation and prayer that always accompanies so that this thesis is finished.
5. All foreign friends , who always give encouragement and encouragement to quickly finish this thesis.
6. Friends of all who have helped in the completion of this thesis.
7. Informatics Engineering Generation 2015 All Students who have given motivation and enthusiasm so that this thesis can be completed.
8. foreign friends especially (Somali brothers) who have helped in the process of completing a thesis

Nothing is perfect except for Allah SWT, for all the shortcomings and imperfections, the authors realize that the completion of this thesis there are still deficiencies. Hopefully this thesis will provide many benefits.

Wassalamu'alaikum Wr. Wb.

Malang, 27 September 2019

Author

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ABSTRACT

Ali Omar Mohamoud. 2019. **The Support System For The Selection Of Outstanding Foreign Students Uin Malang With Topsis method**, Thesis. Department of Informatics,Faculty of Science and Technology, State Islamic University (UIN) Maulana Malik Ibrahim Malang.

Supervisor: (I) Dr. Suhartono,M.Kom (II) Roro Inda Melani,M.T,M.Sc

Keywords: TOPSIS methods, Decision Support System, Student Selection Determination

World class University is a place for students to gain academic knowledge. In general, every high World Class University will split their foreign student Uin malang World Class University to focus on 5 majors. Those 5 choices majors are GPA (Semester), Achievement English Language Mischief Personality and Ta'lim Al Qur'an (Religion). This student selection system makes student to choose and determine the majors according to their ability. This study aims to assist the process of determining student majors at high University level (Uin Malang). The study used TOPSIS Method. This method is chosen because it uses the principle that the chosen alternative must have the shortest distance from the ideal solution and furthest from the ideal negative solution. This method is commonly used to solve practical decision-making, because the concept is simple and easy to understand. It is also efficient and has the ability to measure the relative performance and alternative decisions. The decision support system of student majors determination is made by using PHP programming language and MySQL database .The current system is still using the manual way by spreading paper sheets containing test related problems, so it takes a lot of time and energy in the process of determining the major. TOPSIS method can determine the weight of each criterion. So that, the process of determine the criteria in priority and determine the ranking accurately and easily. From the test data, it can be concluded that the accuracy value is 84% from the result of comparison of initial data with application data.

ABSTRAK

Ali Omar Mohamoud. 2019. **Sistem Pendukung Pemilihan Mahasiswa Asing Berprestasi Uin Malang Dengan Metode Topsis**, Skripsi. Jurusan Informatika, Fakultas Sains dan Teknologi, Universitas Islam Negeri (UIN) Maulana Malik Ibrahim Malang.

Pembimbing: (I) Dr. Suhartono,M.Kom (II) Roro Inda Melani,M.T,M.Sc.

Kata kunci: Metode TOPSIS, Sistem Pendukung Keputusan, Penentuan Seleksi Siswa

universitas kelas dunia adalah tempat bagi mahasiswa untuk mendapatkan pengetahuan akademik. Secara umum, setiap universitas tinggi akan membagi mahasiswa asing mereka universitas kelas dunia Uin malang untuk fokus pada 5 jurusan. Kelima pilihan jurusan tersebut adalah IPK (Semester), Prestasi (Achievement) Bahasa Inggris(English Language) kepribadian kenakalan (mischief personality), dan Ta'lim Al Qur'an (Agama). Sistem seleksi siswa ini membuat siswa memilih dan menentukan jurusan sesuai dengan kemampuannya. Penelitian ini bertujuan untuk membantu proses penentuan jurusan mahasiswa di tingkat Universitas yang tinggi (Uin Malang). Penelitian ini menggunakan Metode TOPSIS. Metode ini dipilih karena menggunakan prinsip bahwa alternatif yang dipilih harus memiliki jarak terdekat dari solusi ideal dan paling jauh dari solusi negatif ideal. Metode ini umumnya digunakan untuk menyelesaikan pengambilan keputusan praktis, karena konsepnya sederhana dan mudah dipahami. Ini juga efisien dan memiliki kemampuan untuk mengukur kinerja relatif dan keputusan alternatif. Sistem pendukung keputusan penentuan jurusan mahasiswa dibuat dengan menggunakan bahasa pemrograman PHP dan database MySQL. Sistem saat ini masih menggunakan cara manual dengan menyebarkan kertas lembar yang berisi masalah terkait tes, sehingga dibutuhkan banyak waktu dan energi dalam proses menentukan jurusan. Metode TOPSIS dapat menentukan bobot masing-masing kriteria. Sehingga, proses menentukan kriteria menjadi prioritas dan menentukan peringkat secara akurat dan mudah. Dari data uji, dapat disimpulkan bahwa nilai akurasi adalah 84% dari hasil perbandingan data awal dengan data aplikasi.

ملخص

علي عمر محمود. ٢٠١٩. نظام الدعم لاختيار الطلاب الأجانب المتفوقين في
أطروحة. قسم المعلوماتية ، كلية العلوم تبسيس الجامعة الإسلامية الحكومية مولانا مالك إبراهيم مالانج مع أسلوب
.مولانا مالك إبراهيم مالانج والتكنولوجيا ، جامعة الدولة الإسلامية
مشرف:(I) الدكتور سوهارتونو (II) رورو إندا ميلاني ، ماجستير ، ماجستير

ونظام دعم القرار ، وتحديد اختيار الطلاب تبسيس الكلمات الرئيسية: أساليب
جامعه عالميه المستوي هو مكان للطلاب للحصول علي المعرفة الاكاديميه. بشكل عام ، فان كل جامعه عاليه المستوي العالمي
مالانغ جامعه الدرجة العالمية للتركيز علي 5 التخصصات. هذه الخيارات الخمسة الكبرى هي Uin تقسيم الطالب الأجنبي
المعدل التراكمي (الفصل الدراسي) ، وتحقيق شخصيه الأذى اللغة الانجليزيه والقران الكريم (الدين). هذا النظام اختيار
الطلاب يجعل الطالب لاختيار وتحديد التخصصات وفقا لقدرتهم. تهدف هذه الدراسة إلى المساعدة في عمليه تحديد
يتم اختيار هذا .TOPSIS مالانغ). استخدمت الدراسة أسلوب Uin) التخصصات الطلابية علي المستوي الجامعي العالي
الأسلوب لأنه يستخدم مبدا ان البديل المختار يجب ان يكون أقصر مسافة من الحل المثالي وابعد من الحل السلبي المثالي.
ويشيع استخدام هذه الطريقة لحل عمليه صنع القرار ، لان المفهوم بسيط وسهل الفهم. كما انها فعاله ولديها القدرة علي قياس
وقاعده PHP الأداء النسبي والقرارات البديلة. في يتم اتخاذ قرار نظام دعم التخصصات الطلابية تحديد باستخدام لغة البرمجة
النظام الحالي لا يزال يستخدم الطريقة اليدوية عن طريق نشر الأوراق الورقية التي تحتوي علي اختبار .MySQL بيانات
تحديد وزن TOPSIS المشاكل ذات الصلة ، لذلك يستغرق الكثير من الوقت والطاقة في عمليه تحديد الرئيسية. يمكن للأسلوب
كل معيار. التالي ، فان عمليه تحديد المعايير في الاولويه وتحديد الترتيب بدقه وسهوله. من بيانات الاختبار ، يمكن استنتاج ان
قيمه الدقة هي 84% من نتيجة مقارنه البيانات الاوليه مع بيانات التطبيق

CHAPTER I

INTRODUCTION

1.1. Research Background

Education is an important factor in the development of a country's progress. Not infrequently in the very rapid progress of today, many students go to study abroad to obtain a high degree. Information is something that is needed in an organization or agency, organization or public institution, government, or education. Information is also a necessity for related parties in decision making. Information is data that has been processed into a form that is meaningful to users, which is useful in making current decisions or supporting information sources (Kusrini, 2007). An information system in the activity of selecting outstanding students in state and private universities serves as a benchmark for assessing human resources which is an important aspect in developing a country. To stimulate student achievement to take education optimally there needs to be an appreciation of the individual student.

The State Islamic University (UIN) Malang is one of the well-known state universities in the East Java Province of Indonesia by having thousands of female students from domestic and abroad. Where every year has graduated many of the best cadres of resources who are ready to plunge into the world of employment. The university has a vision and is committed to always produce graduates who are noble, professional maturity, and become the centre of technology and art science development. This university aspires to become a centre of excellence and a centre of Islamic civilization while implementing Islamic teachings as a blessing for the universe (*Al Islam Rahmatan Lil Al Alamin*).

The University wants its graduates to love and be able to understand the Holy Qur'an independently, be able to speak Arabic, and be able to get along internationally with English in which both are positioned as instruments or instruments that must be mastered (Nurul, 2018). It has thousands of students who come from various parts of the city on the island of Java to students from abroad who are interested in studying at this campus. The number of applicants increases every year where an average of 3500 students who enrol only 1500 students will be accepted on this campus (Kami, 2009).

As actors of education students are required to obtain educational results with satisfying predicates, both students from within the country as well as abroad. Achievements that are highly

anticipated and coveted by families in the home who expect great results from their children who are educated. In spurring student achievement, there needs to be moral support from the family and the campus. The availability of sufficient time for parents to discuss the development of their children in school is one of the important things in monitoring and evaluating the success of children (Graha, 2007). Development of learning in synergy between Intra curricular and extracurricular activities by the campus allows the formation of a whole student identity and integrates the development of intellectual and soft skills that students will need later in community life (Soetanto, 2013). So that students can be provoked by their emotions, interests, and talents to continue to gain achievements in the campus alma meter environment.

The current election is still based on one unilateral decision without seeing the positive aspects of other details arising from the personalities of each student. Due to the occurrence of these problems there is a need for a solution so that in the assessment of students performing more efficiently and effectively, the writer tries to create a "The Support System For Selection Of Outstanding Foreign Students UIN Malang With TOPSIS Method" which is expected to overcome the problem. TOPSIS (Technique for Order Preference Similarity Ideal Solution) is a method used to solve Multi Attribute Decision Making This study aims to build a decision support system, which serves as a tool For selection of outstanding foreign students UIN MALANG with TOPSIS method in determining the best Outstanding Foreign Student . In order for the purpose Simple Additive Weighting Method is often also known as the weighted sum method.

The basic concept of the SAW method is to find a weighted sum of performance ratings on each alternative of all attributes. The SAW method requires the process of normalizing the decision matrix (X) to a scale that can be compared with all available alternative ratings (Kusumadewi, 2006).

This is method used to solve Multi Attribute Decision Making of this DSS to succeed well, it is assisted by using one of the decision-making methods, namely, simple additive weighing Decision making in the selection of outstanding employees uses several criteria in the assessment process.

Competing with goodness includes worship. because it is a positive thing that affects goodness or benefit, every competition in goodness is beneficial, by working hard to get the best results in obtaining goodness is just trying hard the best in worship. Allah SWT has said in Q.S Al Qasas: 77.

وَٱبۡتَغِ فِيمَآ ءَاتَىٰكَ ٱللَّهُ ٱلدَّارَ ٱلۡأٓخِرَةَۖ وَلَا تَنسَ نَصِيبَكَ مِنَ ٱلدُّنۡيَاۖ
وَأَحۡسِن كَمَآ أَحۡسَنَ ٱللَّهُ إِلَيۡكَۖ وَلَا تَبۡغِ ٱلۡفَسَادَ فِي ٱلۡأَرۡضِۖ إِنَّ ٱللَّهَ لَا يُحِبُّ
ٱلۡمُفۡسِدِينَ ٧٧

" But seek, through that which God has given you, the home of the Hereafter; and [yet], don't forget your share of the world. And do good as God has done good to you. And desire not corruption in the land. Indeed, God does not like corrupters. "

عن أبي هريرةرضي الله عنه قال: قال رسول الله صلى الله عليه وسلم:
((إذا مات الإنسان انقطع عنه عملُه إلا من ثلاثةٍ: إلا من صدقةٍ جاريةٍ، أو علمٍ يُنتفع به، أو ولدٍ صالحٍ يدعو له)).
رواه مسلم، باب ما يلحق الإنسانَ مِن الثواب بعد وفاته (1631).

"It was narrated that Abu Hurayrah (may Allah be pleased with him) said: The Messenger of Allah (peace and blessings of Allah be upon him)
"If a person dies, his work is cut off except for three: only from a charity that is valid, or a knowledge that benefits him, or a good son who calls for him."

1.2 Research Questions

Based on the research background, the problem statement or research question in this research is How many of accuracy select of outstanding student UIN Malang using the (TOPSIS) method in Multi Attribute Decision Making?

1.3 Objective of Research

Building a Decision Support System and helping the campus to select outstanding foreign students in Malang UIN using the TOPSIS method

1.4 Benefit of Research

It is hoped that this research can provide several benefits including:

- Determine the most outstanding foreign students at UIN Malang from some of the best student alternatives
- Become a reference for the campus in providing rewards for students from abroad

1.5 Scope of Problem

There are several limitations to the problem in this study including:

- Data used are data on students from the Maulana Malik Ibrahim UIN Malang campus
- Value of the criteria's used in this study is the value obtained from the assessment of students in terms of GPA semester, achievement, English language, Mischief Personality, and Ta'lim Al Qur'an
- Programming languages will used in this study is the PHP language and MySQL database

CHAPTER II

LITERATURE REVIEW

2.1 Decision Support System

DSS is a combination of models and data in solving semi-structure and unstructured problems involving users or users, where no one knows for sure how these decisions should be made (Turban, 2001). DSS can be seen as an achievement or a philosophy rather than an appropriate methodology (Volonio, 2010). From some understanding, DSS can be interpreted, namely a system that is able to solve problems correctly and precisely, which aims to help decision making in choosing one of the various alternative decisions that are the result of processing information data.

At this time as the development of information technology is increasingly advanced where the need for accurate and effective information in one example of the achievement of student selection activities as one of the important factors to support the creation of a quality *alma meter* results. The lack of attention from the campus to the achievements of students, especially students from abroad and as if the assessment of students is more likely to depend only on the rector's reference. Of course this can affect the mentality, creativity, and achievements of students in addition to their activities in taking education. In this case the author conducts a study for decision-making on the selection of students from overseas who have excelled at UIN Malang so that it can be a reference for the campus and other educational institutions in giving more attention to outstanding students.

Decision Support System as an expandable system to be able to support ad hoc data analysis and decision modelling , oriented towards future planning, and used at irregular and unplanned intervals (Moore and Chang, 1980). Decision support system as a computer-based system consisting of three interacting components: a language system (a mechanism to provide communication between users and other DSS components), a knowledge system (repository of problem domain knowledge that exists in DSS as data or as a procedure), and problem processing systems (the relationship between two other components, consisting of one or more general problem manipulation capabilities needed for decision making (Bonczek et al., 1979).
Sprague and Carlson define decision support systems, as a system that has five main characteristics (Sprague and Carlson, 1993):

1. Computer-based systems
2. Used to help decision makers
3. To solve complex problems that are impossible with manual calculations
4. Interactive simulations
5. Data and analysis models as main components.

Decision support system (DSS) is a system that has the following criteria (Turban, 1995):

1. The use of models, communication between decision makers and systems is established through mathematical models, so decision makers are responsible for building mathematical models based on the problems they face.
2. Computer-based, this system brings together human judgment (decision makers) with computer information. This computer information can come from computer software which is an implementation of numerical methods for the relevant mathematical problems.
3. Flexible, the system must be able to adapt to changes in existing problems. So the decision maker must be allowed to make changes to the model that has been given to the system, or provide a new model.
4. Interactive and easy to use, decision makers are responsible for determining whether the answers given by the system are satisfactory or not. However the system is tasked with supporting, not replacing decision makers. So the system must have interactive capabilities: decision makers must be allowed to explore alternative answers by varying the parameters that exist in the system.

2.1.1 Technique for Order Preference Similarity Ideal Solution (TOPSIS)

Technique For Order Preference By Similarity To Ideal Solution or what is also known as TOPSIS is one of the multi-criteria decision making methods that was first introduced by Yoon and Hwang in 1981. (Julianti, Irawan M.I dan Mukhlas I, 2011). TOPSIS is based on a concept where a good chosen alternative not only has the shortest distance from a positive ideal solution, but also has the longest distance from a negative ideal solution. The concept is simple and easy to understand , its computation is efficient and has the ability to measure the relative performance of simple mathematical decision alternatives.

The steps in the TOPSIS method are as follows:

1. Specifies the weight value of each criterion

2. Make an *Xij* matrix consisting of alternative m and n criteria that contain the weights of each alternative against each criterion
3. Calculate the divider value on each criterion by summing the results of the rank of all alternative values
4. Make normalized decision matrix by calculating the criteria value distribution of each alternative with the dividing value of each criterion
5. Make normalized and weighted decision matrix by calculating the weight values of each criterion divided by the values of normalized decision matrix
6. Determine the positive ideal solution (*SI*+) and the negative ideal solution (*SI*-), where *SI*+ the maximum value and *SI*- the minimum value of each criterion
7. Calculate the distance using the Euclidean distance calculation (CI) to obtain the value of the positive *SI*+ ideal value and the value of the negative *SI*-
8. Calculate proximity relative to the most ideal solution

TOPSIS requires a performance rating of each *Ai* alternative in each *Ci* criterion that has been normalized as:

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

Where $i = 1, 2.....m$ and $j = 1, 2.....n$

The ideal *A*+ positive solution and the ideal *A*- negative solution can be determined based on the normalized weight rating (*yij*) as:

$yij = wirij$

With $i = 1, 2.....m$ and $j = 1, 2.....n$

$A+ = (y1^+, y2^+, ..., yn^+)$

$A- = (y1^-, y2^-, ..., yn^-)$

$$y_j^+ = \begin{cases} \max_i y_{ij} & if\ j = profit\ attribute \\ \min_i y_{ij} & if\ j = cost\ attribute \end{cases}$$

$$y_j^- = \begin{cases} \min_i y_{ij} & if\ j = profit\ attribute \\ \max_i y_{ij} & if\ j = cost\ attribute \end{cases}$$

……(2)

The distance between the alternative *Ai* and the positive ideal solution is formulated as:

$$D_i^+ = \sqrt{\sum_{j=1}^{n} \left(y_i^+ - y_{ij}\right)^2} \quad \text{i=1,2,…,m.}$$

……(3)

The distance between the alternative *Ai* and the negative ideal solution is formulated as:

$$D_i^- = \sqrt{\sum_{j=1}^{n} \left(y_{ij} - y_i^-\right)^2}$$

……(4)

The preference value for each alternative (*Vi*) is given as:

$$Vi = \frac{Di^-}{Di^- + Di^+}$$ ……(5)

A larger *Vi* value indicates that the alternative *Ai* is more chosen.

2.2 Design of System

Defined about as drawing, planning, and making sketches or arrangements of several separate elements into one whole unit. System design is designing a system solution that has been conceptualized when analysing the system based on the needs and problems of the system, so that the system can be applied using computer technology (Mulyani, 2016). Design here concerns the configuration of the software and hardware components needed from the system to be built. The purpose of system design is to provide a clear picture and complete design to the designer and the technical experts involved.

2.2.1 Basic Principles of Design

a. Monolithic System Design

Defining design is more emphasized on system integration where the process of selecting types of sources can integrated in order to obtain effective system especially in the use of costs

b. Modular System Design

Defining design is more emphasized on functions that have low independence into separate modules (functional sub systems), such as:

- Data Collection, process of gathering and measuring information about targeted variables in a strong system
- Data Processing, process of converting data into information or knowledge for users
- Data Storage, a component of the recording media that maintains digital data that is used at a certain time
- Information Report, presentation of packaged digital data reports to present processed data to users

2.2.2 System Design Approach

a. Driven Approach Model

It is one approach in system design using model depiction as documentation and blueprint for developing a system

b. Rapid Application Development

Is a model of software development systems or systems that are classified into incremental techniques and emphasize short, short, and fast development cycles

c. FAST-System Design

Is a model of the software development system or system that uses a framework that is flexible enough for various types of projects and strategies

2.3 Related Research

This research is aimed at selecting suppliers that best fit the specified criteria, namely product quality, service quality, delivery time and price. Research that has been published in this International Journal uses the AHP method to evaluate the weight of the criteria mentioned earlier. Then the criteria we have evaluated will be processed with the TOPSIS method to rank supplier ratings. Application of AHP and TOPSIS method for supplier selection problem. Pema Wangchen Bhutia, Ruben Phipon from Institute of Technology Sikkim, India.(2012).

The study compared the accuracy of the 2 AHP-TOPSIS and TOPSIS methods. The case used by researchers is the acceptance of PPA scholarships and receipt of BBM scholarships. The criteria for recipients of PPA and BBM scholarships consist of 12 criteria, namely GPA, semester, achievement, amount of parents' income, family condition, recipients of government scholarships, age, parental status, dependents of parents, college siblings, entry pathways, and student levels. In PPA scholarships, the priority order of criteria starts from GPA, semester, achievement, and the amount of income of parents. While the priority order of criteria for BBM scholarships starts from the amount of parents' income, achievements, and semester. Then proceed with the sequence of family conditions to the level of students for PPA and BBM scholarships. AHP-TOPSIS method gets a greater accuracy value of 100%, while the TOPSIS method gets an accuracy value of 73.075%. The comparative Analysis of Combined AHP and TOPSIS Methods with the TOPSIS Method. Annisa Arfani Yusuf from Gorontalo University(2013).

Research using AHP and TOPSIS methods can also be used in evaluating and ranking bank performance. Research uses criteria from professional observers. The researcher uses the AHP method to calculate capital ratios, weight the criteria and also search for weighted matrices, then it will be processed using TOPSIS for sorting Bank ranks. Performance Evaluation and Ranking of Turkish Private Banks Using AHP and TOPSIS. K. Batu Tunay and Ilyas Akhisarfrom Marmara University Turkey (2014).

