

# Decision Support System to Determine KIP Scholarship Recipients at STIKOM Uyelindo Kupang

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## Abstract

Increasing access to higher education for the underprivileged is a priority through the Smart Indonesia Card (KIP) College program. However, the selection process for scholarship recipients often faces challenges in the form of many criteria that must be considered manually, such as academic achievement, economic conditions, and the number of family dependents, which can affect the efficiency and accuracy of decision making. This study aims to develop a Decision Support System (DSS) based on the Naive Bayes method that is able to automate the selection process by considering various criteria objectively. This study is a web-based system that is expected by STIKOM Uyelindo Kupang to conduct the selection of KIP scholarship recipients more quickly, transparently, and accurately. This system is expected to be able to increase the effectiveness and efficiency of the selection process and minimize the potential for bias, thus ensuring that prospective recipients are truly worthy.

**Keywords:** Accuracy, Decision Support System, Efficiency, Naive Bayes, Scholarship.

## 1. Introduction

Education is one of the important factors in improving the quality of life and welfare of society. The Indonesian government recognizes the importance of access to higher education for all levels of society, especially for those from underprivileged families. For this reason, one of the flagship programs that has been launched is the Smart Indonesia Card (KIP) for College, which aims to provide opportunities for outstanding students from families with economic limitations to receive higher education without being burdened by high education costs [1]

STIKOM Uyelindo Kupang has been running a scholarship program since 2015 as part of its commitment to increasing access to higher education for students who have academic potential but face financial constraints. This scholarship program includes various schemes, including internal scholarships from the campus, government scholarships through the Kartu Indonesia Pintar (KIP) Kuliah program, and scholarship assistance from external organizations that collaborate with the campus. With this program, STIKOM Uyelindo Kupang aims to provide wider opportunities for students in East Nusa Tenggara to be able to pursue higher education and contribute to regional development [2]

In the context of KIP scholarship recipient selection, the Naive Bayes method can be used to classify prospective recipients based on various criteria, such as academic achievement, parental income, number of family dependents, and other socio-economic conditions. By applying Naive Bayes, each candidate can be given a probability based on the combination of criteria values they have, which can then be used to determine the priority of scholarship recipients. This process not only speeds up the selection time but also increases transparency and objectivity in decision-making, thereby minimizing the potential for bias or unfairness. Research by [3] shows that the application of the Naive Bayes method in the selection of scholarship recipients can increase efficiency and accuracy in the decision-making process. In addition, research by [4] also indicates that the use of Naive Bayes in determining the eligibility of KIP Kuliah scholarship recipients can produce more objective and targeted decisions.

## 2. Literature Review

In a study conducted by [3] the Naive Bayes method was applied to predict scholarship recipients based on criteria data including academic achievement, economic conditions, and involvement in extracurricular activities. The results of the study showed that Naive Bayes was able to provide fairly accurate results in the scholarship selection process, given its ability to manage large data and various interrelated variables. This study confirms the effectiveness of using the Naive Bayes method in scholarship selection and can be applied in various higher education institutions.

Meanwhile, Decision Support System for Selection of Smart Indonesia Card Scholarship Acceptance (KIP-K) Nusa Cendana University Using Naïve Bayes Method by Arisandy Pratama Putra, Rian Adi Saputra, and Melkianus M. L. Kakiay [5]. This study develops a decision support system to select KIP-K scholarship recipients at Nusa Cendana University, Kupang. Using the Naïve Bayes method, this system considers criteria such as DTKS status, parents' occupation and income, and number of dependents. The results of the study show that this system has high accuracy in predicting the eligibility of scholarship recipients.

Research by [3] tested the use of DSS in the context of scholarship recipient selection by implementing various classification methods, including Naive Bayes. In this study, a system was developed that can consider various variables to determine scholarship recipients fairly and efficiently. The results of this study confirm that the use of the Naive Bayes method in DSS increases effectiveness and reduces human error in decision making.

### 3. Research Methods

This section contains the methods used in writing the thesis.

#### 3.1. System Analysis

The purpose of this study is to create a decision support system in determining the eligibility of recipients of the Smart Indonesia Card (KIP) scholarship at STIKOM Uyelindo Kupang, applying the Naïve Bayes method in the system, and testing the effectiveness of the Naïve Bayes method in determining scholarship recipients at STIKOM Uyelindo Kupang.

#### 3.2. Use case diagram

Use Case diagrams describe an interaction between one or more actors with system features and show the expected functionality of a system for users (admin).

