

Decision Support System for Selecting Study Programs for New Students at STMIK Syaikh Zainuddin NW Anjani Using the Profile Patching Method

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Abstract The Decision Support System (DSS) is a computer-based information system that generates various alternative decisions to assist in addressing structured and unstructured problems. At STMIK Syaikh Zainuddin NW Anjani, the selection of study programs is still done manually, where prospective students are directly asked to choose which study program they wish to enter without any data processing based on their abilities and skills first. This approach can have negative consequences, as once they begin their studies in the chosen program, they may struggle to keep up due to misalignment with their skills, interests, and abilities, leading many to regret their choice and even decide to switch programs or transfer to another university; some may even attend less frequently. Therefore, there is a need for a system/application that can provide recommendations for study programs that align with their talents, interests, and capabilities.

The Decision Support System for Selecting Study Programs for New Students at STMIK Syaikh Zainuddin NW Anjani uses the Profile Matching Method and the Prototype Method for software development, which begins with requirements gathering, prototype design, prototype evaluation, system coding, system testing, system evaluation, and system implementation.

This decision support system calculates the exam scores taken by new students and successfully provides suitable recommendations based on their exam results. This application can also directly print the results of the calculations and recommendations for study programs for new students; they can also directly print the results of their tests.

Keywords: *Decision support system, Profile Matching, Prototype*

1. Introduction

The development of technology and information is so rapid that almost all professional fields have implemented computer technology into their operations. Companies, government agencies, and academic fields have begun to use technology in their activities,

for example, in determining program selection and choosing academic advisors within institutions of higher education throughout Indonesia. According to Kusrini (Malau, 2020), decision support systems greatly assist decision-makers in problem-solving without replacing their evaluative roles. A decision support system can be defined as an interactive computer-based system that helps decision-makers address unstructured problems by utilizing data and models.

STMIK Syaikh Zainuddin NW Anjani has two study programs: the Information Technology (IT) program and the Information Systems (IS) program. The selection of study programs for new students at STMIK Syaikh Zainuddin NW Anjani is conducted by allowing them to directly choose the program they wish to enter during registration, without any consideration or processing of data to provide advice for selecting a program that aligns with their interests, talents, and grades. As a result, there are many students who regret their choice, transfer to another program, or even drop out halfway through the semester due to The student feels that they do not fit with the chosen major and it becomes a source of regret.

According to Fajrin (2022), Profile Matching is a part of Multicriteria Decision Making that can provide solutions for objective decision-making that has clear goals. The process of Profile Matching broadly involves comparing the actual values of a profile being assessed with the expected profile values, so that the difference in competencies (Gap) can be identified. This research will develop a system that implements the Profile Matching method to determine study programs at STMIK Syaikh Zainuddin NW Anjani that align with the abilities and interests of students. The Profile Matching method is a decision-making mechanism that assumes there is an ideal level of predictor variables that must be possessed.

The profile matching method is used to match profiles or compare a target profile with alternative profiles. This method is often employed in searching for suggestions or recommendations, leading to more objective or clearer decision outcomes.

Therefore, the author conducted research in analyzing and designing an information system as a support tool for selecting study programs to assist in decision-making by using the Profile Matching method so that the choice of study programs for new students is more accurate.

Based on the background presented above, the author raises the title "**DECISION SUPPORT SYSTEM FOR SELECTING STUDY PROGRAMS FOR NEW STUDENTS AT STMIK SYAIKH ZAINUDDIN NW ANJANI USING THE PROFILE MATCHING METHOD.**"

To keep the discussion focused and avoid straying from the main issues being studied, the author limits this research for a more directed approach.

1. The method used to create this decision support system employs *The Profile Matching method*.
2. The research was conducted at STMIK Syaikh Zainuddin NW Anjani.
3. The criteria used for evaluation are the Academic Potential Test (TPA), the English Language Test, the Hardware & Software Test, the Basic Programming Test, and the Major Subject Test from High School or equivalent.

