NEW STUDENT ADMISSIONS INFORMATION SYSTEM WITH CLIENT SERVER BASED SMS GATEWAY

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Abstract—Palembang State Junior High School 58 every year accepts new students, every year SMP N 58 always uses the form in registration and collects diplomas, SKHUN, and other files in hardcopy format so that they often experience file loss for that we need a new student admission information system based client-server and SMS gateway. This information system was designed using the Software Development Life Cycle (SDLC) method, and an analysis and design were carried out using a Data Flow Diagram. This information system has the function of saving, delete, update, report automatically, and can send information in the form of SMS. The new student admission information system is user friendly so that it can be easily used, so the admission process is more effective and there are no more missing files.

Keywords: New Student Admission; Information System, SMS Gateway; Software Development Life Cycle.

INTRODUCTION

With the rapid development of technology, the new student registration process should be done anywhere and anytime, for example at home, outside the city, and no longer need to come to school to queue up for forms[1] and the payment process can be done online[2].

In the research, Umni Kholifah said that the implementation of the New Student Admissions Information System provides time efficiency in the processing of new student admissions[3]. Currently, computer-based data processing has developed rapidly, the use of computer programs is very helpful for its users to solve difficult problems so that data processing can be done well besides that it also has high accuracy so that it will make it easier and not take time long time searching for the required data.

Table 1. Previous Research

| NO | NAME | PROBLEM | METHOD | RESULT |
|----|------|---------|--------|--------|
| 1  | Wahyu Hidayat, Ramadhian Agus Triono, Sukadi Pembangunan Sistem Informasi Pendaftaran Siswa Baru SMP Negeri 2 Sudimoro Pacitan | Data collection for new student registration at SMPN 2 Sudimoro Pacitan is done conventionally. | Designed using context diagrams | With this new student registration information system, the PSB committee can accelerate the process of recording student data, reducing mistakes in recording and losing data[4]. |
Based on table 1, it can be concluded that the problems that exist in schools at the time of admission of new students are the systems that still use paper in the registration process and new student data collection and this problem can be overcome by developing a new student admission information system even though using different methods.

Junior High School (SMP) Negeri 58 Palembang was established on June 23, 2014. SMP Negeri 58 Palembang every year will accept new students (PSB), in this PSB process PSB officers are still managing registration data and admission of prospective new students still using the media paper for registration.

In the first process, prospective students are required to fill out a registration form and submit the required documents, such as diploma, SKHUN, and others to the PSB committee. After the registration form and required documents are received by the PSB committee, then the forms and documents are verified. If the required forms and documents are declared complete, the PSB committee will record the registration of prospective students in the registration book as well as provide details of education payments. In the next stage, prospective students are required to make educational payments to the PSB committee after receiving details of education payments [7].

When students return the registration files to the PSB committee and the registration files for new prospective students are still kept in an archive, so they are vulnerable to file loss and damage because too many students register[8]. Then the PSB committee recaps into the computer in the process of data recording the committee using Microsoft Excel[9].

Currently, SMPN 58 Palembang requires proper data processing to create efficiency and accuracy of data to support operational processes, management, and decision-making processes properly. With the above problems, it is necessary to improve the system that is running, for that we need a client-based application. Server and SMS Gateway to simplify the PSB process.

**MATERIALS AND METHODS**

This research refers to the research framework described in Figure 1.

In Figure 1, the stages carried out in research where SMP Negeri 58 Palembang have 2 problems. The problem is that the system developer uses the SDLC method with the waterfall model and finally produces a new information system.

In the development of this information system, research data was collected, the research data were obtained by two methods, namely:

1) **Interview**

Researchers conducted direct interviews with the principal of SMPN 58 Palembang and the head of administration at SMP N 58 Palembang, where the results of the interview revealed the procedures for new student admissions, input, and data reports of new students that had been running at SMPN 58 Palembang.

2) **Observation**

Observation is data collection carried out by direct observation of the object of research[10]. Researchers made observations at SMPN 58 Palembang, by directly surveying how new student data input and new student data reports. The
results of observations made by the author at SMPN 58 Palembang are examples of registration forms that have been filled in by new student candidates submitted to the new student admissions committee or administrative staff at SMPN 58 Palembang then selected according to the requirements for new student admission then announced on the school walls. After that, the student data received is recapitulated to a computer using the Microsoft Excel application, wherein Microsoft Excel, not all new student data is entered, this is due to time efficiency in the processing process.

In this study, the system was developed using the Software Development Life Cycle (SDLC) method. The stages in this study refer to the Waterfall model stages, namely analysis, design, coding, testing, and maintenance [11][1][12][13].

A. Needs Analysis

Data input is a process of entering the relevant data into one place (in this case software) with the aim that the data is not lost and can be reopened. For example, at SMPN 58 Palembang, this government agency engaged in education uses Microsoft Excel software. In entering data for new students at SMPN 58 Palembang, the administrative staff who served as the entry committee were found to be obstacles, the extent to which the data was lost, and also the ineffective time used to enter the data.