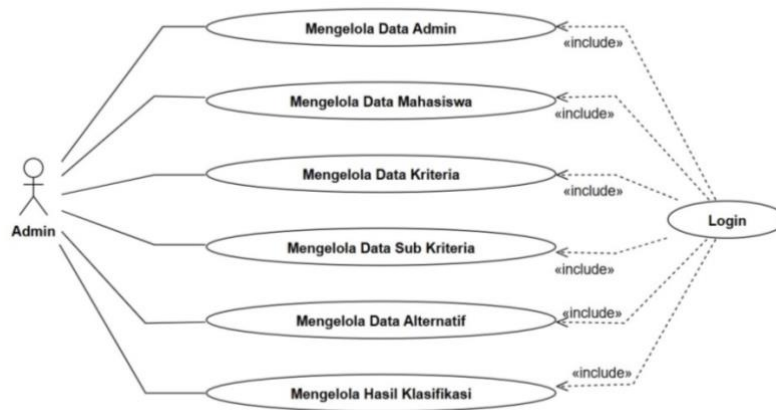


Fig. 1: Usecase Diagram

#### 3.3. Entity relation diagram

A model to explain the relationship between data in a database based on basic data objects that have relationships between relations. ERD to model data structures and relationships between data, to describe it uses several notations and symbols.

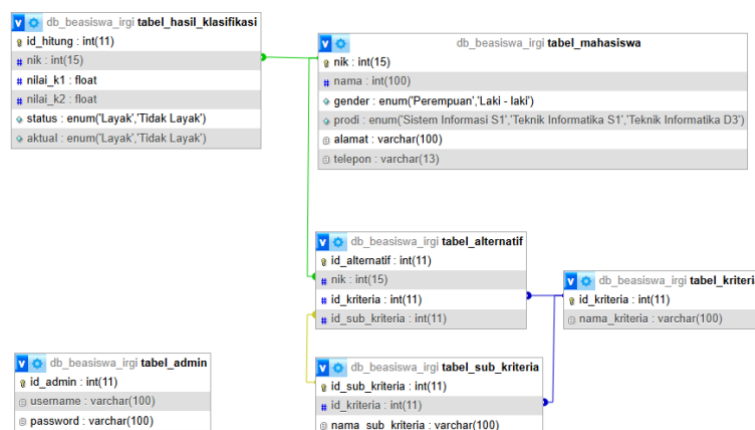


Fig. 2: Entity relation diagram

## 4. Results and Discussion

Implementation is an application of a working method that is carried out based on the results of the design and analysis that have been made previously into a programming language. This website is built using the PHP programming language and MySQL as its database server.

### 1. Admin Login Page

The image shows the login page of a web-based system, which is specifically designed for use by admins. On this page, users are asked to enter their email and password as an authentication process before they can access the system.

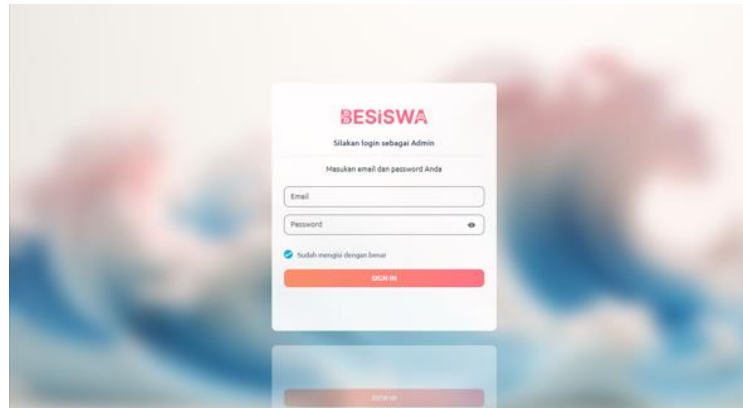


Fig. 3: Login Page

### 2. Main Dashboard Page

The image shows the main dashboard page of the scholarship information system used by the admin.

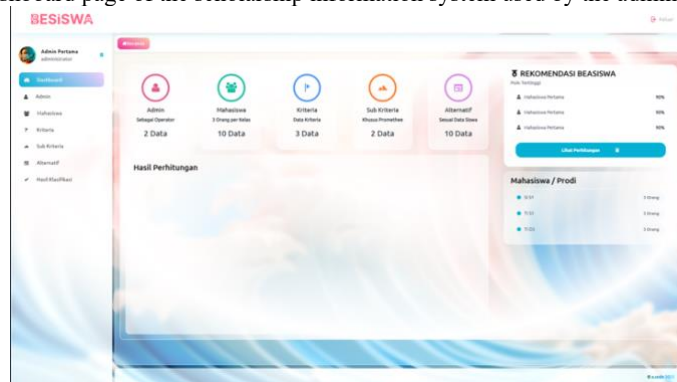


Fig. 4: Main Dashboard Page

### 3. Admin data page

On this page, a table is displayed containing complete information about the admin accounts registered in the system.

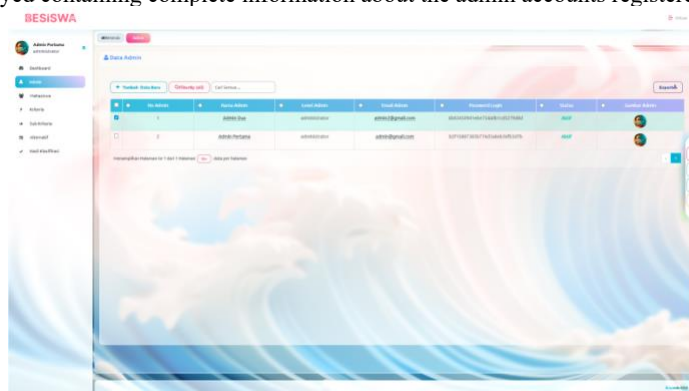


Fig. 5: Admin Data Page

### 4. Student data page

The image shows the student data page in the scholarship information system, which functions to display and manage the list of registered students.