4. The system to be built will be web-based, using the PHP programming language and a MySQL database.

Based on the background of the problem that has been presented, the formulated problem is "How to Create a Decision Support System for Selecting Study Programs for New Students at STMIK Syaikh Zainuddin NW Anjani Using *The Profile Matching Method*?".

The goal of this research is to create a Decision Support System for New Students' Program Selection at STMIK Syaikh Zainuddin NW Anjani.

2. Materials and Methods

The research method is an effort to investigate and explore a problem through careful and meticulous scientific procedures to gather, process, analyze data, and systematically and objectively draw conclusions to obtain answers to the issues raised. (Abubakar, 2021). The methods used in this research are the Profile Matching method, supported by the development method known as the Prototype method.

1. Type of Data

A. Primary Data

A Data Primer is qualitative data that can be gleaned from the design, implementation, monitoring, and research processes.

This data was obtained from the Head of the Study Program and the Administrative Staff, who are responsible for receiving new students at STMIK Syaikh Zainuddin NW Anjani.

B. Secondary Data

Secondary data is data that can exist in each phase of planning, execution, and monitoring of the research.

This secondary data is in the form of data obtained from the Head of the Study Program and the PMB committee in the form of new student grades.

2. System Development Method

The development method used in creating this decision support system employs the Prototype method. According to Harsiti et al. (2014), the Prototype method is a system

development method that utilizes an approach to quickly and incrementally create a program that can be promptly evaluated by users.

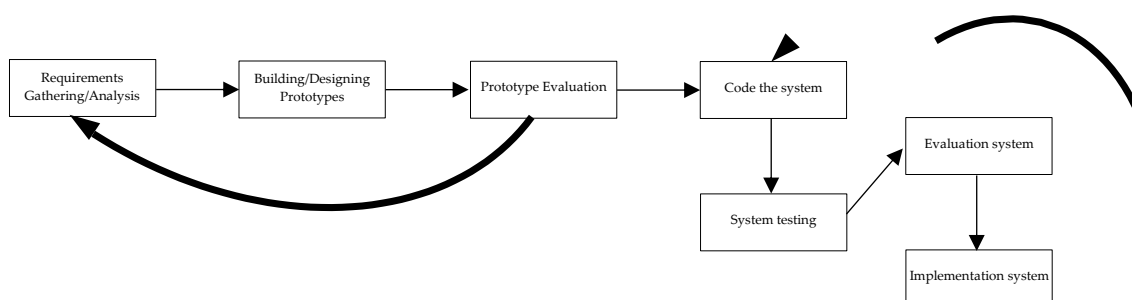


Figure 3.1 Prototype Model

A. Requirements Gathering

At this stage, data collection is conducted through literature studies, interviews and observations. This included data related to new students and the research at hand.

Interviews were conducted with the Head of the Study Program and the Head of the Admissions Committee. Observations were made to support the interview activities at STMIK SZ NW Anjani by collecting data related to the research.

The obtained data will be calculated using the Profile Matching Method, the data required in this research, among others:

Assessment Criteria, Weight Value, Mapping of Competency Gaps/Target Standards, and Gap Weight.

B. Planning

The design of the system flow is carried out using UML (Unified Modeling Language) system development tools.

C. Prototype Evaluation

The evaluation phase of the prototyping involved the author assessing the Program Chair by presenting the interim results of the developed system to determine if it meets the criteria or not.

D. System Coding

This approved prototyping phase can directly proceed to the development stage of the decision support system for selecting academic programs using the PHP programming language.

E. System Testing

This decision support system application has just completed its development phase and is now entering the system testing stage, which will demonstrate the final results of the developed system. It will then evaluate both the input and output processes, as well as the accuracy of the system in determining the study program for new students.

F. System Evaluation

After conducting the system testing phase, an evaluation is performed to determine whether the developed system meets the requirements or has deficiencies.

G. Implementation System

The final stage is the implementation of the system, in which the decision support application for choosing study programs is now operational.