This research is a form of evaluation of a system that has been made before using the Simple Addictive Weighting (SAW) method. Input method weighting criteria, cases used as discussion and also the criteria used are the same as previous research. By using the AHP-TOPSIS method, researchers found greater accuracy of 87% than using only one method, which in the previous study used the Simple Addictive Weighting (SAW) method which had an accuracy of 80%. Implementation of *Analytical Hierarchy Process - Technique For Order Preference By Similarity To Ideal Solution* (AHP-TOPSIS) to Determination of Selection of Pencak Silat Athletes. Jakti Kinayung Prasojo, Rekyan Regasari Mardi Putri, Sutrisno from Brawijaya University (2015).

Research using AHP and TOPSIS methods can also be used in evaluating and ranking bank performance. Research uses criteria from professional observers. The researcher uses the AHP method to calculate capital ratios, weight the criteria and also search for weighted matrices, then it will be processed using TOPSIS for sorting Bank ranks. Performance Evaluation and Ranking of Turkish Private Banks Using AHP and TOPSIS. Beşikçi, Kececi, Arslan, & Turan (2016).

Based on the design results of the Application of the TOPSIS Method for support systems Decision on the Determination of Poor Families in Panca Karsa II Village, conclusions can be drawn as The system used to be able to overcome the weaknesses contained in the old system and provide accurate results in determining the Poor Family. Application of the TOPSIS Method for decision support systems can provide results maximum in terms of decision making by sorting alternative people poor start from the poorest. Based on the results of the white box test, it is concluded that the decision support system is free from program errors with total Cyclomatic Complexity = 6, Region = 6, and Independent Path = 6. Application of topsis method for support systems Decision of determining the poor family indesa panca karsa ii Village(2017).

This research is a follow-up study from a study conducted by Jakti Kinayung Prasojo et al. The difference is, this study combines the AHP method with the Fuzzy method in the criteria weighting process. Determination of criteria also with literacy studies not by taking training data. Input weighting criteria, previous research using random search method, namely randomizing the values to obtain consistent values, while in this study using input values directly from experts who with the supervised method will be converted into an AHP comparison matrix. Decision

Support System for Pencak Silat Athlete Selection Using the Fuzzy AHPTOPSIS Methods. Wahyu Joko Samudro from State Islamic Univesity of Maulana Malik Ibrahim Malang (2018).

2.4 Scope Research

Based on the general guidelines for the selection of outstanding students issued by the Directorate General of Higher Education in the Academic Directorate of the Ministry of National Education in 2010, in assessing outstanding students guided by five components such as GPA Semester, scientific papers, organization activities, English language skills, and personality (Wahyudiono, 2012). GPA Semester is taken from the student GPA values in each semester while taken data student in BAK uin malang. Achievement is a value taken from student achievements while participating in activities around the campus. Language is a value derived from the English language skills of students who are used to communicate while it taken data student the English canter on campus uin malang. Mischief Personality is the value of student behaviour and attitudes while in the campus environment and mahad uin malang. Ta'lim Al Qur'an. is the value of student activity in participating in Ta'lim Al Qur'an taken data student by the mahad uin malang. Where these criteria have their respective weight set by author in conducting his research for GPA Semester 40%, Achievement 12%, English Language 13%, Mischief Personality 20%, and Ta'lim Al Qur'an 15%.

I used scale to Calculating percentage change. Percentages are also very useful if you wish to quantify change. This is because they provide a result in the form of parts per hundred that is usually more readily understandable and comparable than when the information is presented as raw values and used three Criteria Achievement and English Language and Ta'lim Al Qur'an.

2.5 Data Flow Diagram (DFD)

Data Flow Diagram is a description of a system logically by using certain notations where it can be used to understand the system logically, structurally and clearly (Ismael, 2017). DFD is a system design tool that is oriented to the flow of data with the concept of decomposition that can be used to describe the analysis and design of systems that are easily communicated to users. There are several DFD symbols including:

1. supporting the analysis and requirement stage of system design;
2. a diagramming technique with annotation;
3. describing a network of activities/processes of the target system;
4. allowing for behaviors of parallel and asynchronous ;
5. step wise refinement through hierarchical decomposition of processes.

DFD presents a symbol system to describe data flows and a decomposition mechanism to describe a system at various detail levels.

2.6 Entity Relationship Diagram (ERD)

ERD is a data model in the form of graphical notation in conceptual data modeling that describes the relationship between a storage or system user. Entity is an object that can be defined as a user that is an important thing in the context of a system that will be created. Relationship here is the relationship between entities one with the other entities that are interconnected on a system.

There are several ERD component including:

1. ER model allows you to draw Database Design
2. It is an easy to use graphical tool for modeling data
3. Widely used in Database Design
4. It is a GUI representation of the logical structure of a Database
5. It helps you to identifies the entities which exist in a system and the relationships between those entities

2.7 Flowchart

Flowchart is a sequence of work steps that are described using symbols arranged systematically to connect between a process (instruction) and other processes in a program (Nanang, 2017).

If an analyst and programmer will make a flowchart, there are a number of instructions that must be considered, such as:

1. Diagram Divert from top to bottom and left to page right.
2. Activities that are understood must be careful and this resolution must be understood by the reader.
3. When the activity starts and ends must be clear.
4. Every step of the activity must be described using verb descriptions ,for example calculating sales tax.
5. Every step of the activity must be in the right order.
6. Use standard flowchart symbols.
7. The scope and range of activities being addressed must be Carefully explored .The branches that interrupt the activity being developed need not be drawn on the same chart .The connector symbol must be used and the branching is placed on a separate page or removed the branching is not loaded with the system.

2.8 PHP Programming

Hypertext Preprocessor or in short PHP is a programming language used to create dynamic web, of course the PHP programming language is different from HTML. PHP is an open source server-side web programming language that is an integrated script with HTML (Anhar, 2010). In the PHP programming language the script or code that is created cannot be displayed on a browser web page, but must be processed first by a web server and then displayed in the form of a web page in a web browser, PHP scripts can also be inserted in HTML and scripts PHP always starts with *<?php* and ends with *?>*. Database management is usually used for PHP programming such as MySQL. PHP is also called the server side script programming language, because PHP is processed on the server computer. Almost every UI develop that is currently available is always compatible in reading PHP programming syntax. Initially PHP was short for Personal Home Page (personal site) first created by Rasmus Lerdorf in 1995 (Winarno, 2014). At that time PHP was still called Form Interpreted (FI), whose form was in the form of a set of scripts used to process form data from the web. Furthermore Rasmus released the source code for the public and named it PHP / FI. With the release of the source code being open source, many developers are interested in developing PHP. In November 1997, PHP / FI 2.0 was released which was implemented in program C.A company called Zend rewrote PHP interpreters to be cleaner, better, and faster. Then in June 1998, the company released a new interpreter for PHP and inaugurated the release as PHP 3.0 and stands for PHP modified Hypertext Preprocessing. Some advantages of the PHP programming language is a scripting language that does not compile in its use. PHP is open source making it easier for other developers to develop a system that has been built with the PHP programming language.

2.9 MySQL

MySQL is a database management system software (English: Database Management System) or a multithreaded, multi-user DBMS, with around 6 million installations worldwide. MySQL AB is a software company founded in Sweden in 1995 where the company was the creator of MySQL and made MySQL available as free software under the General Public License (GPL) license. GPL is a software license that guarantees the freedom to use, study, share and modify software (Solihin, 2010). MySQL can be categorized as an open source software or database creation software and can run on various operating systems both Windows and Linux.

Reliability of a database system can be known from the optimal way of working in processing SQL commands made by users and application programs that use them. MySQL supports database transaction operations and non-transaction operations. In non-transaction operations, MySQL can be said to be superior in terms of performance compared to other database software, but there is no guarantee of the reliability of stored data, so non-transaction operations are only suitable for types of applications that do not require data reliability such as blogging, CMS, and the like. For system requirements aimed at businesses it is strongly recommended to use it, only as a consequence MySQL's performance is not as fast as performance in non-transaction operations. Various MySQL data types that are often use

CHAPTER III
RESEARCH METODOLOGY

3.1 Research design

3.1.1 Object of research

This research aims to build a decision support system that can help users in this case the selection committee of state Islamic University Of Malang. The decision support system will be built using and helping the campus to select outstanding foreign students in (UIN) and technique for order preference by similarity to ideal solution (TOPSIS) methods. Determination of criteria and weighting criteria by expert FMADM ,This research is expected to be able to provide recommendations for select of outstanding foreign students criteria who pass the selection with high accuracy. It is expected that the system can help users.

In this study, researchers examined the level of accuracy of the TOPSIS method in the DSS in determining ma majors. The input will be in the form of scores from criteria tests, and the average score of report cards. Then it will be processed by a system that will issue output in the form of departmental information that can be considered by the child to take the course.

The researcher chose the TOPSIS method because the concept is simple and easy to understand, its computation is efficient and has the ability to measure the relative performance of decision alternatives in a simple mathematical form. The alternative referred to in this case is a program of science, social studies, and language majors ,From the data that has been obtained processed using the TOPSIS method, the highest and lowest possible values are obtained in each department. For larger values later that will be the chosen alternative.

3.1.2 Types of Research

For this type of research is a quantitative method, namely with data obtained from surveys both conducted by researchers and taken from institutions that have related data and the institution can be trusted.

3.1.3 System Requirements Analysis

The process of building a decision support system using the TOPSIS method, the following must be fulfilled by the system.

1. The system must get the criteria, subcriteria, criteria value and initial weight of the subcriteria entered into the system.

2. The system must be able to calculate the TOPSIS method to find the criteria weight and the weight of the appropriate subcriteria by using criteria, subcriteria, criterion values and initial subcriteria weights obtained from experts in the previous process.

3. The system must be able to perform calculations using the TOPSIS method with input from the user in the form of the athlete's value which then produces a preference value that can be used in the ranking process.

3.2 Material of Research

The material used in the design of this outstanding overseas student selection system is in the form of primary data and secondary data.

3.2.1 Primary Data

Primary data is data obtained directly from the object of research, in this case the author uses direct activities in the form of interviews with the campus

3.2.2Secondary Data

Secondary data is data obtained directly from the object of research in this case the author obtained a report file in the form of data of foreign student.

3.3 Tool of Research

The tool used to support the author in designing this high-achieving overseas student selection system is in the form of hardware and software.

3.3.1 Hardware

- Operating System : Windows 10 Professional
- Processor :Intel Core i52430M 2,40Ghz
- Memory : 4096 Mb RAM
- Hard Disk : 500 Gb
- Graphic Card : Intel HD Graphic 3000

3.3.2 Software

- Text Writing : Microsoft Word 2010
- Browser : Google Chrome 69.0
- IDE Developed : Notepad++
- Web Service : Xampp 3.2.2
- Diagram Design : Pacestar UML Diagrammer

3.4 Flowchart System

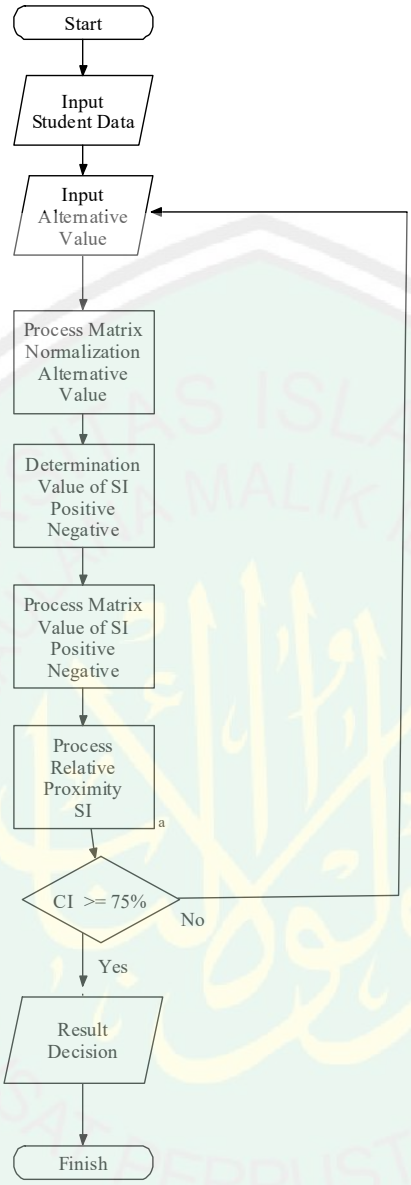

Figure 3.1 Flowchart of Achieving Student Selection System

The flow chart of the test results about Topsis starts from inputting student data and alternative value and process matrix normalization alternative value and determination value of si positive negative, process matrix value of si positive negative, process relative proximity si, and finally get result decision then finish student selection system test values, the calculation process using the topsis method to find results figure will be presented in section on manual calculation.

3.5 Planning of System

3.5.1 DAD Context

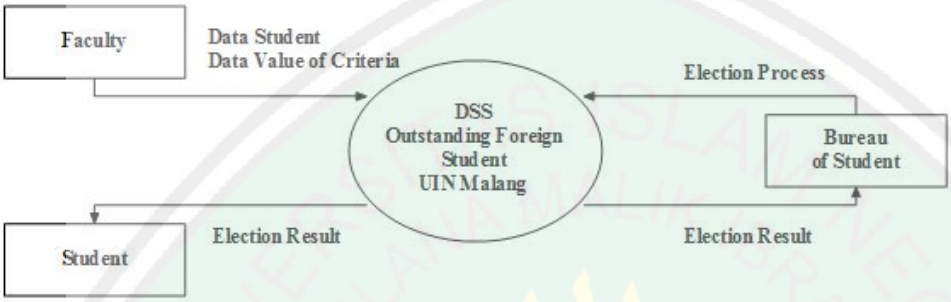

Figure 3.2 DAD Context

Disciplined Agile Delivery It is common that when describing a contextual system the data flow diagram that will first appear is the interaction between the system and external entities. DFD is designed to show a divided system into a smaller sub-system part and to underline the flow of data between the two things mentioned above. This diagram is then "developed" to see in more detail so that models can be seen in it. IT solution delivery. It has a risk-value delivery lifecycle, is goal-driven, is enterprise aware, and is scalable.

In the flow diagram above explains how the flow of the selection of outstanding students, begins with the activity of entering data on foreign students and data on the value of each criterion by each faculty into the system. Then it was continued by the campus student bureau to carry out the system calculation process in obtaining one of the most outstanding foreign student candidates among several registered students. The results of this election will be delivered by the student bureau in the form of announcements that will be posted on the campus information wall. Figure 3.2 DAD Context.

3.5.2 DAD Level 0

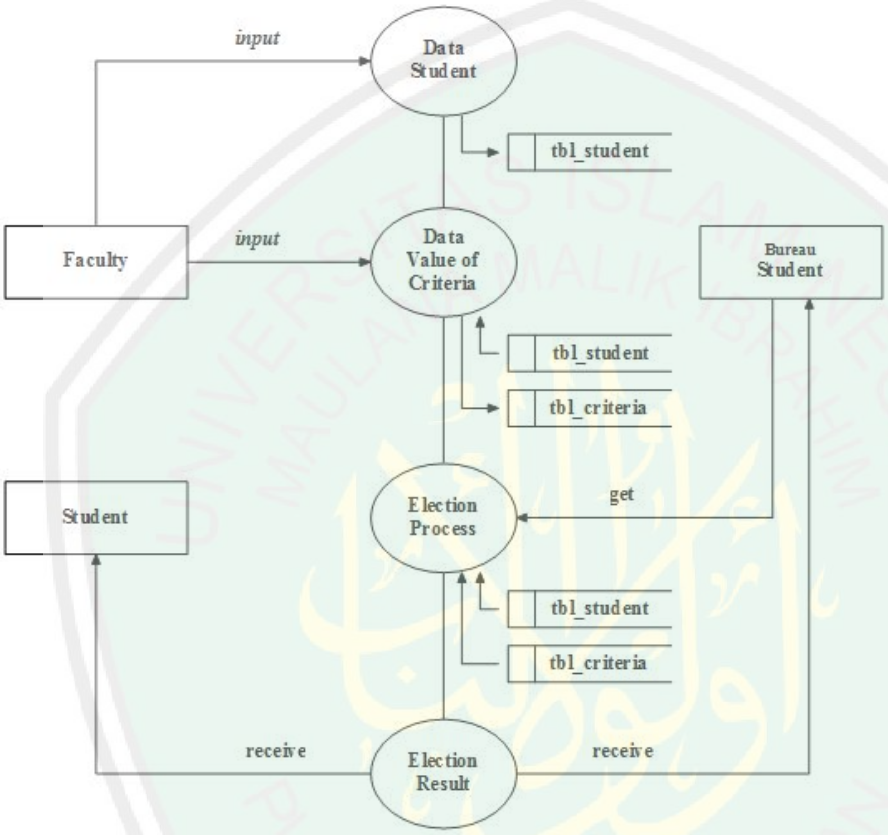

Figure 3.3 DAD Level

DAD Level 0 is also called a Context Diagram. It's a basic overview of the whole system or process being analyzed or modeled. It's designed to be an at-a-glance view, showing the system as a single high-level process, with its relationship to external entities. It should be easily understood by a wide audience, including stakeholders, business analysts, data analysts and developers.

In the data flow diagram the diagram above explains how the selection path of outstanding students, starting with activities by each faculty entering data on foreign students that will be stored in the student table system data base, and data values for each criterion that will be stored in the database system table. Then it is continued by the campus student bureau in processing the calculation system.

The system will perform calculations so that the results of one of the most outstanding foreign student candidates appear among several registered students. The results of this election will be delivered by the student bureau in the form of announcements that will be posted on the campus information wall.

- Bureau Student Academic and Student Administration Bureau Student

(Uin Malang University) The Academic and Student Administration Bureauv is a university administrative executing element that organizes academic and student administration services.

- The Academic and Student Administration Bureau (Uin Malag) is headed by the Head, under and responsible to the Chancellor.
- In carrying out the duties, the Head of the Bureau is assisted by several Section Heads (Head of Section).
- Head of Section is responsible to the Head of Bureau.
- The Academic and Student Administration Bureau (Uin Malag) consists of:

The Registration and Statistics Section consists of:

- Reception Subdivision.
- Registration and Statistics Sub-Section.

The Academic Administration Section, consists of:

- Education Facility Sub-Section.
- Subdivision of Monitoring and Evaluation.

The Student Section consists of:

- Student Activity Sub-Section.
- Student Welfare Subdivision.
- Subdivision of Administration and foreign Development.

3.5.3 Entity Relationship Diagram

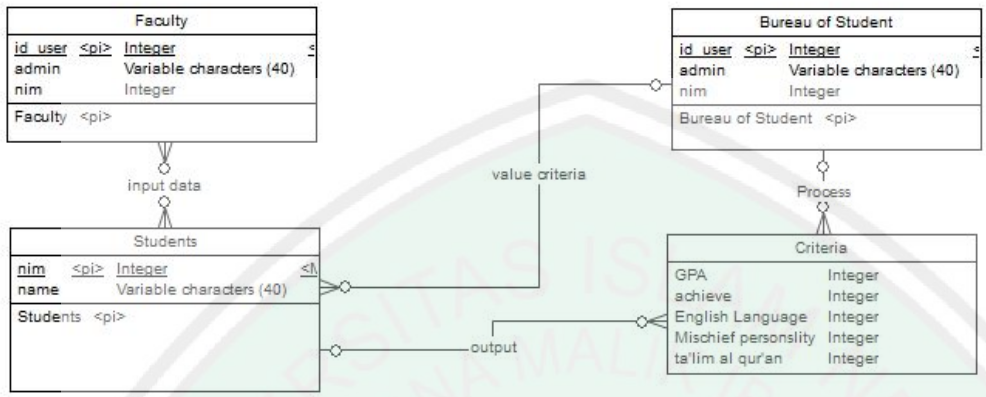

Figure 3.4 Entity Relationship Diagram

An entity relationship model (also called an entity relationship diagram) is a graphical representation of entities and their relationships to each other. This type of diagram is used in databases or information systems design. ERD help you to visualize interrelationships between elements in a database and illustrate how they are involved in a system.

Entity Relationship Diagram is a model to explain the relationship between data in a database based on data base objects that have relations between relations. To model data structures and relationships among the data, as well as using some notations and symbols To See Figure 3.4 Entity Relationship Diagram.

- Identify all the entities in the system. An entity should appear only once in a particular diagram. Create rectangles for all entities and name them properly.

- Identify relationships between entities. Connect the relationships with lines or arrows, and add a hide in the middle to describe the relationships.

- Add meaningful names for the entities so they can be understood quickly and easily by all.

3.5.4 Database

In the design of the system of selection of outstanding foreign students built this has a data table structure as follows:

Table 3.1 Data Student

Field	Size	Attribute	Description
Nim	Integer(11)	Primary Key	ID Number
Name	Varchar(40)	-	Full Name
Faculty	Varchar(10)	-	Faculty
Study	Varchar(10)	-	Program
Entry	Integer(11)	-	Yrs. Entry
Nation	Varchar(10)	-	Nation

Table 3.2 Data Criteria

Field	Size	Attribute	Description
Nim	Integer(11)	Foreign Key	ID Number
Gpa	Integer(11)	-	GPA Semester
Achieve	Integer(11)	-	Achievement
English Language	Integer(11)	-	English Language
Mischief Personality	Integer(11)	-	Mischief Personality
Ta'lim Al	Integer(11)	-	Ta'lim Al Qur'an

Qur'an			
Smt	Enum(‘’,’Odd’,’Even’)	-	Semester
Year	Integer(11)	-	Year

3.6 Case of Study

System design and problem solving in the selection activities of outstanding foreign students who will be built beginning with the determination of criteria sourced from the UIN Malang campus are as follows:

Table 3.3 Name of Selection Criteria for Foreign Students Achieving

Criteria	Name of Criteria	Value
C1	GPA Semester	Benefit
C2	Achievement	Benefit
C3	English Language	Benefit
C4	Mischief Personality	Benefit
C5	Ta'lim Al Qur'an	Benefit

Based on the general guidelines for the selection of outstanding students issued by the Directorate General of Higher Education in the Academic Directorate of the Ministry of National Education in 2010, in assessing outstanding students guided by five components such as GPA Semester, scientific papers, organization activities, English language skills, and personality (Wahyudiono, 2012). GPA Semester is taken from the student GPA values in each semester. Achievement is a value taken from student achievements while participating in activities around the campus. Language is a value derived from the English language skills of students who are used to communicate while on campus. Mischief Personality is the value of student behaviour and attitudes while in the campus environment. Ta'lim Al Qur'an is the value of student activity in participating in Ta'lim Al Qur'an by the campus. Where these criteria have their respective weight set by author in conducting his research for GPA Semester 40%, Achievement 12%, English Language 13%, Mischief Personality 20%, and Ta'lim Al Qur'an 15%.