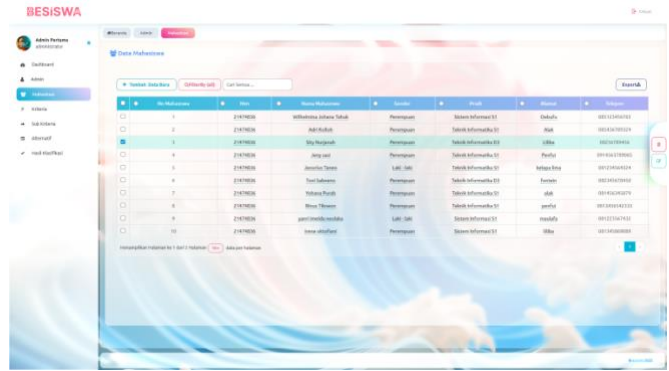


Fig. 6: Student Data Page

5. Criteria data page

The image shows the criteria data page in the scholarship information system, which functions to manage the list of scholarship selection criteria.

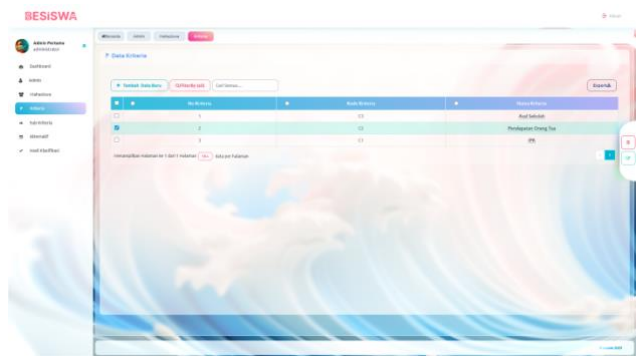


Fig. 7: criteria data page

6. Sub criteria data page

After the buyer puts the product into the shopping cart, the buyer will then make the payment and upload proof of payment so that it can be processed.

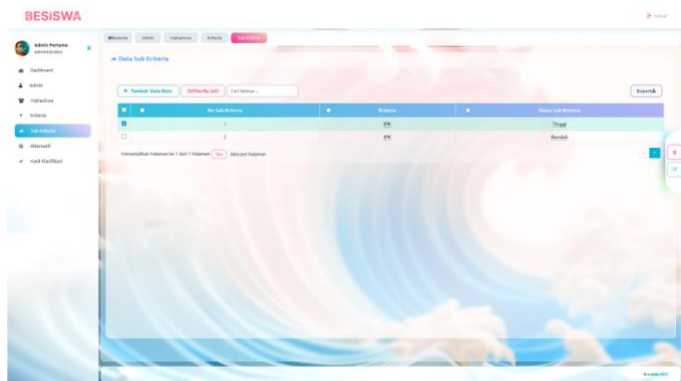


Fig. 8: Sub Criteria Data Page

7. Alternative data page

The image shows the alternative data page on the scholarship information system, which functions to display and manage student data as alternative scholarship recipient candidates.



Fig. 9: Alternative data page

## 8. Scholarship classification results data page

The image shows the scholarship system interface which is showing the scholarship classification results data page.

No	Nama Mahasiswa	Nilai Rata-rata	Nilai Ujian	Status	Kategori
1	Abdullah Al-Fatih	85	85	Ya	Ya
2	Adi Kurnia	80	80	Ya	Ya
3	Alif Hidayat	80	80	Ya	Ya
4	Alvin	80	80	Ya	Ya
5	Amelia Satrio	80	80	Ya	Ya
6	Andriani	80	80	Ya	Ya
7	Andriani Putri	80	80	Ya	Ya
8	Arif Triana	80	80	Ya	Ya
9	Arif Triana	80	80	Ya	Ya
10	Arif Triana	80	80	Ya	Ya

Fig .10: Scholarship classification results data page

## 5. Conclusion

This study produces a web-based decision support system designed to assist STIKOM Uyelindo Kupang in the process of determining the eligibility of Kartu Indonesia Pintar (KIP) scholarship recipients. This system was built with the aim of replacing the manual selection process that has been used so far, so that the selection process can be carried out more quickly, efficiently, objectively, and structured. Through this system, various assessment criteria such as GPA, parental income, and school of origin can be processed automatically to produce recommendations for scholarship recipients. The decision support system developed in this study is able to improve the quality, effectiveness, and transparency in the selection process for KIP scholarship recipients at STIKOM Uyelindo Kupang. In the future, this system can be further developed by adding new features, such as integration with the national scholarship database system, or an automatic evaluation feature for supporting documents submitted by prospective scholarship recipients.

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## References

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