3. Results

The appearance of the program developed by researchers in the Decision Support System for New Students Program Selection at STMIK Syaikh Zainuddin NW Anjani using the Profile Matching method is as follows:

1. Page display for MABA

This page displays two sections. The first consists of a search feature to look for exam results and recommendations for suitable study programs based on those

results, as shown in Figures 4.1 and 4.2.



Figure 4.1 Display page for new students



Figure 4.2 Printed page of exam result and study program recommendation

2. Page Views for Commite or Admin

A. Login page display

On this login page, the committee/admin is kindly asked to log in first in order to add, modify, and delete the existing data in the application. The appearance of this login page can be seen in image 4.3.

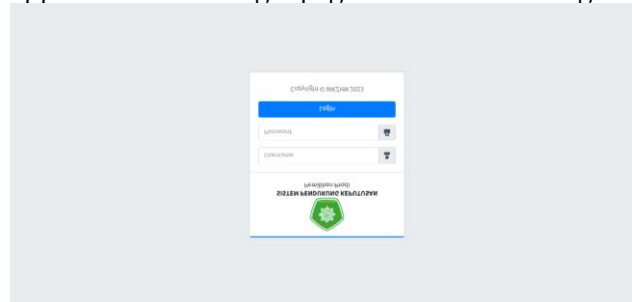


Figure 4.3 Login Page

B. Main Page Display

This page can only be accessed by the committee/admin who manage the data, namely adding, modifying, and deleting data. This page provides several menus consisting of the home menu, new student data menu, aspect or target menu, weight description menu, criteria menu, profile menu, calculation menu, and logout menu. The appearance of the page can be seen in Figure 4.4.



Figure 4.4 Main Display

C. New Student Data List Page Display

This page retrieves data from the database db_spk, from the table cmb, which displays exam number, name, date of birth, gender, address, and major from high school. In this menu, the administrator can add, modify, and delete data. The appearance of this menu can be seen in image 4.5.

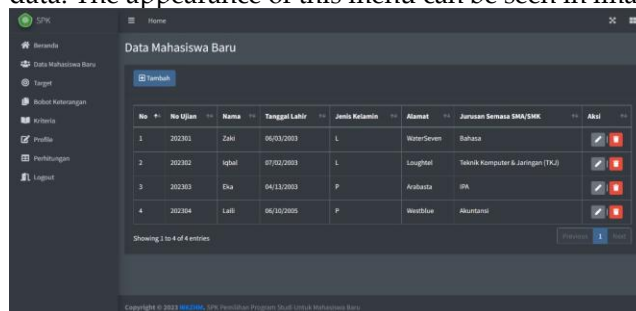


Figure 4.5 New Student Page Display

D. Aspect Page View

This page displays a database from the aspect table, which includes the program study, percentage, cf, and sf. The data can only be modified because at STMIK Syaikh Zainuddin NW there are only two study programs taken as aspects, so the menu available on this page only includes the modify menu for changing the values of percentage, cf, and sf. The appearance of the aspect page can be seen in image 4.6.

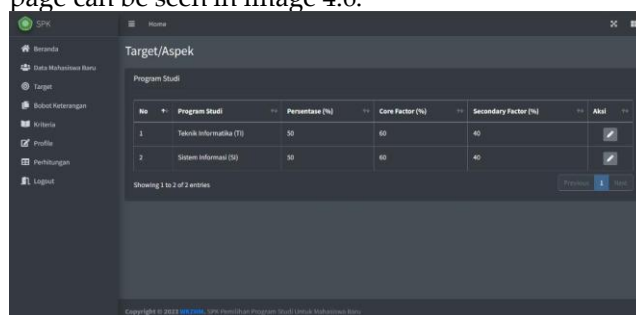


Figure 4.6 Aspect Page View

E. Page View Weight Description

On this page, there are three tables displayed: the department_weight table, the score_weight table, and the gap table. In the department_weight table, the fields displayed are department and weight. For the score_weight table, the fields displayed are exam_score and weight. The gap table shows the difference, gap_weight, and notes. In the department_weight table, the

admin can add, edit, and delete entries. In the score_weight table, only editing and deleting are allowed. The gap table itself is already validated and cannot be changed or added to. The layout of the weight notes can be seen in images 4.7, 4.8, and 4.9.

