

CHAPTER I

INTRODUCTION

1.1 Background

The advancement of information and communication technology has transformed various aspects of human life, including the education sector. Currently, higher education institutions urgently need to utilize digital systems where data processing runs automatically, so that academic data management can be conducted more quickly, easily, and accurately. The most common technology experienced by humans in daily life is information systems. Simply put, an information system can be defined as a combination of well-interconnected processes that, when executed, will produce useful information to assist the decision-making process [1]. Currently, every organization certainly requires an information system. Higher education institutions are no exception; they need information technology to improve the quality of their services.

Considering the rapid advancement of information technology, especially in the realm of web application development, the utilization of technology to support academic activities has now become a crucial necessity [2]. Stricter and more directed supervision of academic guidance between lecturers and students is key to improving the quality of higher education. However, in reality, the monitoring system currently used is still manual and its management is not yet optimal. This condition makes it difficult for academic advisors to monitor the progress of their advised students and to record the results of discussions during the guidance process. Therefore, the institution requires a more effective system to monitor student activity, how often they conduct guidance sessions, and the progress of their final project completion.

One of the main problems in the guidance process is the limited real-time access to information regarding ongoing guidance activities. The main obstacle frequently experienced by students in the guidance process is that the academic advisor does not have a clear record regarding the student's guidance progress. Furthermore, the vulnerability of guidance record documents to damage results in

students losing information regarding evaluations and discussion outcomes from previous meetings [3].

One way to overcome these problems is the digital management of the guidance process. The development of a web-based guidance monitoring application using the Laravel framework is the appropriate step. The Laravel framework is implemented because it offers an organized system structure and high security guarantees, thereby greatly facilitating the process of modifying and adding application features in the future [4]. Through this system, all guidance data can be securely stored in a database, allowing lecturers to monitor the extent of the students' work stages, and students can consistently view their evaluation history without the fear of data being damaged or lost.

Besides the monitoring function, the study program also requires a measurable evaluation mechanism to measure the extent of the effectiveness of the guidance process. This evaluation plays an important role for the institution in making well-targeted academic policies. For example, the collected data is not only utilized to assess the track record of student discipline and activity, but it can also serve as a clear reference to observe whether the lecturers' guidance duties have been evenly distributed, while simultaneously evaluating their performance. To maximize the evaluation process, this application is equipped with a Decision Support System (DSS) utilizing the Simple Additive Weighting (SAW) method [5]. The SAW method is selected due to its reliability in finding the weighted sum of performance ratings for each alternative across all attributes. This activity assessment is conducted by weighting three primary criteria, namely attendance percentage, attendance (guidance) interval, and the difference in note input time. Through the implementation of these specific criteria weightings, this method can produce an objective, fair, and accountable ranking as material for academic evaluation.

This 'Lecturer Guidance Monitoring and Ranking Application Based on the Laravel Framework with the SAW Method' is designed as a comprehensive digital solution to evaluate the level of student guidance activity. This application provides various primary features, including guidance queues, student guidance history, dashboards, and a student ranking system. For students, this system can serve as a tool to ensure that task completion proceeds in a more structured

manner. Meanwhile, for the academic advisors themselves, this system will facilitate the monitoring and assessment process because everything is based on accurate data. Ultimately, the utilization of this application is expected to make the guidance process run more effectively, prevent data loss due to manual recording, and accelerate evaluation time. In this way, academic data management at the institution will become more transparent and accountable. However, prior to full implementation, this application must undergo a functionality testing phase using the Black Box method. This testing aims to ensure that all features can function according to the design and without any errors.

Based on the problems and solutions elaborated above, the author intends to develop the system through a thesis research entitled: " APPLICATION OF SIMPLE ADDITIVE WEIGHTING FOR THE EVALUATION OF STUDENT ACTIVITY BASED ON GUIDANCE INTENSITY AND INTERVAL ".

1.2 Problem Formulation

Based on the background of the problem above, the formulated problems to be discussed are :

1. How to build an application that can record and store guidance history neatly and structuredly using the Laravel framework?
2. How to implement the Simple Additive Weighting (SAW) method to calculate and generate a ranking of student guidance activity levels?
3. What are the results of the system functionality testing on the developed lecturer and student guidance monitoring application?

1.3 Research Objectives

Based on the problem formulation, the objectives the author aims to achieve are :

1. To design and build a guidance monitoring application based on the Laravel framework capable of recording, managing, and storing the entire guidance history neatly and structuredly.
2. To implement the Simple Additive Weighting (SAW) method into the system to perform automatic calculations by applying weights to three primary criteria, namely attendance percentage, guidance interval, and

note input speed, in order to generate a ranking of student guidance activity levels.

3. To ensure the system functionality on the developed lecturer and student guidance monitoring application can run according to the design and is free from errors through Black Box testing.

1.4 Research Benefits

The following are several benefits obtained from the conducted research, among others :

1. Reducing the risk of losing guidance logbook documents because all data is digitally stored in a single database.
2. Facilitating lecturers in managing guidance schedules, reviewing revisions, and viewing the track record (logbook) of all their advised students more systematically through a single application.
3. Lecturers can easily evaluate the progress of students' thesis or final project writing based on the detailed guidance history recorded within the system.
4. Minimizing miscommunication or stacked/lost revision instructions in chatting applications (such as WhatsApp), because all notes and feedback from lecturers are clearly recorded in a single application.

1.5 Scope of the Problem

There are several problem scopes in this research, including:

1. This application is exclusively used within the university environment to facilitate academic advisors and students.
2. The application is focused on the guidance process monitoring phase, which encompasses: recording guidance history (logbook), uploading document drafts (thesis files), and providing notes/directions from the academic advisor.
3. This system is built web-based using the PHP Laravel framework and utilizes the MySQL database management system.
4. The ranking process within the system exclusively utilizes the Simple Additive Weighting (SAW) method to rank students with the best

guidance progress, based on criteria and weights determined by the academic advisor.

5. The implementation and testing of the system are conducted only within the scope of the Informatics Engineering Study Program, utilizing sample data of students currently taking the Thesis/Final Project course along with their academic advisors.