Development of Online Web-Based New Student Graduation Application in Junior High School

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ABSTRACT

The student graduation information system is an important part in managing and carrying out school information system activities. Especially in Junior High Schools (SMP) today there are still many who have not used a website-based information system due to the new internet network entering this area. In meeting the needs of the admin in particular to deal with the problem of passing the distribution of receiving information or announcements, documentation of activities, teaching materials, and registration of new student participants has not run optimally as expected. The system development method in making this research, the author uses the System Development Life Cycle (SDLC) with the Waterfall model approach which consists of 5 stages, namely, analysis, design, implementation, testing, implementation. The system design tool uses the UML (Unifed Modeling Language) method by using use-case diagrams according to system requirements. The development of the SDLC method in this study the authors used it until the design stage. The results obtained from this research is a Web-based application system for new students graduation. With this tool, several related files will be generated. This new system can improve the quality of new student admissions graduation information and school information through the website.

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1. INTRODUCTION

Along with the advancement of technology, the era of information technology is also rapidly expanding. By utilizing human resource management (HR) and information technology (IT) with the goal of achieving a better and more useful corporate organization to facilitate human work in the era of the industrial revolution 4.0, which is an information and communication technology-based era, internet technology is no longer a foreign technology in everyday life. All activities in various fields of life that produce, process, and disseminate internet information are extremely important. The internet network has recently arrived in the area of SMP N 1 Tigo Lurah, Solok Regency. On this basis, the authors propose a new student graduation information system accessible via the SMP N 1 Tigo Lurah, Solok Regency website. Everything that is borderless and unlimited as a result of the development of the internet and digital technology in the era of the fourth industrial revolution has affected many aspects of life, including the economy, politics, culture, art, and even education. Preparing qualified graduates who can compete globally and master technological developments is important for everyone and for a country's future [1]. SMPN 1 Tigo Lurah Solok Regency is a school that needs to make changes in informing students about graduation and selecting new students.

The advancement of information technology has resulted in a trend of human functions being shifted to machines or electronics for more reliable processes, speed, and accuracy [2]. Schools are an essential component of a society dealing with the realities of today's society; they are also a tool for achieving quality education and meeting national education standards [3]. Admission of new students follows student graduation from the selection process. One of the processes in educational institutions such as SMP N 1 Tigo Lurah, Solok Regency, is the selection of prospective students based on the school's criteria. Based on previous research, the writer believes it is appropriate to use as study material in this research and includes it as a comparison and additional reference in this paper: a. The Admission of New Students at SMA Negeri 1 Ngemplak Information System is web-based in the form of a website that provides information on Admission of New Students at SMA Negeri 1 Ngemplak, Boyolali district using a Data Flowchart [4] b. SMA Nusaputera Semarang's web-based new admissions information system. The discussion is carried out by examining the relationship between the system and the information obtained by the user [5]. c. This evaluation study employs survey research methods such as questionnaires, interviews, and observation tools. According to the findings of this evaluation study, the online PPDB system [6]. d. The findings of the PPDB research (problems with admitting new students) with the zoning system at SD Mataram City are as follows: (1) favorite schools are still limited, (2) equal distribution of education quality is still unequal, and (3) the government lacks socialization. [7].

As the most recent educational innovation, a teacher must understand higher-order thinking skills such as definitions, principles, theories, and assessments in order for educators to meet the demands of the curriculum, particularly the current curriculum, namely the 2013 curriculum. [8]

The system can be viewed as a unit composed of components or subsystems that are orderly arranged, interact with one another, are interdependent with one another, and cannot be separated (integrative) to achieve a goal [**?**]. An information system is a collection of interconnected or interacting components (humans, information technology, work processes, and others) that process data into information within an organization [9].

Data that has been processed into a form that is valuable to the recipient and useful in all decision making is referred to as information [10]. Data that has been classified, processed, or interpreted for use in decision-making is referred to as information. Information processing systems convert data into information or convert data from useless forms to useful forms for the recipient [8].

Good management of data and information will provide broad access to the school data network so that the information that will be provided and obtained is accurate information [11].systematic writing in research is an introductory section that discusses the background, problems and solutions. While the second part discusses the research method which discusses the methods and steps in this research, the results and discussion section on the steps in this study to obtain the results of the research, and the last part is the conclusion that discusses the results of the research and suggestions for next research.