I used scale to Calculating percentage change. Percentages are also very useful if you wish to quantify change. This is because they provide a result in the form of parts per hundred that is usually more readily understandable and comparable than when the information is presented as raw values and used three Criteria Achievement and English Language and Ta'lim Al Qur'an.

Table 3.4 Weight of Assessment Criteria

C1	C2	C3	C4	C5
0,40	0,12	0,13	0,20	0,15

In the assessment of foreign students, the campus already has a measure in giving scores for each criterion according to the Likert scale. Likert scale is a measurement method used to assess the attitudes and behaviour of a person or group in a phenomenon that occurs (Sugiono, 2012). The Likert scale has four or more questions that are combined so as to form a score or value that represents the individual nature (Budiaji, 2013). Likert scale uses several questions to measure individual behavior by responding to the 5 choice points in each item, strongly agree, agree, not decide, disagree, and strongly disagree (Likert, 1932)

Table 3.5 Criteria Value Standard

Criteria	Name of Criteria	Value
C1	GPA Semester	
Bad (<= 2,3)		1
Less (2,4 – 2,6)		2
Sufficient (2,7 – 2,9)		3
Good (3,0 – 3,9)		4
Very Good (>= 4,0)		5
C2	Achievement	
Bad (0 – 45)		1
Less (46 – 55)		2
Sufficient (56 – 70)		3
Nice (71 – 85)		4
Very Nice (86 – 100)		5

C3	English Language	
Bad (0 – 45)		1
Less (46 – 55)		2
Sufficient (56 – 70)		3
Active (71 – 85)		4
Very Active (86 – 100)		5
C4	Mischief Personality	
Bad (> 5)		1
Less (4 – 5)		2
Sufficient (2 – 3)		3
Little (1)		4
Very Little (0)		5
C5	Ta'lim Al Qur'an	
Bad (0 – 45)		1
Less (46 – 55)		2
Sufficient (56 – 70)		3
Active (71 – 85)		4
Very Active (86 – 100)		5

In the following case study the criteria values that were previously entered by the admin as the user are generated.

Table 3.6 Input Alternative Value

Alternative	C1	C2	C3	C4	C5
A1	Very Good	Very Nice	Very Active	Little	Very Active
A2	Good	Nice	Very Active	Very Little	Very Active
A3	Good	Nice	Active	Sufficient	Active
A4	Good	Nice	Active	Little	Sufficient

Where the alternative values mentioned above have a value based on the standard criteria values as follows:

Table 3.7 Alternative Value

Alternative	C1	C2	C3	C4	C5
A1	5	5	5	4	5
A2	4	4	5	5	5
A3	4	4	4	3	4
A4	4	4	4	4	3

Next is the calculation of the assignment of each of the alternative values.

Table 3.8 Appointment of Alternative Values

Alternative	C1	C2	C3	C4	C5
A1	5 ^ 2	5 ^ 2	5 ^ 2	4 ^ 2	5 ^ 2
A2	4 ^ 2	4 ^ 2	5 ^ 2	5 ^ 2	5 ^ 2
A3	4 ^ 2	4 ^ 2	4 ^ 2	3 ^ 2	4 ^ 2
A4	4 ^ 2	4 ^ 2	4 ^ 2	4 ^ 2	3 ^ 2

So that after the rank calculation process, the next step is to add the total of each criterion.

Table 3.9 Result of Alternative Value Appointment

Alternative	C1	C2	C3	C4	C5
A1	25	25	25	16	25
A2	16	16	25	25	25
A3	16	16	16	9	16
A4	16	16	16	16	9
Σ	73	73	82	66	75

Next, the formation of an alternative matrix normalized by means of the default alternative value divided by the square root of the number of results of appointment based on each criterion.

Table 3.10 Alternative Normalization Matrix

Alternative	C1	C2	C3	C4	C5
A1	25 / √ 73	25 / √ 73	25 / √ 82	16 / √ 66	25 / √ 75
A2	16 / √ 73	16 / √ 73	25 / √ 82	25 / √ 66	25 / √ 75
A3	16 / √ 73	16 / √ 73	16 / √ 82	9 / √ 66	16 / √ 75
A4	16 / √ 73	16 / √ 73	16 / √ 82	16 / √ 66	9 / √ 75

Table 3.11 Alternative Normalization Matrix Results

Alternative	C1	C2	C3	C4	C5
A1	0,5852	0,5852	0,5522	0,4924	0,5774
A2	0,4682	0,4682	0,5522	0,6155	0,5774
A3	0,4682	0,4682	0,4417	0,3693	0,4619
A4	0,4682	0,4682	0,4417	0,4924	0,3464

Next, the formation of a weighted normalized alternative matrix is done by means of the default alternative value multiplied by the results of normalization of the matrix based on each criterion.

Table 3.12 Results of the Alternative Weighted Normalization Matrix

Alternative	C1	C2	C3	C4	C5
A1	2,9260	2,9260	2,7608	1,9695	2,8868
A2	1,8727	1,8727	2,7608	3,0773	2,8868
A3	1,8727	1,8727	1,7669	1,1078	1,8475
A4	1,8727	1,8727	1,7669	1,9695	1,0392

Next, determine the value of the SI+ positive ideal solution and the value of the SI- negative ideal solution from the results of the weighted normalized alternative matrix. For the value of SI+, the biggest value (benefit) is taken and the smallest value (cost) is taken. For

the value of SI-, the smallest value (benefit) is taken and the biggest value is taken (cost), then the value is obtained:

Table 3.13 Ideal Positive Negative Solutions

Solution	C1	C2	C3	C4	C5
SI+	2,9260	2,9260	2,7608	1,1078	2,8868
SI-	1,8727	1,8727	1,7669	3,0773	1,0392

Determine the SI+ ideal matrix positive solution by means of a weighted normalized alternative value minus the value of the positive ideal solution SI+ and then assigning it based on each criterion. Then the sum of these results is carried out for each alternative.

Table 3.14 Results of the SI+ Ideal Solution Matrix

Alternative	C1	C2	C3	C4	C5	Σ
A1	0,0000	0,0000	0,0000	0,7424	0,0000	0,8616
A2	1,1096	1,1096	0,0000	3,8788	0,0000	2,4694
A3	1,1096	1,1096	0,9878	0,0000	1,0800	2,0705
A4	1,1096	1,1096	0,9878	0,7424	3,4133	2,7134

Determine the matrix of the SI negative ideal solution by means of the weighted normalized alternative value minus the value of the negative ideal solution SI- then carried out based on each criterion. Then the sum of these results is carried out for each alternative.

Table 3.15 Results of the SI- Ideal Solution Matrix

Alternative	C1	C2	C3	C4	C5	Σ
A1	1,1096	1,1096	0,9878	1,2273	3,4133	2,8014
A2	0,0000	0,0000	0,9878	0,0000	3,4133	2,0979

A3	0,0000	0,0000	0,0000	3,8788	0,6533	2,1289
A4	0,0000	0,0000	0,0000	1,2273	0,0000	1,1078

The last step is to calculate the separation measure using the calculation of Euclidean distance (CI) between the total value of the positive SI+ ideal solution and the value for the negative ideal solution SI-.

Table 3.16 CI Calculation Results

Alternative	SI+	SI-	CI $SI_- / (SI_+ + SI_-)$
A1	0,8616	2,8014	0,7648
A2	2,4694	2,0979	0,4593
A3	2,0705	2,1289	0,5070
A4	2,7134	1,1078	0,2899

So based on the above results it can be decided that the alternative value A1 is 0,7648 or 76% greater than the value of other alternatives.

3.7 Design Interface

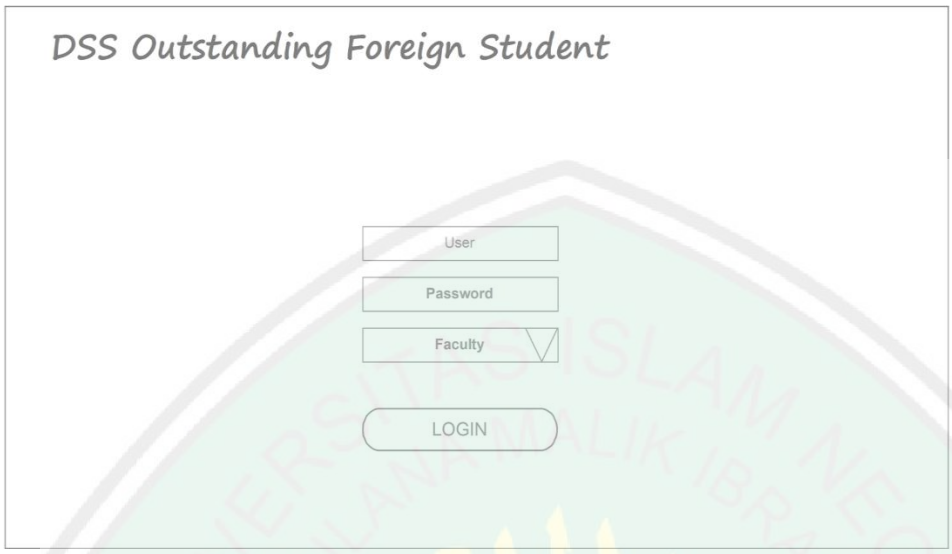

Figure 3.5 Form Login User

Design Interface diagrams is describes how database system works when you logging in. Where actors access logins by entering a username and password and faculty which is then checked by the system through the database, if the data is valid

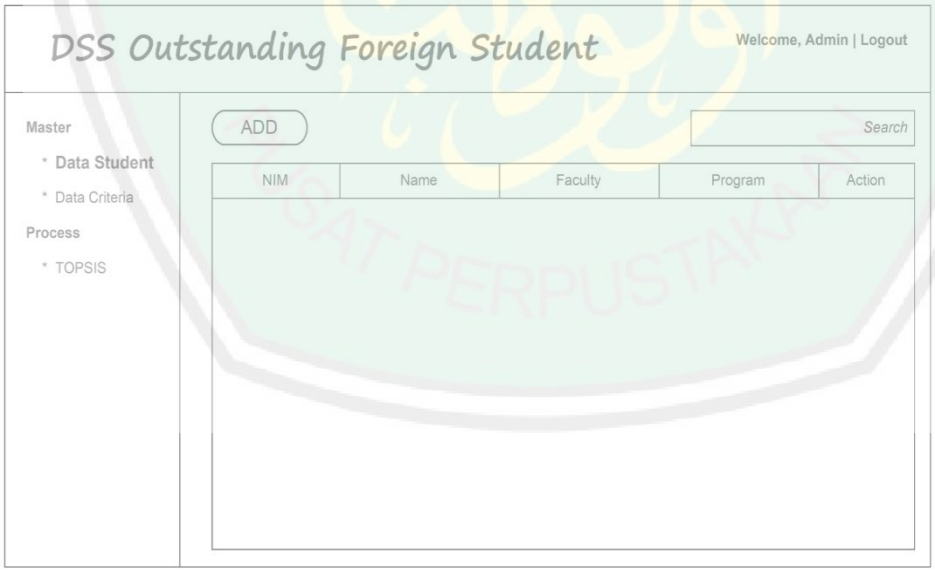

Figure 3.6 Form Data Student.

then the system will display the main page. On the main page, the action can access student data pages, such as in

Figure 3.7 Form Input Data Student

Describe the interaction of action with the system in inputting student data. Actors input student data which is then stored in system. Then when the actor will access the value data page, then interaction as seen in

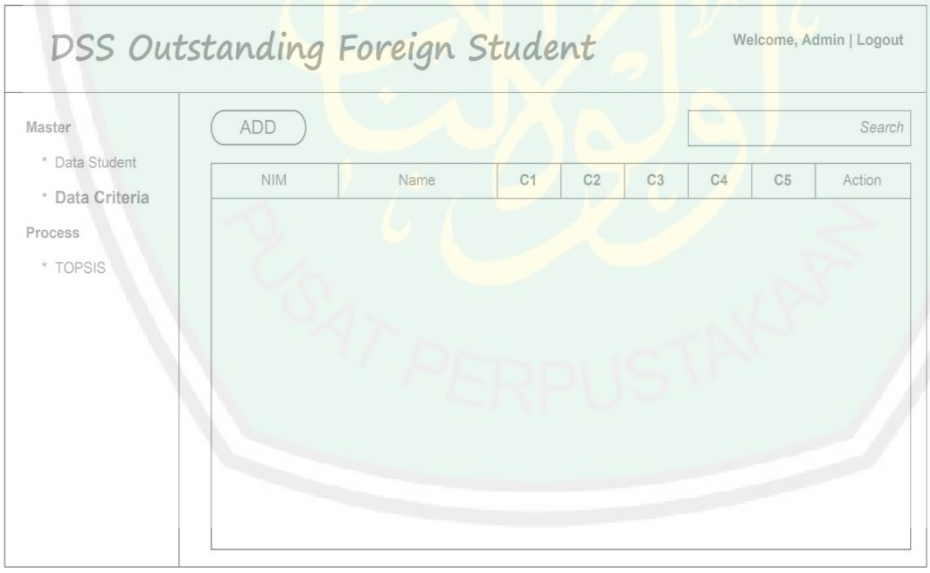

Figure 3.8 Form Data Criteria

System design and problem solving in the selection activities of outstanding foreign students who will be built beginning with the determination of criteria sourced from the UIN Malang

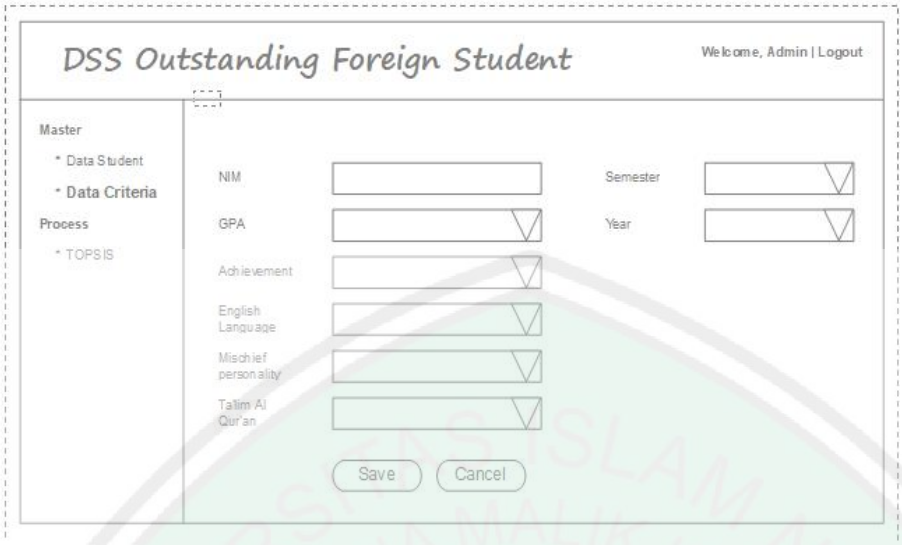

Figure 3.9 Form Input Data Criteria

This show how input data criteria works and uses several questions to measure individual behavior by responding to the 5 choice points in each item.

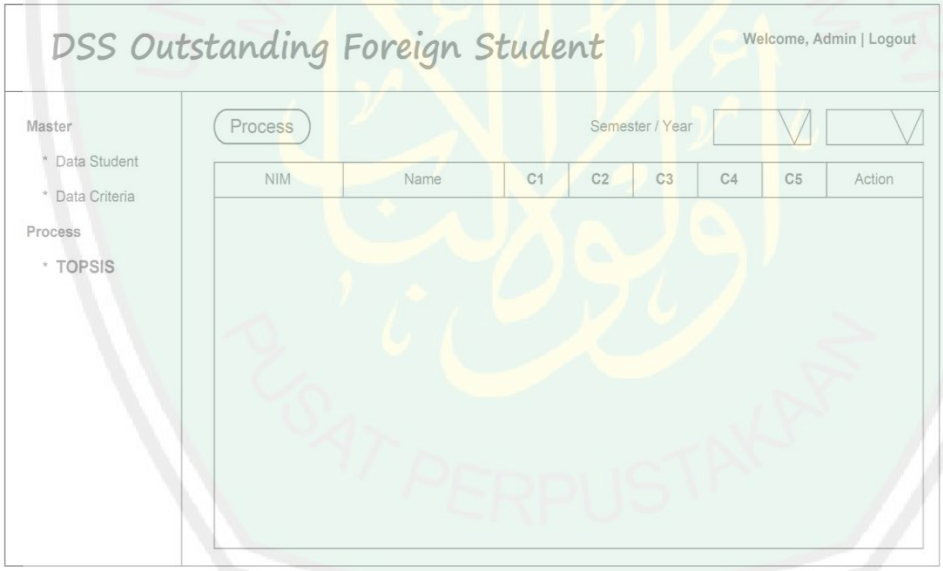

Figure 3.10 Form Prepare TOPSIS

This show How Prepare TOPSIS works and you feel it how process Action take place and Feel all it.

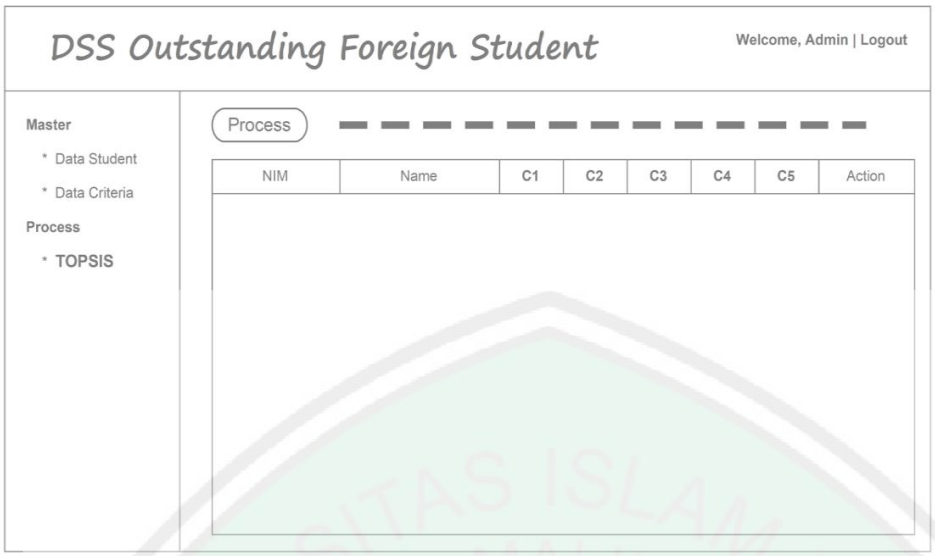

Figure 3.11 Form Process TOPSIS

TOPSIS process is a chart that describes a process flow. In this case, the flow of the TOPSIS calculation process is discussed which can be seen in.

Figure 3.12 Form Result TOPS

This show the result process Works and discussed which can be seen it

CHAPTER IV

RESULTS AND DISCUSSION

4.1.System Implementation

System implementation is the stage of transformation of application system development into software according to the results of the analysis that has been carried out. After that, the system will be tested, the aim is to find out the shortcomings that exist in the application for later system improvements. The technology used in the construction of this system is a website-based application technology. The device specifications used from the beginning of the system design stage supporting the decision making decisions of outstanding foreign student selection using the TOPSIS method are as follows.

The tool used to support the author in designing a foreign student selection system is in the form of hardware and software

4.1.1. Hardware Requirements (Hardware)

The hardware used to implement hardware from this application can be seen in Table 4.1 below:

Table4.1. Hardware Specifications

Name	Specification
Operating System	Windows 10 Professional
Processor	Intel Core i5 2430M 2,40 Ghz
Memory	4096 Mb RAM
Hard Disk	500 Gb
Graphic Card	Intel HD Graphic 3000

4.1.2. Software Requirements (Software)

The software used to implement software from this application can be seen in Table 4.2 below:

Table4.2. Software Specifications

Text Writing	Specification
Operating System	Microsoft Word 2016
Browser	Google Chrome 69.0
IDE Developed	Notepad++
Web Service	Xampp 3.2.2
Diagram Design	Pacestar UML Diagrammer

4.2.Interface Implementation

Implementation of the interface is the appearance of the application that has been made. The application interface for determining the direction of selecting Outstanding foreign students using the TOPSIS method is as follows:

4.2.1. Login Page

When the information system for selecting foreign students achievers is run, there is a user login page, both in charge as admin, faculty, or student bureau. The user login page starts by authenticating the username and password as a user to enter the system environment and can do further data processing.

Figure 4.1 Login Page

To be able to enter the system, you must enter the correct username and password in accordance with the database. For admins to enter with the username "admin" and password "admin". As for students enter the username "students" and passwords "students" And Faculty "student" Student 1 means students with the second serial number, so that for students three, four, and so on just adjust it.