This new student admission application is designed to help overcome problems faced by the committee or new admissions staff when inputting and reporting new student data at SMPN 58 Palembang. The general function of this application design is to input new student data, in this new student admission application is equipped with edit, cancel, search, save, delete, and print facilities.

B. Design

The design is part of the Waterfall model stage, this stage is carried out after the analysis stage. At this stage, it provides a detailed description. In system design, the system design that will be built is described before coding into a programming language [4].

Figure 2 illustrates the data flow used during data processing, the data flow is drawn with a Data Flow Diagram. Data Flow Diagrams are a way to document the design system process to show the flow of information and information transformation applied as data flowing from input and output[3][14].

C. Encoding

At this stage, the preparation or writing of the Delphi programming language is carried out according to the system design that has been made so that it becomes the required information system. The Client-Server Information System topology is depicted in Figure 4.
Figure 4 shows the client-server topology, the information system used consists of a server computer connected to the SMS gateway and a server computer connected to the client computer.

D. Testing
At this stage, testing is carried out on a system that has been completed using a network with two computers, with one computer being used as a server and the other as a client. This testing system uses the User Accepted Test (UAT) method with the UAT type Black Box Testing. Black Box Testing is functionality testing, where the end-user will test the function of the software regardless of the internal code structure.

RESULTS AND DISCUSSION
The results of the design of a new admissions information system with data flow diagrams can be implemented in the system. Implementation is the steps or procedures carried out in completing an approved system design, to test, install, and start a new system or a repaired system to replace the old system.

The dashboard for the new student admission information system only has the login and CANCEL menu, on this menu application users who want to open the information system must first log in to be able to the main information system dashboard.

Figure 6 shows the main dashboard of the information system. In Figure 6 buttons can be used by users, these 5 buttons can call the new student-parent data input menu function, new student data input, user data, employee data input, report list, and 1 button to exit.

The new student data form is used to input data related to new students such as NIS, NISN, student name, address, date of birth, and some others. In this form there is a menu for the process of saving, editing, exiting, deleting, refreshing, adding, printing, and also searching for data. The image of the new student data input form can be seen in Figure 7.

After the user logs in, the main dashboard will appear as depicted in Figure 6.
A user data form is for inputting user data such as admin and user, as for inputted data such as name, password, position, and status. The image of the user data form can be seen in Figure 11.

Figure 11. User Data Form

In Figure 11 there is a combo box status, this combo box functions for users of the new student admission information system.

In this report menu, the admin and user can select a list of reports such as new student data reports, new student parents data reports, new student school data reports, student data reports based on the year of entry, and student data reports by gender. The menu display can be seen in Figure 12.

Figure 12. SI report

Figure 13 shows the new student admission report form based on new student data.
Figure 14 shows the new student admission report form based on the student's school of origin.

Whereas Figure 15 shows the school data report based on the origin of the new student's school.

Figure 16 illustrates the flowchart of the use of the new student admissions information system starting with a star then processed, in this first process, 6 processes can be used. Of these 6 processes, there are 4 processes, while the other 2 processes have no reports.

To test the information system that has been created, information system testing is carried out using a server computer, an SMS gateway, and a server computer. Based on the testing that has been done, the results are:
a. Data processing can run better, all data inputted can be stored in the database.
b. The new admissions information system is user friendly.
c. The process of creating reports relating to new students can be done quickly.

From the results of testing the information system for new student admissions, there are advantages and disadvantages, including:

1) Advantage
   In the data entry process, it is younger, because it uses a database so that the process of searching for data and storing data is younger and safer. The new student admission information system can create new student reports, new student parent data reports, and new student school data reports.

2) Loss
   In this new student admission application, it is still limited to internal, where only the school can input and see, external or external parties cannot because it is not online yet.

The test results with Black Box Testing can be seen in Table 1 below.

| Menu          | Successful (%) | Failed (%) | Timed Out (%) | Not Played (%) |
|---------------|----------------|------------|---------------|----------------|
| New Student Data | 98.76          | 0.44       | 0.62          | 0.18           |
| Parent Data   | 99.01          | 0.38       | 0.42          | 0.19           |
| User Data     | 99.63          | 0.24       | 0.13          | 0              |
| Employee data | 98.96          | 0.57       | 0.36          | 0.11           |
| Report        | 99.84          | 0.08       | 0.08          | 0              |
| Total         | 99.24          | 0.342      | 0.322         | 0.096          |

CONCLUSION

Successfully creating a new student admission system based on client-server and SMS gateway at SMP Negeri 58 Palembang, this information system can input new student data, new student parents data, user data, employee data, and reports. The report is related to data entry so that the new student data processing information system can help new student data entry at SMPN 58 Palembang more effectively and new students can receive information via SMS. Based on the results of the UAT test, the acceptance rate of this new student admission system is on average 99.24 percent, the failure of this system is on average 0.342 percent, Timed Out is on average 0.322 and Not Played is on average 0.096.

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