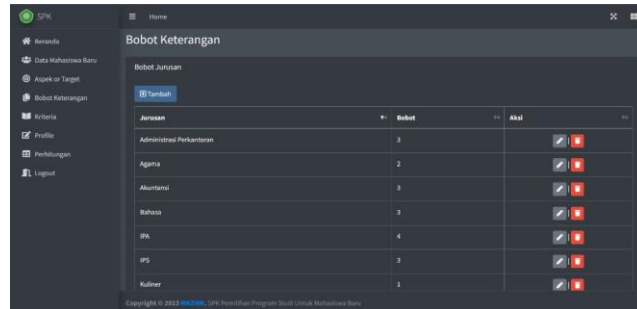


Figure 4.7 Departemen Section



Figure 4.8 Value Section

Figure 4.9 Gap Weight Value Section

F. Criteria Page Kriteria

On this page, a table of criteria is called and displayed, comprising fields that consist of aspects/targets, criteria, standards, types that can be added, changed, and deleted. The appearance of this page can be viewed in image 4.10.

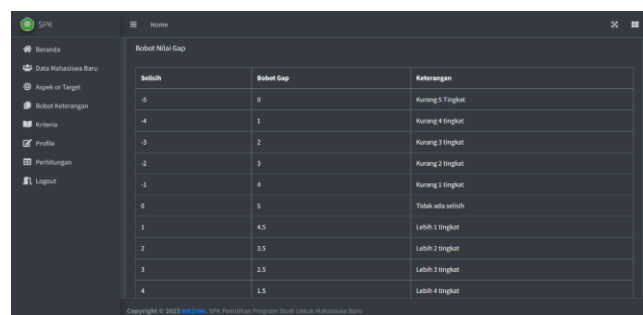


Figure 4.10 Criteria page Views

G. Profile page view

The profile page is an input form where the admin will input the scores from the exams, which are then saved and can later be viewed in the profile button for the table of that profile. This page layout can be seen in Figure 4.11.

Figure 4.11 Profile Page View

No	Nama MABA	Prodi Teknik Informatika	Prodi Sistem Informasi	Hasil Akhir	Rekomendasi	Aksi
1	Zaki	4.4	4.4	4.4	Teknik Informatika	[Print]
2	Iqbal	3.3	3.6	3.75	Sistem Informasi	[Print]
3	Eka	4.3	4.3	4.3	Teknik Informatika	[Print]
4	Laili	4.4	4.4	4.4	Teknik Informatika	[Print]

H. Calculation Page View

This display showcases the process and results of the profile matching method from both aspects, as well as the total score, and options to print the report and the result letter for each new student. The view for this calculation page can be seen at figure 4.12 and figure 4.13

No	Nama	C1	C2	C3	C4	C5
1	Zaki	4	3	4	3	3
2	Iqbal	3	3	5	2	5
3	Eka	3	3	4	4	4
4	Laili	4	4	3	3	3

Figure 4.12 Calculation Page View

Figure 4.13 Calculation display of final result

4. Conclusions

Based on the results of the system development that has been conducted from the design process to the implementation of the Decision Support System for New Student Program Selection at STMIK Syaikh Zainuddin NW Anjani Using the Profile Matching Method, the following conclusions can be drawn:

1. The Decision Support System Application for New Students' Program Selection can provide suggestions/recommendations for study programs for new students based on the results of the tests they have taken.
2. By utilizing this DSS application, the admissions committee can provide study program recommendations for new students so that program selection is not done randomly.
3. With this application, the admissions committee and new students can directly view and print the results of the tests they have taken. The admissions committee can also print a report of the overall calculation results.
4. This application also successfully inputs, deletes, and updates data. It also performs calculations accurately.

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