4.2.2. Admin Dashboard Page

After successfully entering the user's page as an admin user, the environment page will be displayed as an admin user where there are several menu options including Admin, Student, Evaluation, and Result, each of which functions to process further data.

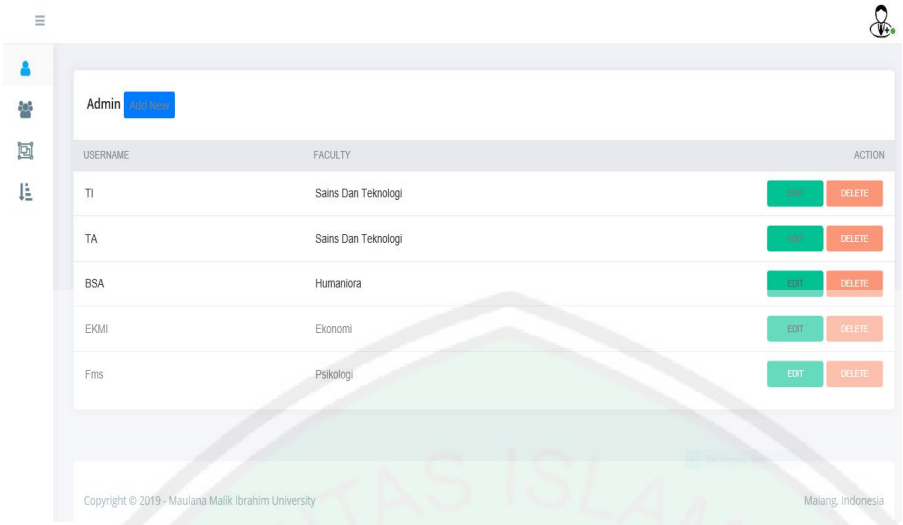

Figure 4.2 Admin Main Page

There are 4 main menus from this page, namely Home as the main page, Admin, Student, Evaluation, and Result, The content only contains Welcome to the Student Application DSS Foreign Student Application and user login credentials

4.2.3. Faculty Dashboard Page

After successfully entering the user page as a faculty part, the environmental page will be displayed as a faculty user where there are menu options including Student and Evaluation, each of which functions to process further data.

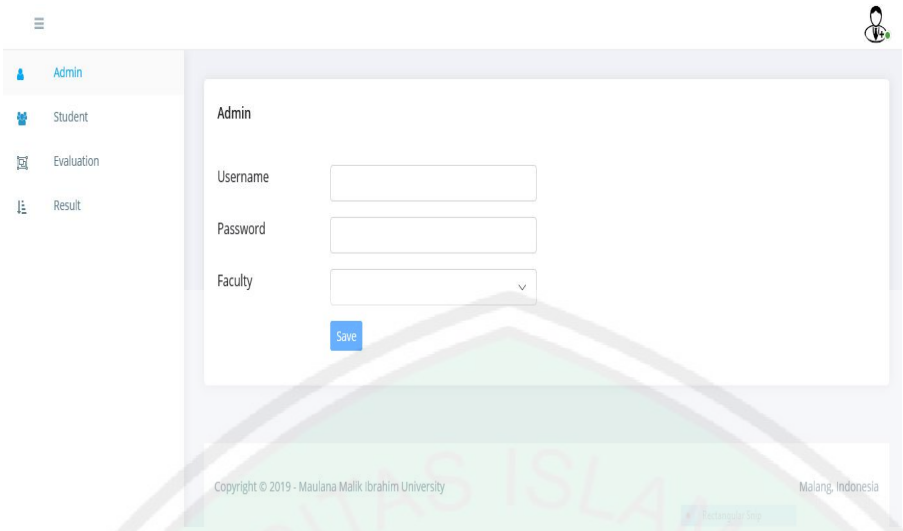

Figure 4.3 Faculty Main Page

There are 4 Main menus from this page, namely Home as the main page, Admin, Student, Evaluation, and Result. The content only contains Welcome to the DSS Foreign Student Application and user login credentials

4.2.4. Bureau Student Dashboard Page

After successfully entering the user page as a student bureau, the environmental page will be displayed as a user of the student bureau where there is a menu selection including TOPSIS and Result, each of which functions to process further data.

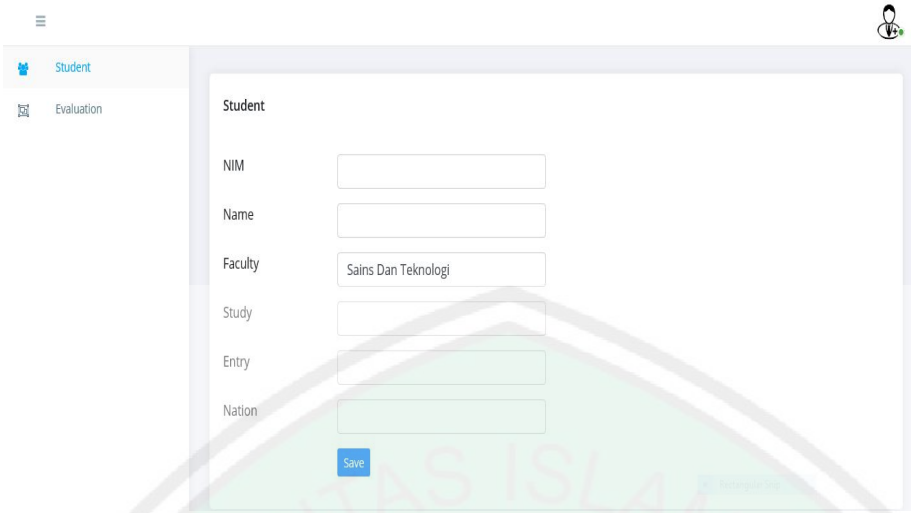

Figure 4.4 Bureau Student Main Page

There are 6 Input that must be filled, Student ID, Student Name, Faculty, Study, Entry Year, Nation. Then the save button is available to save to the database and the close button to close this page.

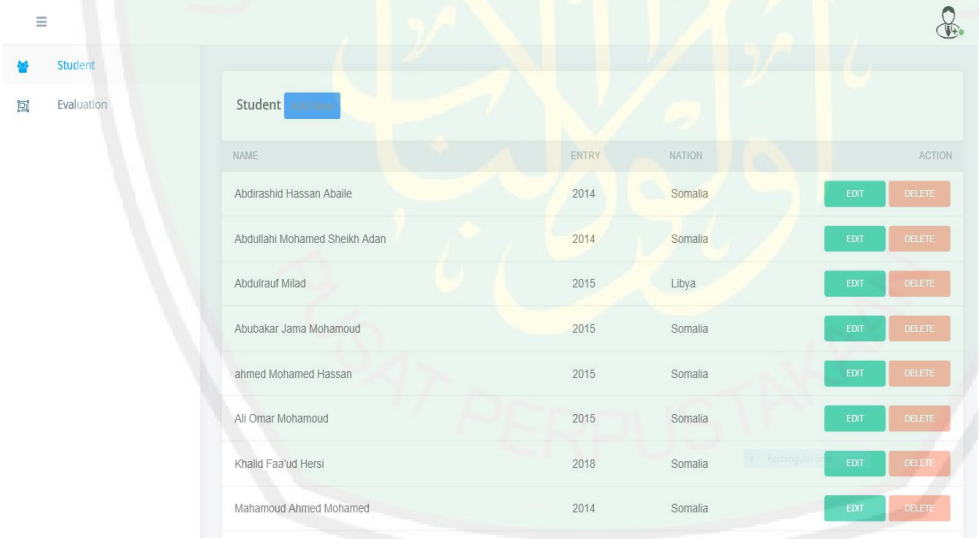

Figure 4.5 Bureau Student Main Page

There are two action buttons on this page that are to add student data, change data (edit) and delete student data (delete). Next, the following is displayed on This student data add page can be seen in Figure 4.5.

4.2.5. Admin Page

In the Admin page view in this admin environment it functions to process the faculty user data in order to enter into the system and process the data of each student, either adding change, or deleting. To create admin data, it is only done by clicking the Add New button, and there is an Edit button icon that serves to change admin data that has been entered or changed and the Delete button icon to delete data.

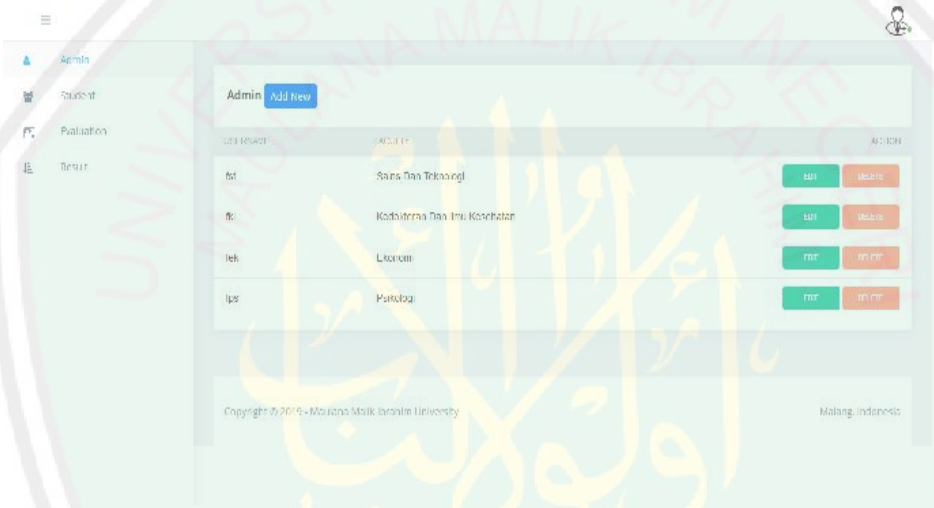

Figure 4.6 Admin Page

In the addition page, the admin data display explains how to add new admin data. It starts with completing all existing columns Username, Password, and Faculty then continues by clicking the Save button to save the admin data.

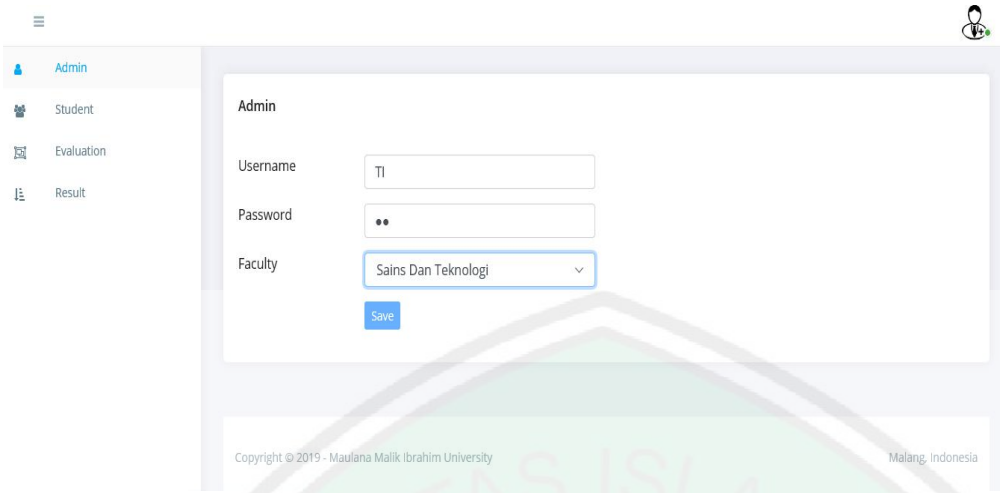

Figure 4.7 Add New Admin Page

In this page the admin data change page explains how the process of changing admin data. It starts with completing all existing columns Username, Password, and Faculty then continues by clicking the button to save admin data.

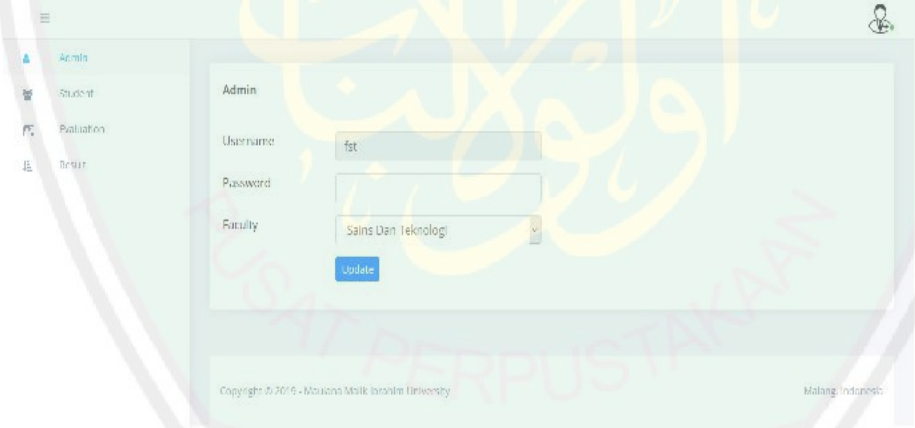

Figure 4.8 Update Admin Page

It starts with completing all existing columns Username, Password, and Faculty then continues by clicking the Update button to save admin data.

4.2.6 Value Data Page

The next page is the value data page, can be seen in Figure 4.9. This page contains the values of students who will become the criteria in determining the majors later.

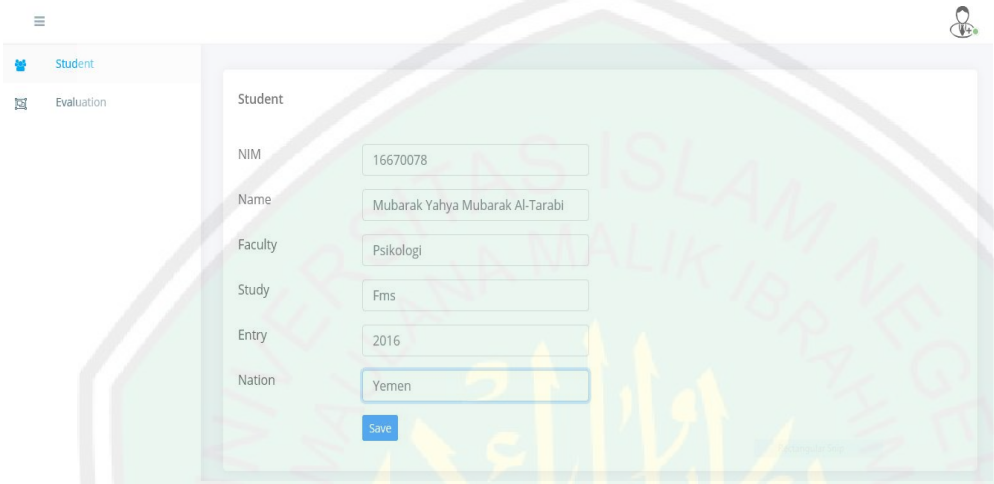

Figure 4.9 Value Data Display

Similar to the previous student data, there is an action button for Save value data. In this page there is a table with several columns containing student IDs, student names, and Faculty, Study ,Entry Year , Nation, values that will be the criteria in later majors.

4.2.7 Test Data Page

4.2.7.1 Type of Test

This test type page is a page to provide what tests you want to do. As shown in Figure 4.10

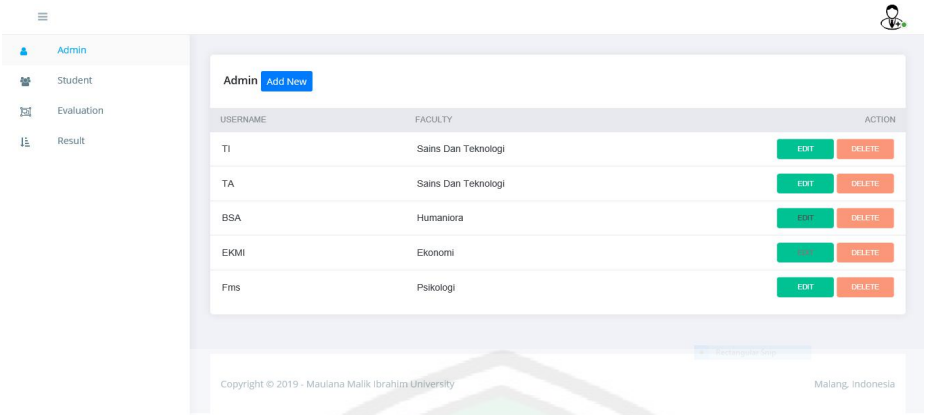

Figure 4.10 Test Admin Page

In this case only Faculty Admin tests will be carried out. But you can add any type of faculty you want to do later, because there is an action button to add to the type of faculty .

4.2.7.2 Question Data

This page provides questions related to the test. As seen in Figure 4.11 and also the display to add new questions as shown in Figure 4.12.

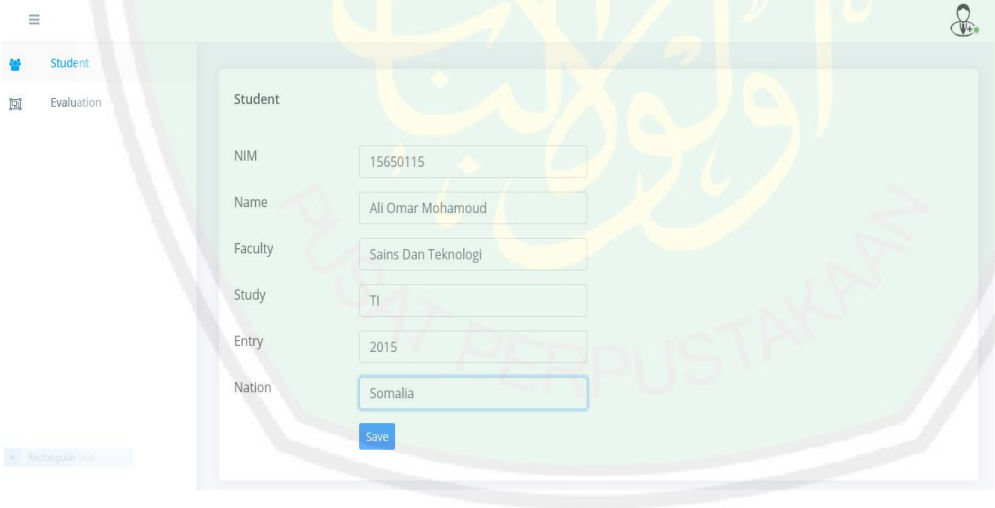

Figure 4.11 add new questions

There is also an action button to add data to add question data. The following display of added question data

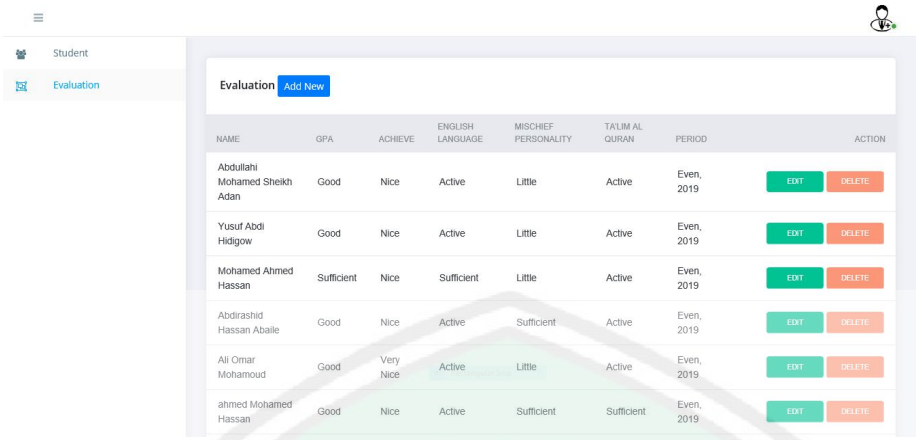

Figure 4.12 Update Question data

There are several input that must be filled on this page. The test id for determining this question is what type of test. Then weights to determine the number of weights, so that each question can be different. And there are answer options, as well as the actual answers. Save button to save data to the database.

4.2.8 Course page

4.2.8.1 Criteria

The criteria page serves to determine what criteria will be used for the determination of majors. There is also a button action to add data as seen in Figure 4.13, so that if it works when there is a change in criteria.

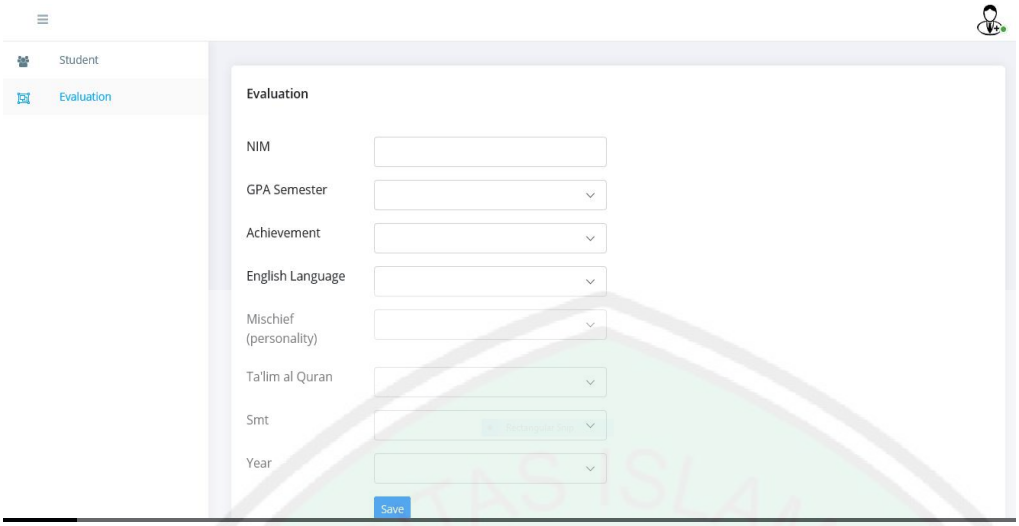

Figure 4.13 majors Evaluation Page

In this case, 8 criteria were used in determining Selecting Outstanding Foreigner Student majors, namely, the value of Student , Nim, GPA Semester, Achievement, English Language , Mischief Personality , Ta'lim Al Qur'an, Semester, and Year.

4.2.8.2 Majors

This majors page is a page that contains the determination of majors for students. As shown in Figure 4.14, there are student data such as student Name , GPA , Achievement, and English Language, Mischief Personality, Ta'lim Al Qur'an, Period . There is an action result to see the results of the majors.

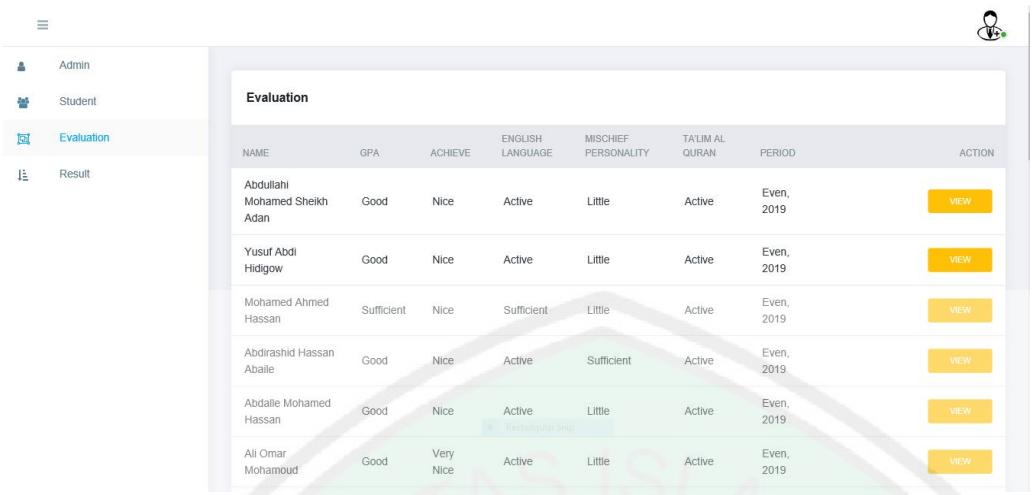

Figure 4.14 Evaluation View

The button to add data on this page serves to add student data to find out the results of majors. As shown in Figure 4.14, it contains input values for each criterion.

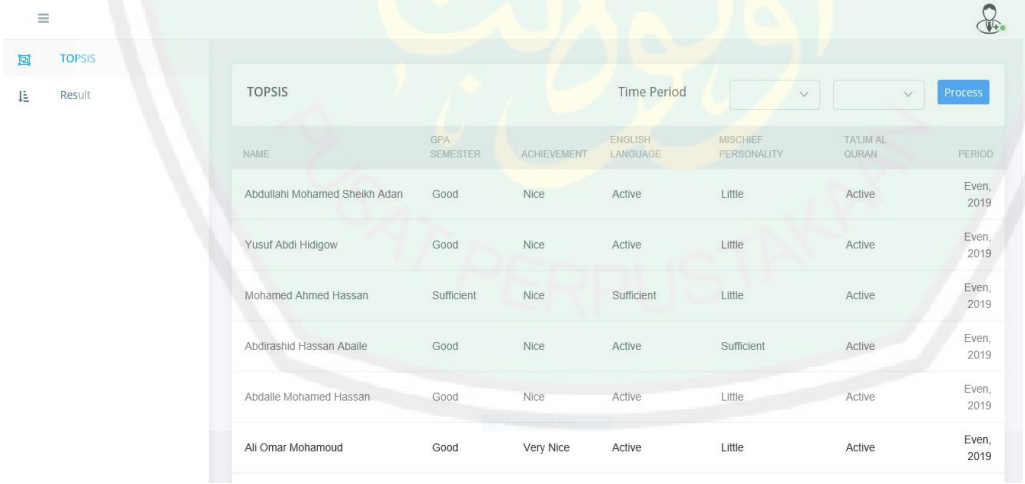

Figure 4.15 Topsis Page

There are several columns that need to be filled. However, first chose Topsis simply and choose Odd or Even then you input process, when you finish see it the figure you see students

data . So just select the name process of the columns will be filled automatically based on the value table.

4.2.9. Student of Admin Page

In the Student page display in this admin environment, it serves to view information on prospective foreign student candidates that have been entered and submitted by their respective faculties to be included in the selection process of foreign students performed by the student agency. There is a View button icon that functions to view student data information in detail.

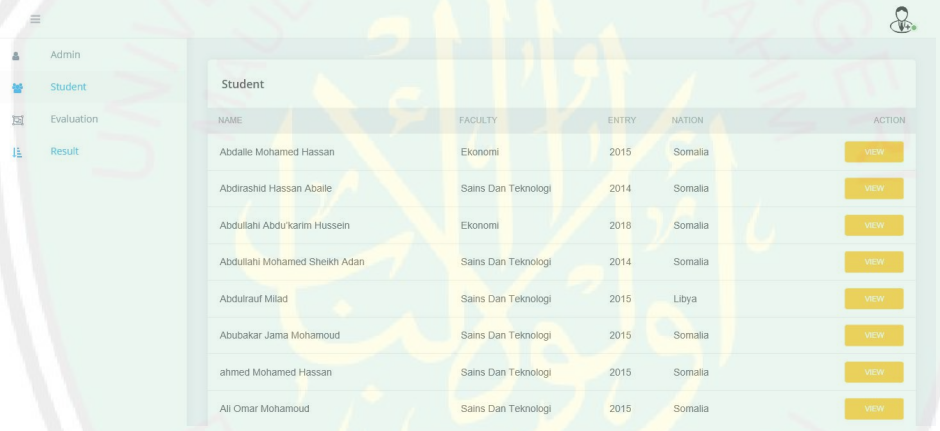

Figure 4.16 Student Admin Page

In this student data view page, student data will be displayed in detail and there is an OK button to return to the student data page.

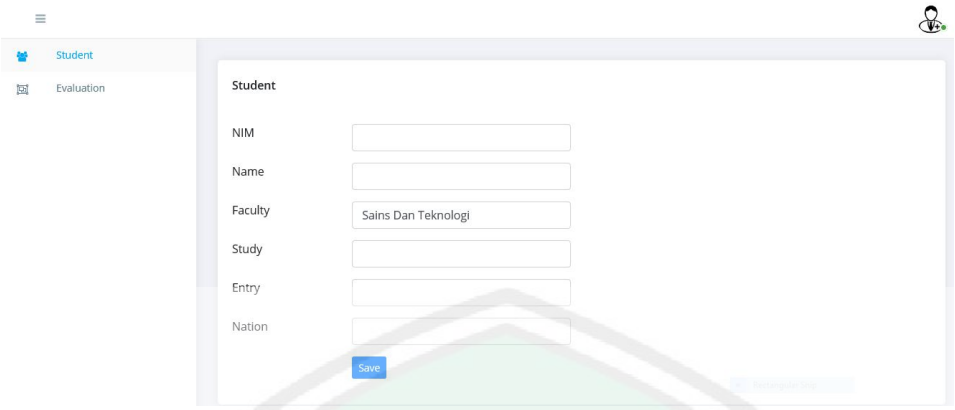

Figure 4.17 View Student Page

In this adding data student, then student data will be displayed in detail and there is an Save button to return to the student data page.

4.2.9.1 Evaluation of Admin Page

In the Evaluation page display in the admin environment, it serves to view information on student criteria values that have been entered by the respective faculties for later data to be further processed in the process of calculating the selection of foreign students with a system achievement. There is a View button icon that serves to view detailed student value data information.

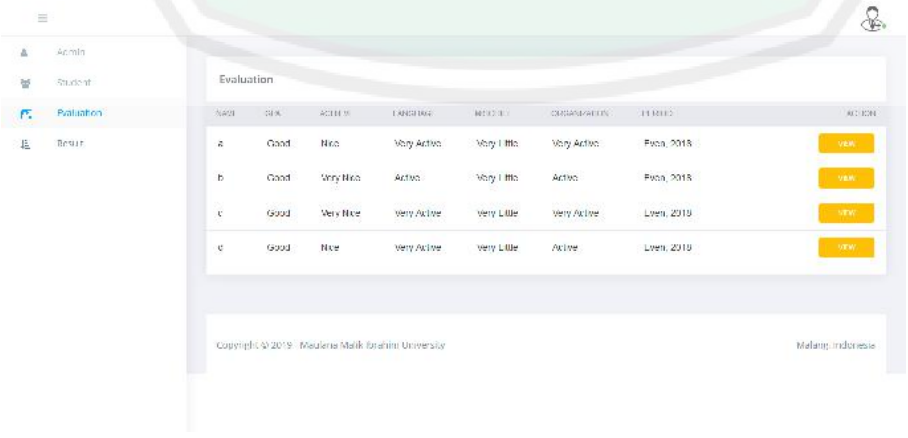

Figure 4.18 Evaluation Admin Page

In the view data evaluation page view, student value data will be displayed in detail and there is an OK button to return to the data evaluation page.

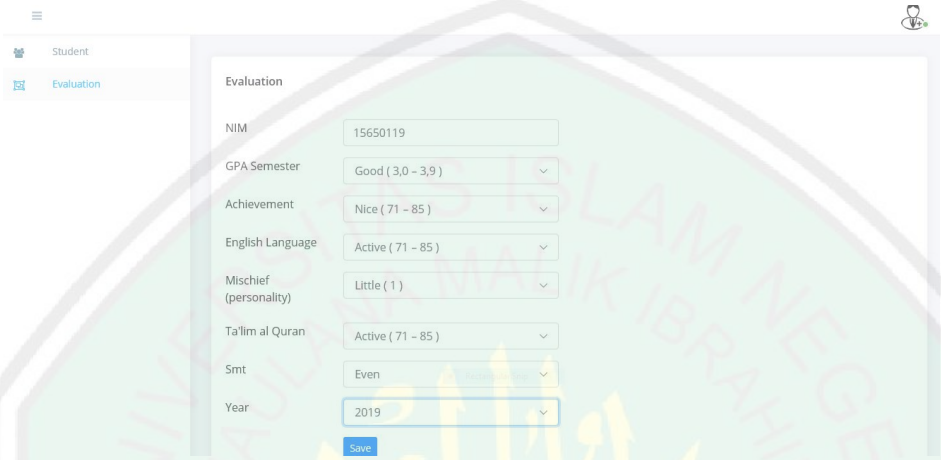

Figure 4.19 View Evaluation Page

This figure see when we add data student evaluation page and you pick button save and add student admin page .

4.2.9.2 Result of Admin Page

In the Result page view in this admin environment it functions to see information on the results of the selection of outstanding foreign students that have been carried out by the student bureau based on their respective assessment periods.

Figure 4.20 Result Admin Page

It is done like you see the results of the selection of Outstanding Foreign Students that have been carried out by the student bureau based on their , the Result Admin Page.

4.2.9.3 Student of Faculty Page

In the Student page view in this faculty environment it functions to process the data of each student, either adding change, or deleting. To create Student data, it is only done by clicking the Add New button, and there is an Edit button icon that functions to change the Student data that has been entered or changed and the Delete button icon to delete data.

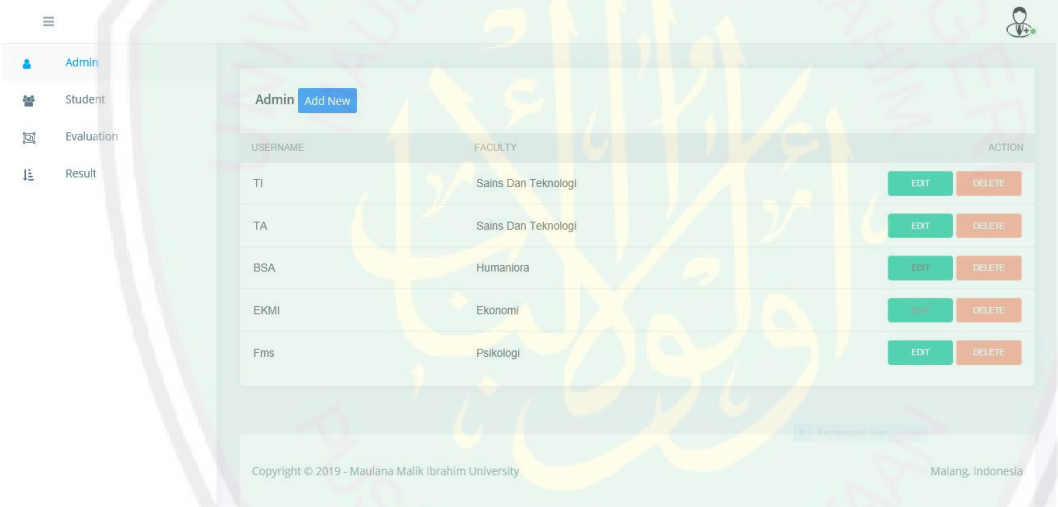

Figure 4.21 Student of Faculty Page

In the page view, the addition of Student data explains how to add new student data. It starts with completing all existing columns NIM, Name, Study, Entry, and Nation, then proceed with clicking the Save button to save student data.

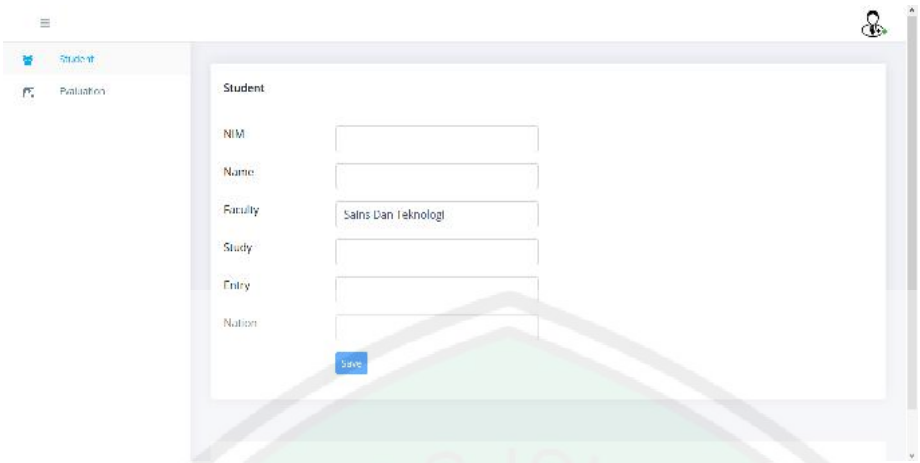

Figure 4.22 Add New Student Page

In this page the student data changes page explains how the process of changing student data. It starts with completing all existing columns Name, Study, Entry, and Nation then continues by clicking the button to save student data.

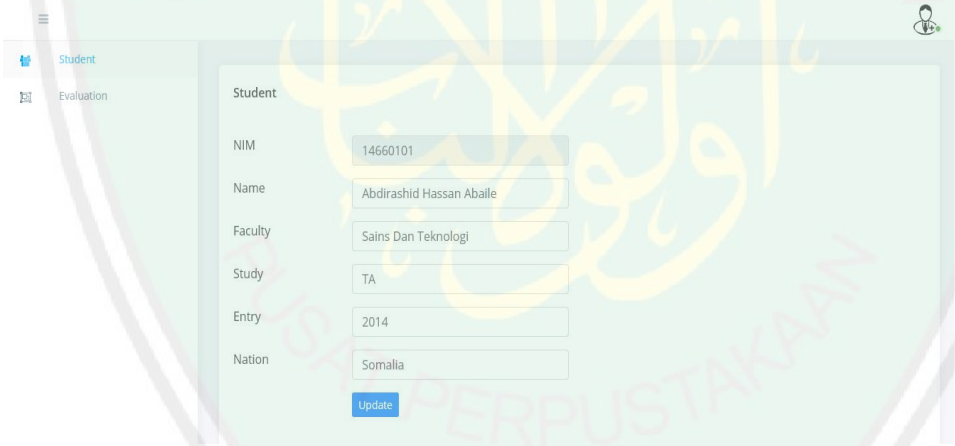

Figure 4.23 Update Student Page

It Finished with completing all existing columns Name, Study, Entry, and Nation then continues by clicking the Update button to save student data.

4.2.9.4 Evaluation of Faculty Page

In the Evaluation page view in this faculty environment it functions to process the data values of each student, either adding change, or deleting. To make the new Evaluation data done by clicking the Add New button, and there is an Edit button icon that serves to change the data evaluation that has been entered or changed and the Delete button icon to delete data.

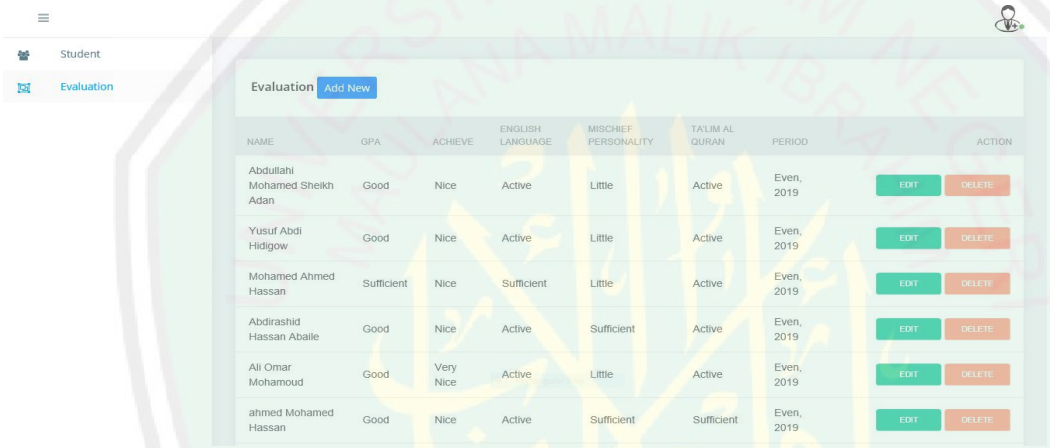

Figure 4.24 Evaluation of Faculty Page

In the page view, the addition of this data evaluation explains how to add new value data. Starting with completing all existing columns NIM, GPA Semester, Achievement, English Language, Mischief Personality, Ta'lim Al Qur'an, Smt, and Year, then proceed by clicking the Save button to save the value data.

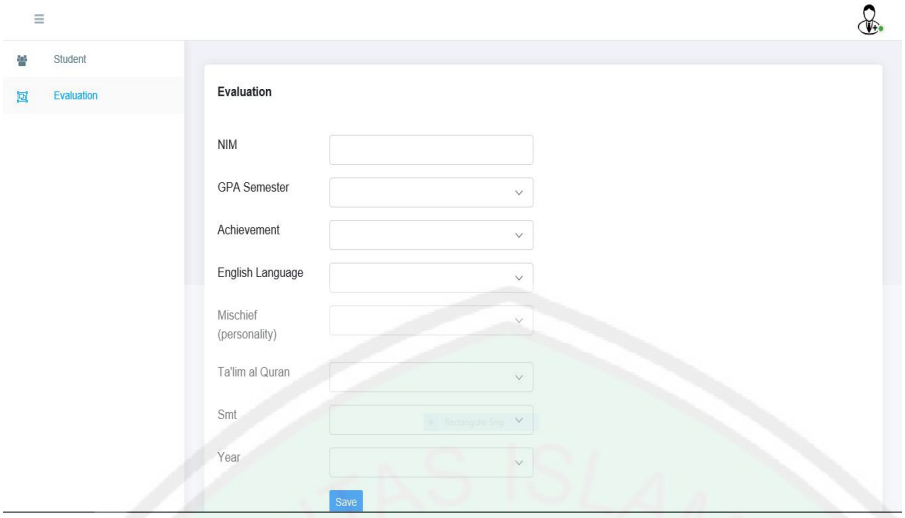

Figure 4.25 Add New Evaluation Page

In this page the data evaluation change page explains how the process of changing value data. Starting with completing all existing columns GPA Semester, Achievement, English Language, Mischief Personality , Ta'lim Al Qur'an , Smt, and Year, then proceed with clicking the button to save the value data.

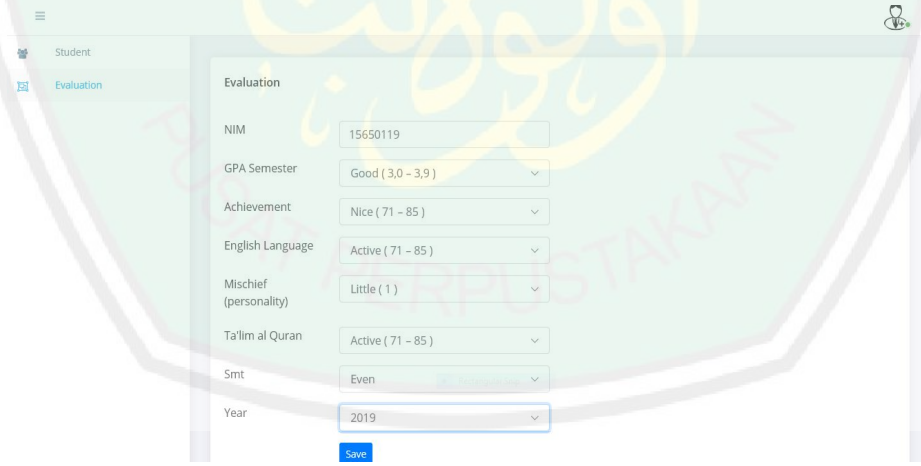

Figure 4.26 Update Evaluation Page

The Finishing with all existing columns GPA Semester, Achievement, English Language, Mischief Personality , Ta'lim Al Qur'an , Smt, and Year, then proceed with clicking the Update button to save the value data.

4.2.10 TOPSIS of Bureau Page

In the TOPSIS page view, it serves to process the selection of foreign students with high achievement. Starting with selecting the selection period then proceed by clicking the Process button.

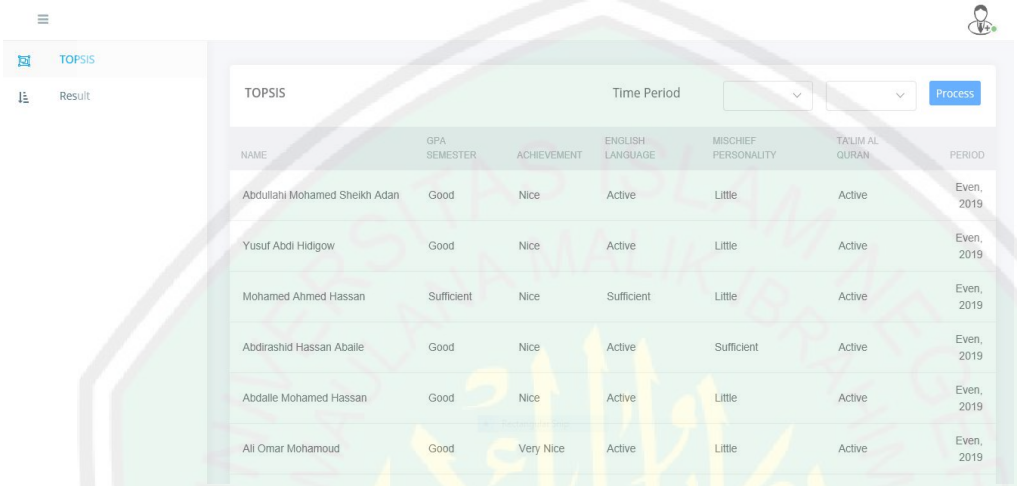

Figure 4.27 TOPSIS of Bureau Page

Next display, the results of calculation of student criteria values that have been entered by the faculty are based on the standard criteria. Then it can be done by clicking the Next button to continue the process

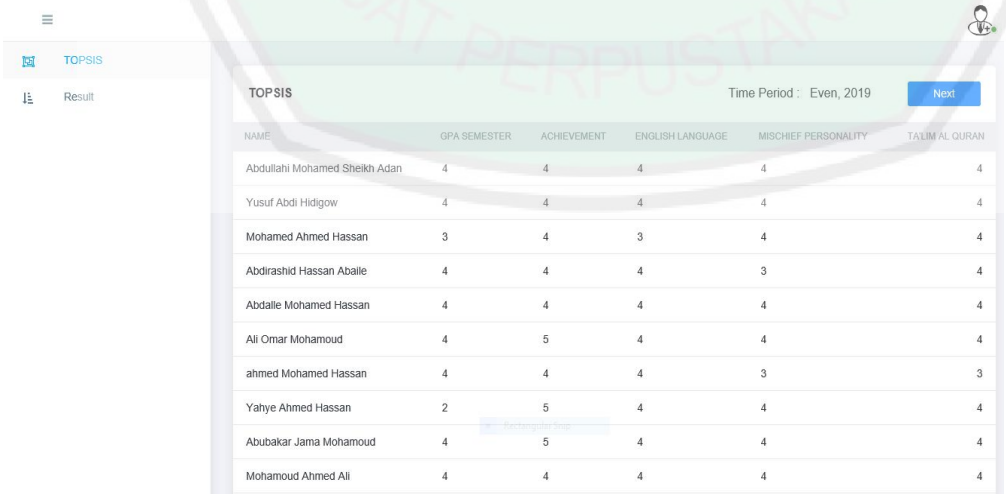

Figure 4.28 TOPSIS Criteria Value of Bureau Page

Next display, the results of the appointment of student criteria values have been displayed by the respective faculties. Then it can be done by clicking the Next button to continue the process.

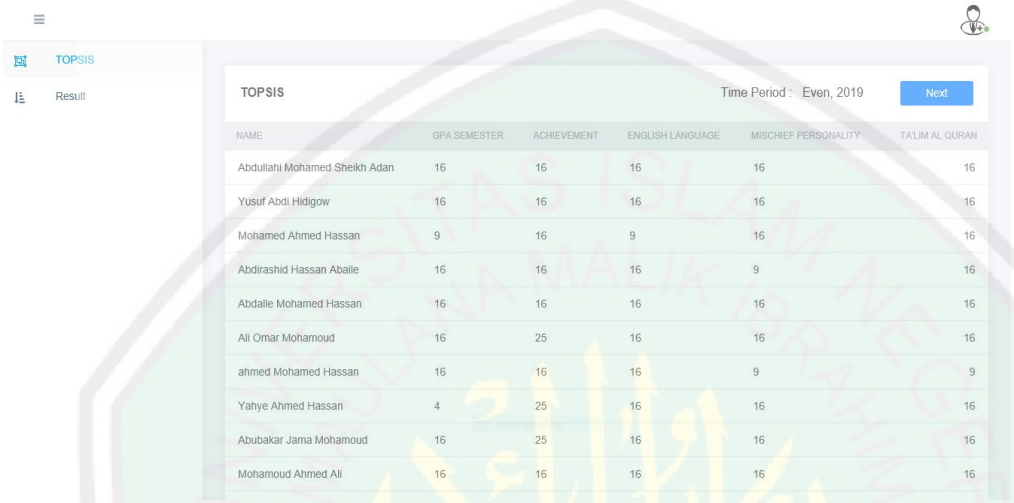

Figure 4.29 TOPSIS Appointment Value of Bureau Page

Next display, will show a normalized matrix formation namely the lifted value divided by the square root of the number of lifted results based on each criterion. Then it can be done by clicking the Next button to continue the process.

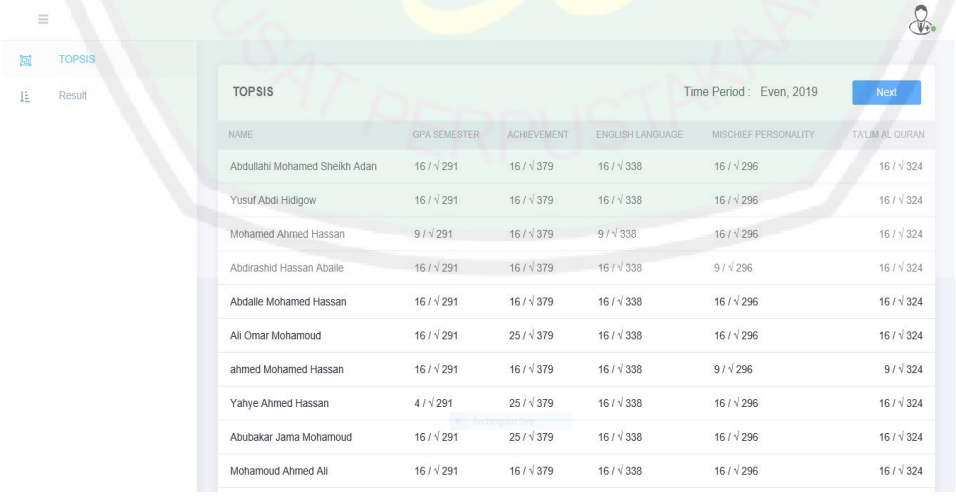

Figure 4.30 TOPSIS Normalize Formation of Bureau Page

Next display, will show the results of normalized matrix formation.

Then it can be done by clicking the Next button to continue the process.

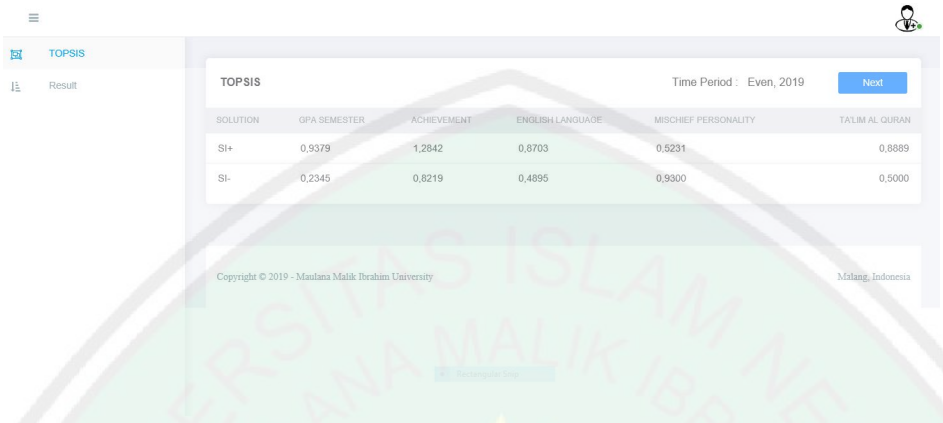

Figure 4.31 TOPSIS Results Normalize of Bureau Page

Next display, will display the results of determining the value of the positive SI + positive solution and the value of the SI-negative ideal solution. Then it can be done by clicking the Next button to continue the process.

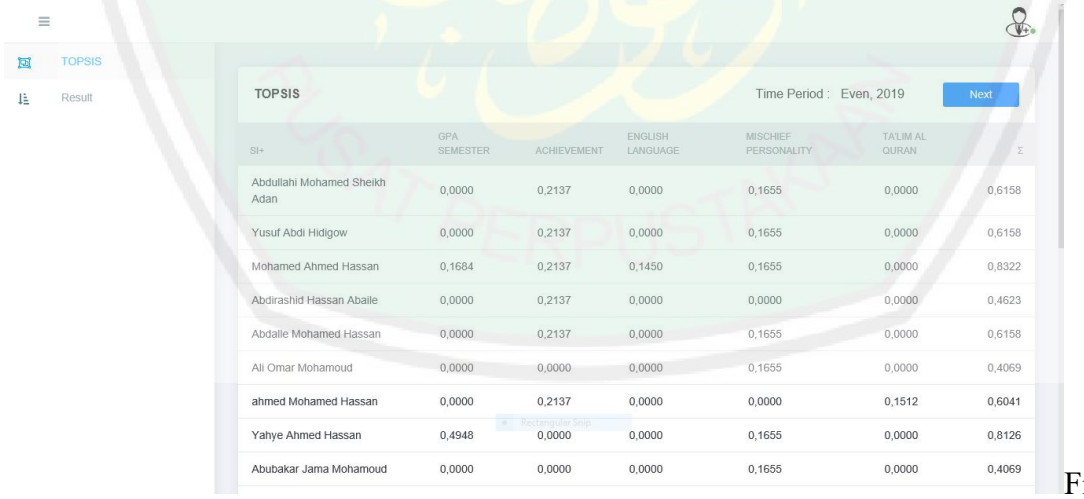

Figure 4.32 TOPSIS Results Solution Ideal of Bureau Page

Next display, will show the matrix formation results of the positive ideal SI+. Then it can be done by clicking the Next button to continue the process.

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Figure 4.33 TOPSIS Results Solution Ideal Positive of Bureau Page

Next display, will show the matrix formation results of the negative ideal SI-. Then it can be done by clicking the Next button to continue the process.

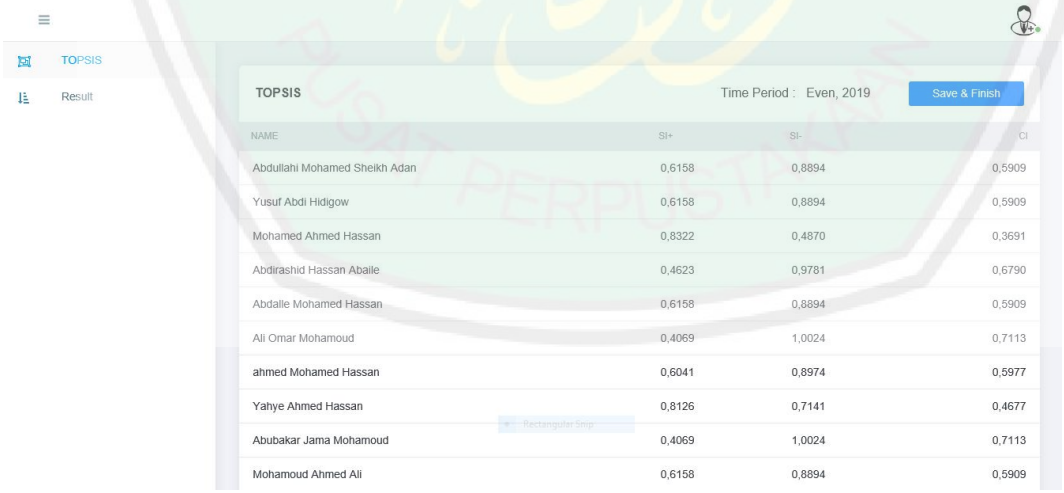


Figure 4.34 TOPSIS Results Solution Ideal Negative of Bureau Page

Next display, the results of the calculation of Euclidean distance (CI) will be displayed between the total value of the positive ideal SI+ solution and the value for the ideal negative SI- solution. Then the TOPSIS calculation results can be saved as data by clicking the Save and Finish button to do a new process.

Figure 4.35 TOPSIS Results Solution Ideal Negative of Bureau Page

Next display, the results of the calculation of Euclidean distance (CI) will be displayed between the total value of the positive ideal SI+ solution and the value for the ideal negative SI- solution. Then the TOPSIS calculation results can be saved as data by clicking the Save and Finish button to do a new process.

4.2.11 Result of Bureau Page

In the result page view in this bureau environment it functions to see information on the results of the selection of outstanding foreign students that have been carried out by the student bureau based on their respective assessment periods.

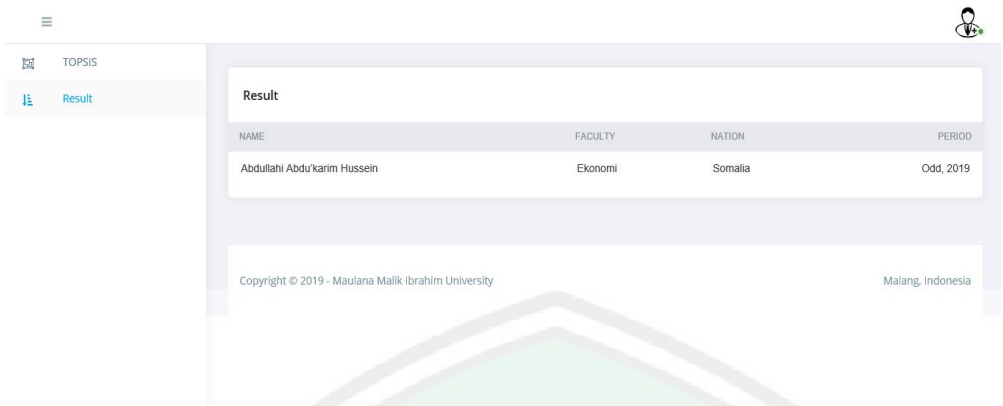


Figure 4.36 Result Bureau Page

On this page there are names of students who have taken a majors test with the results of the recommended course. Then there is the calculation that shows the number of students from each department in the results and the total number of students there

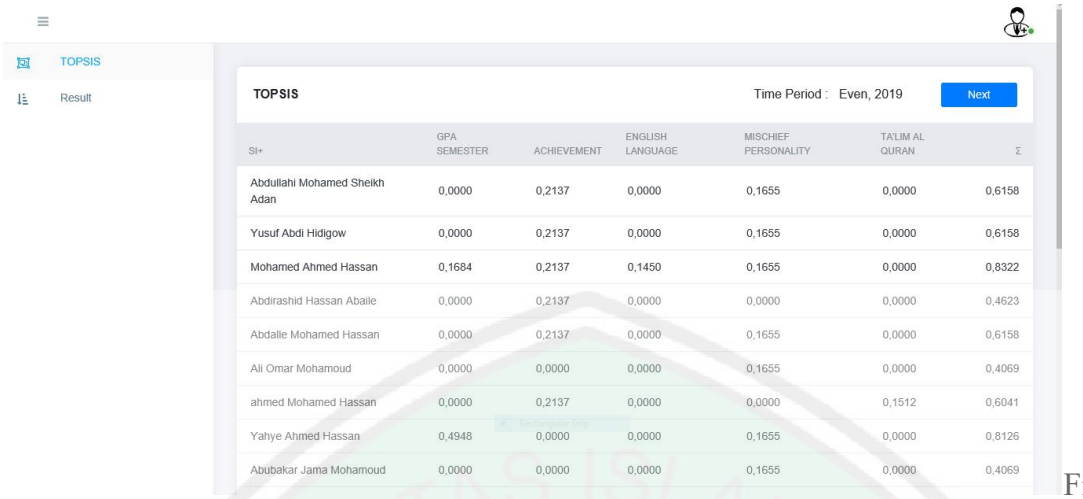
4.3 Analysis of Results

After the system implementation process is carried out, a program trial processis carried out in order to find out whether the application program created is appropriate and for later to analyze the results After the system applicationis completed, data input is in the form of student data and value data. This value data is used to determine the results of the majors of each student. Examples of authors take one data as seen in Figure 4.37. One data with the student Name Mohamoud Ahmed Mohamed has the following data values:

NAME	SI+	SI-	CI
Mahamoud Ahmed Mohamed	1,4446	1,8873	0,5664

Figure 4.37. Sample Value Data Display

From the value data, the alignment process is carried out on the majors page, as seen in Figure 4.38, by selecting the name of the student in the Topsis that has been provided to retrieve the value in the database for the next processed so that the results can be known.

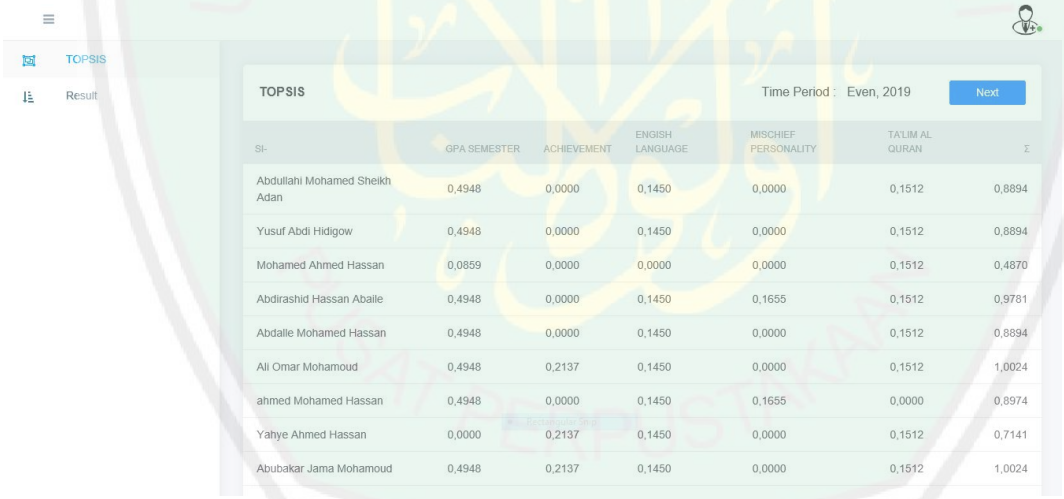


SI+	GPA SEMESTER	ACHIEVEMENT	ENGLISH LANGUAGE	MISCHIEF PERSONALITY	TA'LIM AL QURAN	Σ
Abdullahi Mohamed Sheikh Adan	0,0000	0,2137	0,0000	0,1655	0,0000	0,6158
Yusuf Abdi Hidigow	0,0000	0,2137	0,0000	0,1655	0,0000	0,6158
Mohamed Ahmed Hassan	0,1684	0,2137	0,1450	0,1655	0,0000	0,8322
Abdirashid Hassan Abaile	0,0000	0,2137	0,0000	0,0000	0,0000	0,4623
Abdalle Mohamed Hassan	0,0000	0,2137	0,0000	0,1655	0,0000	0,6158
Ali Omar Mohamoud	0,0000	0,0000	0,0000	0,1655	0,0000	0,4069
ahmed Mohamed Hassan	0,0000	0,2137	0,0000	0,0000	0,1512	0,6041
Yahye Ahmed Hassan	0,4948	0,0000	0,0000	0,1655	0,0000	0,8126
Abubakar Jama Mohamoud	0,0000	0,0000	0,0000	0,1655	0,0000	0,4069

Figure 4.38.

Display of Sample Value Data Input

On this page, the majors are carried out using the TOPSIS method. Automatically when the data is saved, it will be stored in the database with a predetermined value. These values are obtained from the compatibility rating of each criterion as explained in Chapter 3 Table 3.11. Then the results will look like Figure 4.39



SI-	GPA SEMESTER	ACHIEVEMENT	ENGISH LANGUAGE	MISCHIEF PERSONALITY	TA'LIM AL QURAN	Σ
Abdullahi Mohamed Sheikh Adan	0,4948	0,0000	0,1450	0,0000	0,1512	0,8894
Yusuf Abdi Hidigow	0,4948	0,0000	0,1450	0,0000	0,1512	0,8894
Mohamed Ahmed Hassan	0,0859	0,0000	0,0000	0,0000	0,1512	0,4870
Abdirashid Hassan Abaile	0,4948	0,0000	0,1450	0,1655	0,1512	0,9781
Abdalle Mohamed Hassan	0,4948	0,0000	0,1450	0,0000	0,1512	0,8894
Ali Omar Mohamoud	0,4948	0,2137	0,1450	0,0000	0,1512	1,0024
ahmed Mohamed Hassan	0,4948	0,0000	0,1450	0,1655	0,0000	0,8974
Yahye Ahmed Hassan	0,0000	0,2137	0,1450	0,0000	0,1512	0,7141
Abubakar Jama Mohamoud	0,4948	0,2137	0,1450	0,0000	0,1512	1,0024

Figure 4.39. Sample Display of Decision Matrix

Furthermore, from the value data, the TOPSIS steps are carried out using the formula described in Chapter 2 and an example of manual calculation in Chapter 3. The results are as follows: Stage 1 after the data is obtained, the normalized R matrix is shown as shown in Figure 4.17:

Table 4.3. Display of Example Matrices Normalized R

Alternative	C1	C2	C3	C4	C5
A 1	0,5852	0,5852	0,5522	0,4924	0,5774
A2	0,4682	0,4682	0,5522	0,6155	0,5774
A3	0,4682	0,4682	0,4417	0,3693	0,4619
A4	0,4682	0,4682	0,4417	0,4924	0,3464

Table 4.4.Results of the Alternative Weighted Normalization Matrix

Alternative	C1	C2	C3	C4	C5
A 1	2,9260	2,9260	2,7608	1,9695	2,8868
A2	1,8727	1,8727	2,7608	1,1078	2,8868
A3	1,8727	1,8727	1,7669	3,0773	1,8475
A4	1,8727	1,8727	1,7669	1,9695	1,0392

Stage 3 the positive ideal solution (A +) can be seen the results of the calculation below:

Table 4.5. Results of the SI+ Ideal Solution Matrix

Alternative	C1	C2	C3	C4	C5	Σ
A1	0,0000	0,0000	0,0000	0,7424	0,0000	0,8616
A2	1,1096	1,1096	0,0000	3,8788	0,0000	2,4694
A3	1,1096	1,1096	0,9878	0,0000	1,0800	2,0705
A4	1,1096	1,1096	0,9878	0,7424	3,4133	2,7134

Stage 4: the ideal negative (A-) solution can be seen the results of the calculation below:

Table 4.6. Results of the SI- Ideal Solution Matrix

Alternative	C1	C2	C3	C4	C5	Σ
A1	1,1096	1,1096	0,9878	1,2273	3,4133	2,8014
A2	0,0000	0,0000	0,9878	0,0000	3,4133	2,0979
A3	0,0000	0,0000	0,0000	3,8788	0,6533	2,1289
A4	0,0000	0,0000	0,0000	1,2273	0,0000	1,1078

Stage 5 determines the distance of the weighted value of each alternative to the positive ideal solution and the distance of the weighted value of each alternative to the negative ideal solution, can be seen the results of the calculation below:

the distance between the weighted value of each alternative to the positive ideal solution of Si+

A1' = 0,8616

A2' = 2,4694

A3'= 2,0705

A4'= 2,7134

the distance between the weighted value of each alternative to the negative ideal solution of Si-

A1' = 2,8014

A2' = 2,0979

A3'= 2,1289

A4'= 1,1078

Then the proximity of each alternative is done to the ideal solution as the final step to determine which alternative value is chosen. The calculation results can be seen below:

CI $SI_- / (SI_+ + SI_-)$

A1' = 0,7648

A2' = 0,4593

A3'= 0,5070

A4'= 0,2899

That way the calculation process with the TOPSIS method has been completed so the results are obtained that the alternative chosen is the highest value alternative

Namely the two alternative, which means the student is advised to major in the third alternative, jurusan, entry year.

The above is an example of 100 existing data. Next is to compare the results of the initial data with data from the calculation results using the TOPSIS method to see the accuracy of the system. The results of the calculation of this system can be seen in Table 4.7.

Table 4.7. Student data faculty Uin Malang

No	Nim	Name	Jurusan	Entry Year
1	15650115	ALI OMAR MOHAMOUD	TEKNIK INFORMATIKA	2015
2	15660110	ABUBAKAR JAMA MOHAMOUD	ARSITEKTUR	2015
3	14650110	ABDULLAHI MOHAMED SHEIKH ADAN	TEKNIK INFORMATIKA	2014
4	18660111	XAMSE ABDI OMAR	ARSITEKTUR	2018
5	15650116	AHMED MOHAMED HASSAN	TEKNIK INFORMATIKA	2015
6	18660112	KHALID FU,AAD XIRSI	ARSITEKTUR	2018
7	15660114	ABDULRAUF MILAD	ARSITEKTUR	2015
8	14650111	YUSUF ABDI HIDIGOW	TEKNIK	2014

			INFORMATIKA	
9	15660113	MOHAMOUD AHMED ALI	ARSITEKTUR	2015
10	14560112	MOHAMED AHMED HASSAN	TEKNIK INFORMATIKA	2014
11	14660101	ABDIRASHID HASSAN ABAILE	ARSITEKTUR	2014
12	14560113	MAHAMOUD AHMED MOHAMED	TEKNIK INFORMATIKA	2014
13	15540082	ABDALLE MOHAMED HASSAN	PERBANKAN SYARIAH	2015
14	18510195	ABDULLAHI ABDU'KARIM HUSSEIN	MANAGEMENT	2018
15	18520119	LIBAN ISAK MOHAMED	AKUNTANSI	2018
16	18520099	OMAR ABDIRIHIM HUSSEIN	AKUNTANSI	2018
17	17310176	MA JIA HUI	HUMANIORA	2017
18	17320186	MA LING	HUMANIORA	2017
19	17320160	JIN YU JIA	HUMANIORA	2017
20	16670078	MUBARAK YAHYA MUBARAK AL-TARABI	FARMASI	2016
21	16670076	RABIE ELHUSSEIN ABDALLA	FARMASI	2016
22	16670077	MOHAMED JAMALELADEEN ADAM AHMED	FARMASI	2016
23	16670079	AHMED MOHAMMED ALTAYEB	FARMASI	2016
24	17930084	MOHAMED ELFADIL AHMED BAKHIT	FARMASI	2017
25	17930094	TRAK AHMED MOHAMMAD	FARMASI	2017
26	17930087	ALTAYEB KHALAFALLA ALTAYEB	FARMASI	2017

27	14110247	ROMLEE YEEKABJEE	PENDIDIKAN AGAMA ISLAM	2014
28	14110248	NASAFEE HEEMSUWAN	PENDIDIKAN AGAMA ISLAM	2014
29	14110249	MOHUMUDZAKEE DAERH SALAEH	PENDIDIKAN AGAMA ISLAM	2014
30	14110250	SORUR KHALED O ABDULATIF	PENDIDIKAN AGAMA ISLAM	2014
31	14110253	RADON YEEWANGCHAROEN	PENDIDIKAN AGAMA ISLAM	2014
32	14210143	SYED MOHD FAUZI BIN WAN YUSOF	AL-AHWAL AL-SYAKHSHIYYAH	2014
33	14210144	WAN AHMAD SYAHIR BIN WAN KAMARULZAMAN	AL-AHWAL AL-SYAKHSHIYYAH	2014
34	14210145	ABU UBAIDAH BIN FADZLI	AL-AHWAL AL-SYAKHSHIYYAH	2014
35	14210146	LUQMAN HAKIM BIN AHMAD FAUZI	AL-AHWAL AL-SYAKHSHIYYAH	2014
36	14210147	ZAINUL MUTAQIEN BIN MARZUKI	AL-AHWAL AL-SYAKHSHIYYAH	2014
37	14210157	FARDOS MOHAMMED IBRAHIM H. ALHUDHAIRY	AL-AHWAL AL-SYAKHSHIYYAH	2014
38	14220193	SAREEF YAWOR	HUKUM BISNIS SYARIAH	2014
39	14310126	APISIT DAMDEE	BAHASA DAN SASTRA ARAB	2014
40	14310127	MR. ANUSORN MAPRASIT	BAHASA DAN SASTRA ARAB	2014
41	14320158	SUMAIREE TOAKHWAN	BAHASA DAN SASTRA INGGRIS	2014
42	14320159	NUREEYAH BILMAD	BAHASA DAN SASTRA INGGRIS	2014
43	14320161	FARDOS MOHAMMED IBRAHIM H. ALHUDHAIRY	BAHASA DAN SASTRA INGGRIS	2014
44	14410215	MARITO JOAO DA SILVA	PSIKOLOGI	2014

45	14410216	WANFAIS WAEKUEJIK	PSIKOLOGI	2014
46	14510187	CLARISSA RAHMADANI R NASUTION	MANAJEMEN	2014
47	14510189	REFANEE BINMAD	MANAJEMEN	2014
48	14510190	ATAFA YOUSAF ALI	MANAJEMEN	2014
49	14630083	MOHAMED BELHEDI	KIMIA	2014
50	14650115	ABDULRAHMAN OMAR MOHAMMED BA HASHWAN	TEKNIK INFORMATIKA	2014
51	14660100	ABDELSALAM BAKRI MOHAMED BAKHEET	TEKNIK ARSITEKTUR	2014
52	14660102	NUR HAYATI	TEKNIK ARSITEKTUR	2014
53	14660103	HUSEN RAMOS COSTA	TEKNIK ARSITEKTUR	2014
54	14660104	MORAKOT KRUATHONG	TEKNIK ARSITEKTUR	2014
55	14660105	RAMZI MUSTAFA NUWARA	TEKNIK ARSITEKTUR	2014
56	14660106	HANI MUSTAFA MUHAMMAD	TEKNIK ARSITEKTUR	2014
57	14660107	ZIAD MOSTAFA MOHAMMED	TEKNIK ARSITEKTUR	2014
58	14670059	SU`AD MUHAMED AHMED	FARMASI	2014
59	14670060	AMEENA SOARES	FARMASI	2014
60	14670061	AKREEMAH WATEH	FARMASI	2014
61	14670062	FATMA DOTAE	FARMASI	2014
62	15110228	MOHD ALLIFF BIN SARBAINI	PENDIDIKAN AGAMA ISLAM	2015
63	15110233	METEE KHAMLEE	PENDIDIKAN AGAMA ISLAM	2015
64	15150162	AKLIMEE HIM A DAM	PENDIDIKAN AGAMA ISLAM	2015
65	15210146	ELSA FALEEDA BINTI MOHD. YUSOFF	AL-AHWAL AL-SYAKHSHIYYAH	2015

66	15210147	NURUL SAKINA BINTI BOLHASAN	AL-AHWAL AL-SYAKHSHIYYAH	2015
67	15210148	NUR FATIHA BINTI BAHREN	AL-AHWAL AL-SYAKHSHIYYAH	2015
68	15210150	NURULHUDA SOFIA BINTI MORSALIN	AL-AHWAL AL-SYAKHSHIYYAH	2015
69	15220166	HASAN SYUKRI BIN ABDUL RAHMAN	HUKUM BISNIS SYARI'AH	2015
70	15220168	MUHAMMAD FAKHRI BIN OMAR	HUKUM BISNIS SYARI'AH	2015
71	15220170	MUHAMMAD AMILUDDIN BIN MANSOR	HUKUM BISNIS SYARI'AH	2015
72	15220171	KAMAL HASAN BIN MOHD RAZALI	HUKUM BISNIS SYARI'AH	2015
73	15310140	MOHD. ALWALID JUNAIDI	BAHASA DAN SASTRA ARAB	2015
74	15310152	NURMALINA FEBRIANI	BAHASA DAN SASTRA ARAB	2015
75	15310186	SARA MOSTAFA SHOKSHOK	BAHASA DAN SASTRA INGGRIS	2015
76	15320201	MOHAMED AB. AH. AMER	BAHASA DAN SASTRA INGGRIS	2015
77	15510227	SUKREE GANCHOO	MANAJEMEN	2015
78	15520135	HISHAM SALIM ALI AL-SHADIQ	AKUNTANSI	2015
79	15650117	MOHAMED IBRAHIM A. SALEM	TEKNIK INFORMATIKA	2015
80	15650118	MOHAMED S ALI SALEM	TEKNIK INFORMATIKA	2015
81	15650119	AHMAD ZAKI ROZINI BIN HAJI MUSTAKIM	TEKNIK INFORMATIKA	2015
82	15650120	AHMED NASER M NASER	TEKNIK INFORMATIKA	2015
83	15650122	MOHAMMED YOUSIF ESHAG AHMED	TEKNIK INFORMATIKA	2015

84	15650123	OMER ELRSHED DAFAALLA MOHAMED	TEKNIK INFORMATIKA	2015
85	15670080	FARHANA YEEKAJI	FARMASI	2015
86	15670081	BUSAROH WAJI	FARMASI	2015
87	15670082	SUFIANEE MAMA	FARMASI	2015
88	16170079	MUSAMMIL LATEH	MANAJEMEN PENDIDIKAN ISLAM	2016
89	16210178	ABDILRAHMAN NURSALAM BIN BOLHASSAN	AL-AHWAL AL-SYAKHSHIYYAH	2016
90	16210179	AZIZI BIN OTHMAN	AL-AHWAL AL-SYAKHSHIYYAH	2016
91	16210180	AHMAD ASYRAF BIN ABU BAKAR	AL-AHWAL AL-SYAKHSHIYYAH	2016
92	16540097	HAMZA ALI MOHAMED TALHA	PERBANKAN SYARI'AH	2016
93	16650128	FAZIL QAWI	TEKNIK INFORMATIKA	2016
94	16660127	ATIF HAMA	TEKNIK ARSITEKTUR	2016
95	17210173	AHMAD BAIHAQI SYAMSUDDIN SADERI	ALAHWAL AL SHAKHSIYYAH	2017
96	17410196	ZULHILMI WAN BIN BOLKAM	PSIKOLOGI	2017
97	17510233	LUONG NGOC UYEN	MANAJEMEN	2017
98	17520127	LUONG NGOC QUYNH	AKUNTANSI	2017
99	17660122	ERWA SAID AHMAD	TEKNIK ARSITEKTUR	2017
100	17320161	NAWRAS B. M. ABOURAHIM	SASTRA INGGRIS	2017

Table 4.8. Enter student data faculty Uin Malang

No	Nim	Gpa	Achievement	English language	Mischief Personality	Ta'lim Al Qur'an	Semester	Year
1	15650115	3.1	84	89	1	79	8	2019
2	1566011 0	3.25	89	87	2	73	8	2019
3	1456011 3	3.33	78	83	3	74	10	2018
4	1565011 6	3.6	71	88	2	75	8	2019
5	1456011 2	2.84	77	80	2	71	10	2019
6	1456011 1	3.11	84	88	2	79	10	2019
7	1456011 0	3.16	82	91	1	73	10	2019
8	1566011 4	3.13	77	79	2	81	8	2019
9	1566011 3	3.30	89	90	1	77	8	2019
10	1866011 2	3.7	92	81	1	79	2	2019
11	1866011 1	2,98	95	90	2	78	2	2019
12	1466010 1	3.23	93	90	2	80	10	2019
13	1554008 2	3.36	86	80	1	80	8	2019
14	1851019 5	3.88	88		1	86	2	2019
15	1852011 9	3.25	78		2	71	2	2019
16	1852009 9	3.10	77		3	77	2	2019
17	1667007 8	3.02	87	77	1	80	6	2019
18	1667007 9	3.14	81	79	2	83	6	2019
19	16670077	2.98	80	81	3	79	6	2019
20	16670076	2.77	77	84	1	71	6	2019
21	17930094	3.10	81	86	1	79	4	2019
22	17930084	2.89	79	76	3	81	4	2019
23	17930087	2.78	78	83	2	85	4	2019
24	17320186	3.45	88	82	1	86	4	2019

25	17310160	3.20	82	81	3	73	4	2019
26	17310176	3.32	83	79	1	82	4	2019
27	14110247	3.1	84	89	1	79	9	2018
28	14110248	3.25	89	87	2	73	9	2018
29	14110249	3.33	78	83	3	74	9	2018
30	14110250	3.6	71	88	2	75	9	2018
31	14110253	2.84	77	80	2	71	9	2018
32	14210143	3.11	84	88	2	79	9	2018
33	14210144	3.16	82	91	1	73	9	2018
34	14210145	3.13	77	79	2	81	9	2018
35	14210146	3.30	89	90	1	77	9	2018
36	14210147	3.7	92	81	1	79	9	2018
37	14210157	2,98	95	90	2	78	9	2018
38	14220193	3.23	93	90	2	80	9	2018
39	14310126	3.36	86	80	1	80	9	2018
40	14310127	3.88	88	79	1	86	9	2018
41	14320158	3.25	78	70	2	71	9	2018
42	14320159	3.10	77	73	3	77	9	2018
43	14320161	3.02	87	77	1	80	9	2018
44	14410215	3.14	81	79	2	83	9	2018
45	14410216	2.98	80	81	3	79	9	2018
46	14510187	2.77	77	84	1	71	9	2018
47	14510189	3.10	81		1	79	9	2018
48	14510190	2.89	79	76	3	81	9	2018
49	14630083	2.78		83	2	85	9	2018
50	14650115	3.45	88	82	1	86	9	2018
51	14660100	3.20	82		3	73	9	2018
52	14660102	3.32	83	79	1	82	9	2018
53	14660103	3.1		89	1	79	9	2018

54	14660104	3.25	89	87	2		9	2018
55	14660105	3.33	78	83	3	74	9	2018
56	14660106	3.6	71	88	2	75	9	2018
57	14660107	3.1	84	89	1	79	9	2018
58	14670059	3.25	89	87	2	73	9	2018
59	14670060	3.33	78	83	3	74	9	2018
60	14670061	3.6	71	88	2	75	9	2018
61	14670062	2.84	77	80	2	71	9	2018
62	15110228	3.11	84	88	2	79	8	2018
63	15110233	3.16	82	91	1	73	8	2018
64	15150162	3.13	77	79	2	81	8	2018
65	15210146	3.30	89	90	1	77	8	2018
66	15210147	3.7	92	81	1	79	8	2018
67	15210148	2,98	95	90	2	78	8	2018
68	15210150	3.23	93	90	2		8	2018
69	15220166	3.36	86	80	1	80	8	2018
70	15220168	3.88	88		1	86	8	2018
71	15220170	3.25	78	70	2	71	8	2018
72	15220171	3.10	77	73	3	77	8	2018
73	15310140	3.02	87	77	1	80	8	2018
74	15310152	3.1	84	89	1		8	2018
75	15310186	3.25	89	87	2	73	8	2018
76	15320201	3.33	78	83	3	74	8	2018
77	15510227	3.6	71	88	2		8	2018
78	15520135	2.84	77	80	2		8	2018
79	15650117	3.11	84	88	2	79	9	2019
80	15650118	3.16	82	91	1		9	2019
81	15650119	3.13	77	79	2	81	9	2019
82	15650120	3.30	89		1	77	9	2019

83	15650122	3.7	92	81	1	79	9	2019
84	15650123	2,98	95	90	2	78	9	2019
85	15670080	3.23	93	90	2		9	2019
86	15670081	3.36	86	80	1		9	2019
87	15670082	3.88	88		1	86	9	2019
88	16170079	3.25	78	70	2	71	7	2019
89	16210178	3.10	77		3	77	7	2019
90	16210179	3.02	87	77	1	80	7	2019
91	16210180	3.14	81		2	83	7	2019
92	16540097	2.98	80	81		79	7	2019
93	16650128	2.77	77	84	1	71	7	2019
94	16660127	3.10	81	86	1		7	2019
95	17210173	2.89	79	76	3		5	2019
96	17410196	2.78	78	83	2		5	2019
97	17510233	3.45	88		1	86	5	2019
98	17520127	3.20	82	81	3		5	2019
99	17660122	3.32	83	79	1	82	5	2019
100	17320161	3.1	84		1	79	5	2019

Name	Gpa	Achievement	English Language	Mischief Personality	Ta'lim Al Qur'an	Period
ABUBAKAR JAMA MOHAMOUD	Good	Very Nice	Very active	Little	Active	Even .2019
MAHAMOUD AHMED MOHAMED	Good	Nice	Active	Little	Active	Odd .2018
MOHAMOUD AHMED ALI	Good	Nice	Active	Little	Active	Even .2019
ABDULRAUF MILAD	Sufficient	Nice	Active	Sufficient	Active	Even .2019
KHALID FAA'UD HERSI	Sufficient	Nice		Sufficient		Even .2019
XAMSE ABDI OMAR	Good	Nice		Sufficient		Even .2019
ALI OMAR MOHAMOUD	Good	Nice	Very active	Little	Very active	Odd.2019
AHMED MOHAMED HASSAN	Good	Nice	Very active	Sufficient	Very active	Even .2019
ABDULLAHI MOHAMED SHEIKH ADAN	Good	Nice	Very Active	Sufficient	Active	Even .2019
YUSUF ABDI HIDIGOW	Good	Nice	Active	Sufficient	Active	Even .2019
ABDIRASHID HASSAN ABAILE	Good	Nice	Active	Sufficient	Very Active	Even .2019
MOHAMED AHMED HASSAN	Sufficient	Nice	Active	Sufficient	Sufficient	Even .2019

ABDALLE MOHAMED HASSAN	Good	Nice	Active	Little	Very active	Even.2109
ABDULLAHI ABDU'KARIM HUSSEIN	Good	Very nice		Little		Even.2019
LIBAN ISAK MOHAMED	Good	Nice		Sufficient		Even.2019
OMAR ABDIRIHIM HUSSEIN	Good	Nice		Sufficient		Even.2019
MUBARAK YAHYA MUBARAK AL-TARABI	Sufficient	Nice	Active	Sufficient	Active	Odd.2018
RABIE ELHUSSEIN ABDALLA	Sufficient	Nice	Active	Sufficient	Active	Odd.2018
MOHAMED JAMALELADEEN ADAM AHMED	Good	Nice	Active	Little	Active	Odd.2018
AHMED MOHAMMED ALTAYEB	Good	Nice	Very active	Sufficient	Active	Odd.2018
MOHAMED ELFADIL AHMED BAKHIT	Good	Nice	Active	Little	Active	Even.2019
TRAK AHMED MOHAMMAD	Sufficient	Nice	Active	Little	Active	Even.2019
ALTAYEB KHALAFALLA ALTAYEB	Good	Nice	Active	Sufficient	Active	Even.2019
MA LING	Good	Nice	Very active	Little	Active	Even.2019
JIN YU JIA	Good	Nice	Active	Sufficient	Very active	Even.2019
MA JIA HUI	Good	Nice	Active	Little	Active	Even.2019
ROMLEE YEEKABJEE	Good	Very Nice	Very active	Little	Active	Odd.2018
NASAFEE HEEMSUWAN	Good	Nice	Active	Little	Active	Odd.2018
MOHUMUDZAKEE DAERH SALAEH	Good	Nice	Active	Little	Active	Odd.2018
SORUR KHALEDO ABDULATIF	Sufficient	Nice	Active	Sufficient	Active	Odd.2018

RADON YEEWANGCHAROEN	Sufficient	Nice	Active	Sufficient	Active	Odd.2018
SYED MOHD FAUZI BIN WAN YUSOF	Good	Nice	Active	Sufficient	Active	Odd.2018
WAN AHMAD SYAHIR BIN WAN KAMARULZAMAN	Good	Nice	Very active	Little	Very active	Odd.2018
ABU UBAIDAH BIN FADZLI	Good	Nice	Very active	Sufficient	Very active	Odd.2018
LUQMAN HAKIM BIN AHMAD FAUZI	Good	Nice	Very Active	Sufficient	Active	Odd.2018
ZAINUL MUTAQIEN BIN MARZUKI	Good	Nice	Active	Sufficient	Active	Odd.2018
FARDOS MOHAMMED IBRAHIMH. ALHUDHAIRY	Good	Nice	Active	Sufficient	Very Active	Odd.2018
SAREEF YAWOR	Sufficient	Nice	Active	Sufficient	Sufficient	Odd.2018
APISIT DAMDEE	Good	Nice	Active	Little	Very active	Odd.2018
MR.ANUSORN MAPRASIT	Good	Very nice	Active	Little	Active	Odd.2018
SUMAIREE TOAKHWAN	Good	Nice	Active	Sufficient		Odd.2018
NUREEYAH BILMAD	Good	Nice	Very active	Sufficient	Active	Odd.2018
FARDOS MOHAMMED IBRAHIMH. ALHUDHAIRY	Sufficient	Nice	Active	Sufficient	Active	Odd.2018
MARITO JOAODA SILVA	Good	Very Nice	Very active	Little		Odd.2018
WANFAIS WAEKUEJIK	Good	Nice	Active	Little	Active	Odd.2018
CLARISSA RAHMADANIR NASUTION	Good	Nice	Active	Little	Active	Odd.2018
REFANEE BINMAD	Sufficient	Nice	Active	Sufficient	Active	Odd.2018

ATAFA YOUSAF ALI	Sufficient	Nice	Active	Sufficient	Active	Odd.2018
MOHAMED BELHEDI	Good	Nice	Active	Sufficient		Odd.2018
ABDULRAHMAN OMAR MOHAMMED BA HASHWAN	Sufficient	Nice	Very active	Little	Very active	Odd.2018
ABDELSALAM BAKRI MOHAMED BAKHEET	Sufficient	Nice	Very active	Sufficient	Very active	Odd.2018
NUR HAYATI	Good	Nice	Very Active	Sufficient	Active	Odd.2018
HUSEN RAMOS COSTA	Sufficient	Nice	Active	Sufficient	Active	Odd.2018
MORAKOT KRUATHONG	Sufficient	Nice	Active	Sufficient	Very Active	Odd.2018
RAMZI MUSTAFA NUWARA	Sufficient	Nice	Active	Sufficient	Sufficient	Odd.2018
HANI MUSTAFA MUHAMMAD	Good	Nice	Active	Little	Very active	Odd.2018
ZIAD MOSTAFA MOHAMMED	Good	Very nice	Active	Little	Active	Odd.2018
SU`AD MUHAMED AHMED	Good	Nice	Active	Sufficient	Active	Odd.2018
AMEENA SOARES	Good	Nice	Very active	Sufficient	Active	Odd.2018
AKREEMAH WATEH	Sufficient	Nice	Active	Sufficient	Active	Odd.2018
FATMA DOTAE	Sufficient	Very Nice	Very active	Little	Active	Odd.2018
MOHD ALLIFF BIN SARBAINI	Sufficient	Nice	Active	Little	Active	Even .2018
METEE KHAMLEE	Sufficient	Nice	Active	Little	Active	Even .2018
AKLIMEE HIM A DAM	Sufficient	Nice	Active	Sufficient	Active	Even .2018
ELSAFALEEDA BINTIMOHD. YUSOFF	Sufficient	Nice	Active	Sufficient	Active	Even .2018
NURUL SAKINA BINTI BOLHASAN	Good	Nice	Active	Sufficient	Active	Even .2018
NUR FATIHA BINTI BAHREN	Good	Nice	Very active	Little		Even .2018
NURULHUDA SOFIA BINTI MORSALIN	Good	Nice	Very active	Sufficient	Very active	Even .2018

HASAN SYUKRI BIN ABDUL RAHMAN	Good	Nice	Very Active	Sufficient		Even .2018
MUHAMMAD FAKHRI BIN OMAR	Good	Nice	Active	Sufficient	Active	Even .2018
MUHAMMAD AMILUDDIN BIN MANSOR	Good	Nice	Active	Sufficient	Very Active	Even .2018
KAMAL HASAN BIN MOHD RAZALI	Sufficient	Nice	Active	Sufficient	Sufficient	Even .2018
MOHD. ALWALID JUNAIDI	Good	Nice	Active	Little	Very active	Even .2018
NURMALINA FEBRIANI	Sufficient	Very nice	Active	Little	Active	Even .2018
SARA MOSTAFA SHOKSHOK	Sufficient	Nice	Active	Sufficient	Active	Even .2018
MOHAMED AB. AH. AMER	Good	Nice	Very active	Sufficient		Even .2018
SUKREE GANCHOO	Sufficient	Nice	Active	Sufficient	Active	Even .2018
HISHAM SALIM ALI AL-SHADIQ	Sufficient	Very Nice	Very active	Little		Even .2018
MOHAMED IBRAHIM A. SALEM	Sufficient	Nice	Active	Little		Odd .2019
MOHAMED S ALI SALEM	Good	Nice	Active	Little	Active	Odd .2019
AHMAD ZAKI ROZINI BIN HAJI MUSTAKIM	Sufficient	Nice	Active	Sufficient		Odd .2019
AHMED NASER M NASER	Sufficient	Nice	Active	Sufficient		Odd .2019
MOHAMMED YOUSIF ESHAG AHMED	Good	Nice	Active	Sufficient	Active	Odd .2019
OMER ELRSHED DAFAALLA MOHAMED	Good	Nice	Very active	Little	Very active	Odd .2019
FARHANA YEEKAJI	Good	Nice	Very active	Sufficient		Odd .2019
BUSAROH WAJI	Good	Nice	Very Active	Sufficient	Active	Odd .2019

SUFIANEE MAMA	Good	Nice	Active	Sufficient	Active	Odd .2019
MUSAMMIL LATEH	Good	Nice	Active	Sufficient	Very Active	Odd .2019
ABDILRAHMAN NURSALAM BIN BOLHASSAN	Sufficient	Nice	Active	Sufficient		Odd .2019
AZIZI BIN OTHMAN	Good	Nice	Active	Little	Very active	Odd .2019
AHMAD ASYRAF BIN ABU BAKAR	Sufficient	Very nice		Little	Active	Odd .2019
HAMZA ALI MOHAMED TALHA	Sufficient	Nice	Active	Sufficient	Active	Odd .2019
FAZIL QAWI	Good	Nice		Sufficient	Active	Odd .2019
ATIF HAMA	Sufficient	Nice	Active	Sufficient	Active	Odd .2019
AHMAD BAIHAQI SYAMSUDDIN SADERI	Good	Very Nice	Very active	Little		Odd .2019
ZULHILMI WAN BIN BOLKAM	Good	Nice	Active	Little	Active	Odd .2019
LUONG NGOC UYEN	Good	Nice	Active	Little	Active	Odd .2019
LUONG NGOC QUYNH	Sufficient	Nice		Sufficient	Active	Odd .2019
ERWA SAID AHMAD	Sufficient	Nice	Active	Sufficient	Active	Odd .2019
NAWRAS B. M. ABOURAHIM	Good	Nice	Active	Sufficient		Odd .2019

Table 4.9. Entry evaluation student data faculty Uin Malang

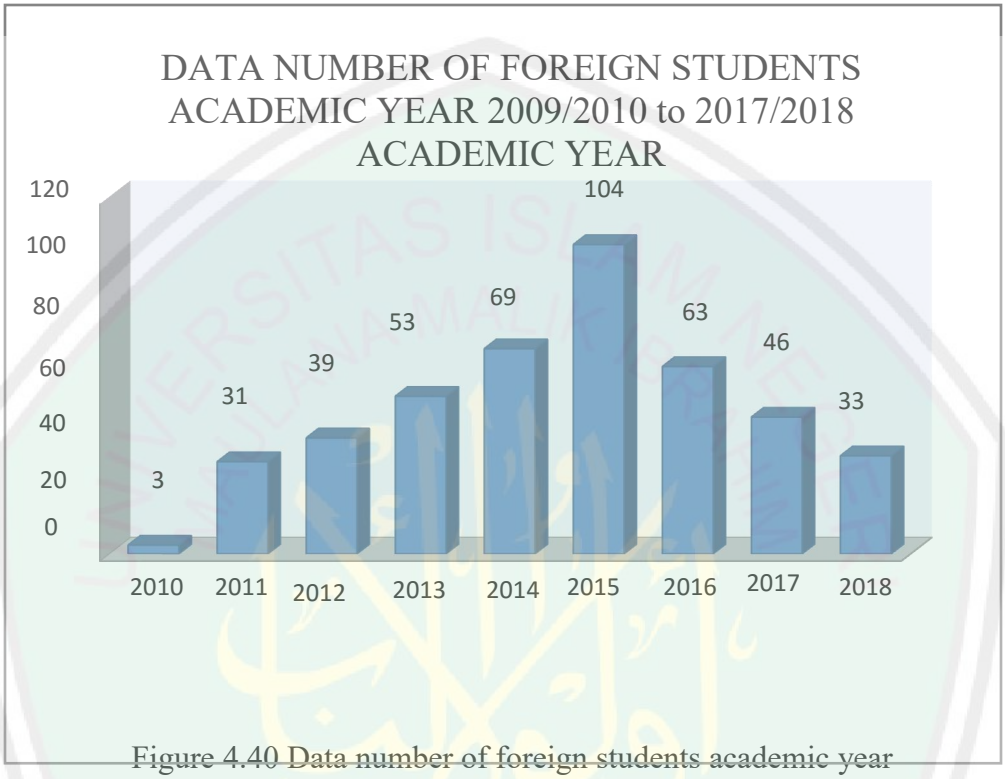


Figure 4.40 Data number of foreign students academic year

Table 4.10 Enter year table student data faculty Uin Malang

NO	ENTER YEAR	TOTAL
1	2009	2
2	2010	31
3	2011	39
4	2012	53
5	2013	69
6	2014	104
7	2015	63
8	2016	46
9	2017	33
10	2018	13
TOTAL		453

Table 4.11 Study Status Table Student Data Faculty Uin Malang

STUDY STATUS	TOTAL
Active	139
Paid Leave	1
Non-Active	52
Graduated	167
Mutation	2
Decide Of Study	92
TOTAL	453

UIN Maulana Malik Ibrahim Malang continues to make various efforts in order to realize a world-class Islamic campus. Various international level academic activities are often held, such as holding Guest Lectures, Seminars, Workshops, to study abroad. Besides that, there are also a number of foreign students studying at this ulul albab campus.

This graph shows data of foreign students that entry for university Uin Malang and How number of student are joining every year, like we sow in the graphic data

Number of foreign students academic year 2009/2010 to 2017/2018 academic year and the year after year the student become more than year before.

The two table shows the number of student are study Uin Malang the total number is 453 foreign student 2009 until 2018 and the anther table shows how many student are Graduated and how many students are now study and how many students are Non-Active and how many students are Mutation.

There was a graduation this time, there were many foreign students each from Jordan, Malaysia and Libya Somalia, Sudan, Thailand, Yemen are Graduated and success delivered and They will be proud if the FE graduate can make achievements that benefit the community or where he works. Congratulations and good luck for prospective graduates of UIN Malang.

Table 4.12 Accuracy Table of results Student Data Faculty Uin Malang

Accuracy Data Results	Total
Success Data	84
Unsuccessful Data	26
TOTAL	100

Based on the test results shown in Table 4.10 it is obtained:

$$System\ Accuracy = \frac{\text{Same Amount of Results}}{\text{Amount of TEST data}} x\ 100\ \%$$

$$= \frac{84}{100} x\ 100\ \%$$

$$= 84.\%$$

Based on the calculation of system accuracy the accuracy of the program is obtained 84% with the total amount of data is 100 and the amount of data that has the same result is 84. Thus the results of the DSS Foreign Student performance for this system obtained for the accuracy of the data. In the Uin Malang manual the calculation there are data that is not the same as the application calculation all of them , this is a calculation for the there are other factors that cause students to enter in the program, namely the interest of the students themselves and the role of the teacher. The Achievement student is referred to as the case of home works and Mischief personality , while in the only race system on values, namely academic values and psychological values. With these numbers, it can be concluded that this system is quite feasible to use as a support system for decision making majors in students. Because after all the choice remains in the student.

The accuracy of the program is obtained 84% with the total amount of data is 100 and the amount of data that has the same result is 84. Graphs of the accuracy of the results of system

testing can be shown in Figure 4.40. shown on the graph in red is the result of testing with UNSUCCESS DATA status and in blue is the test result with SUCCESS DATA status.

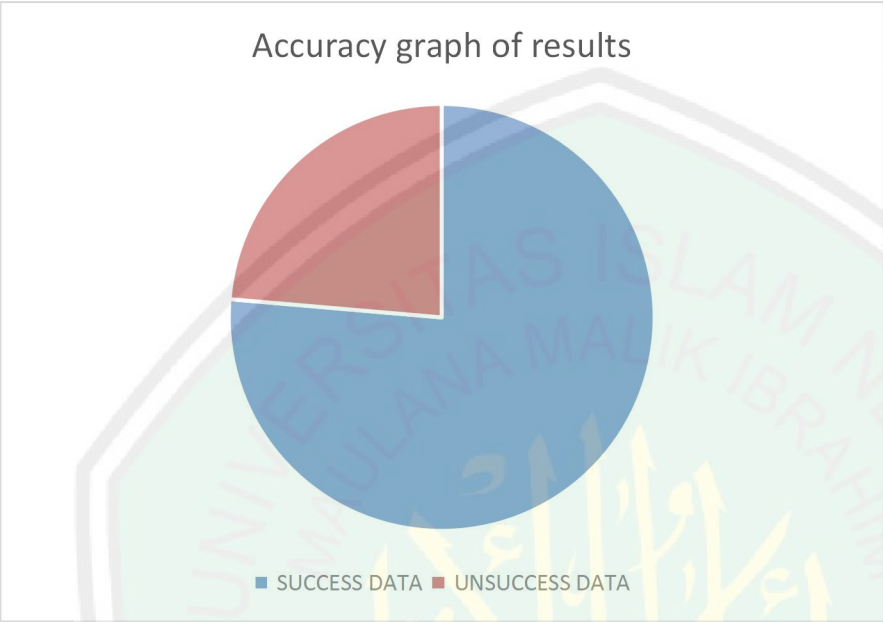


Figure 4.41 Accuracy graph of results

4.4 Integration with Islam

Humans are often faced with difficult choices, whether they are related to their work, mate, or in other things that all affect their lives. Even so, humans still have to choose which ones will benefit their lives. In this case a student must choose a department that matches his ability to continue his education at the world class university/ criteria level. It has become commonplace for students to be confused in choosing a suitable course for them. For that world class university / Uin Malang always conduct tests to determine the direction for their students. But the criteria carried out in the University still use manual methods as usual, namely by spreading sheets of paper to their students. Then the students must work on the test with a set amount of time. Then wait for the results of the announcement for this student to know what department they are in. This is certainly related to the efficiency of time used.

Great attention. Nash-nash Al-Quran and the Sunnah mostly explain the primacy of time. When explaining about the blessings that Allah swt Time in an Islamic perspective is among the cases that get subjugation to humans, time is included among these favors. Allah said:

وَالعَصر } 1 { إنَّ الإنسانَ لَفي خُسر } 2 {
إلاَّ الَّذينَ آمَنوا وَعَمِلُوا الصّالِحاتِ وَتَواصَوا بِالحَقّ وَتَواصَوا بِالصَّبر } 3 {

Meaning:

"For the sake of time. Indeed, man is truly in loss, except those who believe and do good deeds and counsel-advice so that they obey truth and counsel-counsel so that they can impose patience ”(Qur'an, Al-1-3).

In this verse Allah swears by time, and this shows the importance of the period. Surely in times there are miracles. In times of pleasure and distress, health and pain, wealth and poverty. If a person wastes his age, one hundred years is in vain, even mere immorality, then he repents at the end of his life, with repentance received, then he will get perfect happiness in return, being in heaven forever. He really knows that the most valuable time of his life is a bit of his repentance. Indeed, the period is a gift from Allah Ta'ala, there is no reproach to him, man is the one who despised when not using it (Isma'il, 2015).

This application system was created to replace the manual test method that is still used in the university so that the goal does not take up a lot of time, so can streamline time well. Besides that, it can also make it easier his job, because it has been computed. The support system for determining student majors using the TOPSIS method makes it easy admin to determine the direction of the students

From Abu Hurairah ra, the Prophet said: "Whoever releases one trouble of a believer, surely Allah will deliver from him one tribulation on the Day of Judgment. Whoever makes other people's business easy, surely God will make it easier in the world and in the hereafter. Whoever covers the shame of a Muslim, surely Allah will cover his shame in the world and in the hereafter. God always helps His servants as long as His servant likes to help his brother ". (Narrated by Muslim)

If you know that you are actually able to do something in terms of helping other people's difficulties, then immediately do it, immediately give help. Even more so if the person has asked for it. Because the help given will mean a lot to people who are in trouble. And really God loves people who want to give happiness to others and eliminate people's difficulties (Isma'il, 2015).

CHAPTER V

Conclusion

5.1 Conclusion

After analyzing, designing and implementing the Decision Support System for select of outstanding foreign students, conclusions are obtained as follows:

1. The TOPSIS method can be applied in the DSS in determining the majors in students. This system is used to obtain recommendations for determining majors for students in Uin Malang. This system is built based on the website using the PHP and MySQL programming languages as the database. The criteria used can be adjusted to the criteria needed for the determination of majors in students. Henceforth, a system design plan will be made in more detail, and will continue at the development stage of the system. How to apply it in this case with students doing DSS tests that have been provided in the system as one of the criteria in determining the majors, then the results of the tests are inputted in the system provided along with other values obtained through student report results is a criterion in determining majors in this case, namely the value of GPA, Language, Achievement, Mischief Personality, and Ta'lim Al Qur'an. After the values are fulfilled then it will be processed using the TOPSIS method which will be known directly as a result of the direction of advice for students. So this TOPSIS method is applied to the calculation process in determining selected alternatives. The TOPSIS calculation is done when the values are in the following stages:

a. Make a decision matrix which is then normalized by the matrix

b. Creating a normalized weight rating matrix from the multiplication of matrix normalization results with a weighted rating matrix. Weight values are generated based on user input, so that each user has different priority values.

c. Then determine the value of the positive and negative ideal solution based on the weighted rating matrix value.

d. Determine the distance between weighted values for each alternative to positive ideal solutions and negative ideal solutions.

e. And finally calculate the preference value for each alternative.

2. The TOPSIS method can be used to solve the problem of determining the student's majors, with the calculation method found that the most prioritized criteria is the academic value. Giving preference weight values and the criteria weights used affect the results of the TOPSIS calculation, if the preference weight values and criteria weights are greater, then the ranking results will have a greater value as well. With the construction of the DSS it can facilitate the Uin Malang University in helping determine to select of their students.

3. This system uses initial identification in the form of a condition where the process of determining majors at selecting foreign students is still manual so it requires considerable time to obtain the results of determining the majors for their selecting foreign students. Furthermore, it is done by using the TOPSIS method calculation to obtain the results of student majors. From the test data by comparing the initial data with the results data from the system, the data accuracy rate is Where these criteria have their respective weight set by author in conducting his research for GPA Semester 40%, Achievement 12%, English Language 13%,Mischief Personality 20%, and Ta;lim Al Qur'an 15%.With these figures, it can be said that this system is quite feasible to be used within the institution, because after all this system is only a supporter of the decision of a problem and the choice will still be on the student, scale uses several questions to measure individual behavior by responding to the 5 choice points in each item, strongly agree, agree, not decide, disagree, and strongly disagree.

4. The TOPSIS method has an accuracy of program 84.% with the total number of data is 100 and the amount of data that has the same result is 84. With this number, it can be said that this system is quite feasible to be used in the selection process of DSS Foreign Student at UIN Malang, because this system only provides recommendations or as a decision support, then the decision on the results of the selection remains with the authorities in the Islamic State University of Malang.

5.2 Suggestions

The researcher felt that in making this application there were still many shortcomings which would later be very necessary to develop so that this application could later be used optimally, including:

1. Research on making this application can be re-developed with different methods which are certainly in accordance with case studies that occur in the field later.

2. Future studies are expected to be able to perfect this research, by adding other features in determining the selection and displaying the results of the selection so that better results can be accounted for.

3. Future studies are expected to use alternative data samples greater than. An alternative amount of data is expected to be greater provide the results of a selection of Outstanding Foreign Students that are close to reality.

4. Future studies are expected to be able to develop systems that are built by building a decision support system for Similar problems are based on Android or IOS mobile and are dynamic.

5. Future studies can make comparisons with methods other than the TOPSIS Method for selecting Outstanding Foreign Student at UIN Malang, to obtain a comparison of their accuracy values.

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