2. RESEARCH METHOD

The quantitative research method was used, with the goal of explaining the relationship between variables, testing theories, and generalizing the research object. The System Development Life Cycle is a software system development process that employs several systematic (ordered) development processes or methods in this study's system design method. The System Development Life Cycle is the process of creating or changing a software system using the same model or methodology that was used to create the previous software system. [12] [13]. The waterfall SDLC method was used in this study. The waterfall method is a model for the systematic and sequential development of information systems [14]. The waterfall method, or what is commonly referred to as the waterfall method, is also known as the classical life cycle; however, the name of this model is actually the "Linear Sequential Model," which describes a systematic and sequential approach to software development.The stages of the waterfall method are depicted in Figure 1:
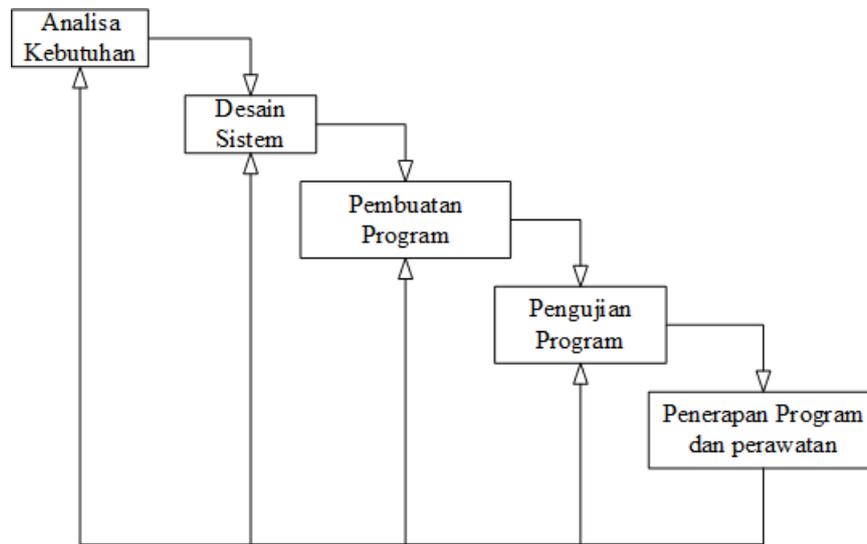
Figure 1. SDLC Metode Waterfall

1. Needs Assessment
   Analyze existing problems and determine software requirements from users using data collection methods such as interviews and literature studies, so that a computer system can be created that can perform the tasks desired by the user in creating the system. This document will be used by system analysts to translate into programming languages.
2. System Design
   This system design modeling employs UML diagrams, which are created through diagramming. Use case diagrams, activity diagrams, and class diagrams were created. For the creation of the system interface using the Video application.
3. Programming
   Coding that implements the design produces code or a language that computer machines understand.
4. Program Testing
   There are two system implementation environments used in this implementation and testing, namely the hardware hardware environment and the software software environment.
5. Program implementation and upkeep
   Software that has been created, run, and maintained. Maintenance entails correcting errors that were not discovered in the previous step. As new requirements emerge, improve system unit implementation and system services.

3. RESULT AND ANALYSIS

Tools and techniques are required to carry out system development. The system design tool used in this study is UML (Unified Modeling Language). The Unified Modeling Language (UML) is a set of diagrams that have already been standardised for the development of object-based software [11] 15. In this study, a use-case diagram on the UML (Unified Modeling Language) system design tool will be used to analyze the system that will be implemented. Use the symbols in table 1 to create a use case diagram.

Table 1. Symbol Use-Case Diagram Figure Name Description

Figure	Name	Description
⬭	*Use case*	Use Case describes the system's functionality as units that exchange messages with actors, which are expressed using verbs.
👤	Actor	Actor is an abstraction of a person or thing (devices, other systems) that contributes to the success of a built operating system. Actors only interact with use-cases and have no authority over them.
——	*Asosiasi*	Associations between actors and use cases are represented by lines without arrows, which indicate who or what requested the interaction directly rather than indicating data.
⟶	*Asosiasi*	An association between an actor and a use-case that uses an open arrow to indicate whether the actor is interacting with the system passively.
<<extend>>	*Extend*	If the conditions or conditions are met, extend is an extension of another use case.
<<include>>	*Include*	Additional use case relationships to a use case and additional use cases necessitate the performance of this use case.

Examine the process of delivering information at SMP Negeri 1 Tigo lurah before analyzing the running system. The goal of analyzing the current system is to identify the system constraints that affect the deployment range. The following is an examination of the new student admissions information system at SMP Negeri 1 Tigo Lurah in Solok Regency:

1. Employees print and place brochures or banners in various locations.
2. People see information on banners, brochures, or come to school directly for more information.
3. Employees explain information.
4. If a visitor wishes to register, the visitor requests a registration form, which is provided by the staff.
5. Visitors fill out and complete all requirements and submit all requirements in printed form to staff.

According to the above description, obstacles and problems are encountered in the process of disseminating school information at SMP Negeri 1 Tigo Lurah, Solok Regency. The author discovered the following issues:

1. The process of disseminating information on new student admissions is still simple, in the form of forms, brochures, and banners that cannot be widely distributed.
2. The process of receiving and accessing information for the community is still limited and difficult, requiring people from multiple districts to come directly to school.
3. New student participants are still registered offline.
4. In the long run, the information dissemination system is wasteful for both parties because it requires ongoing printing and transportation costs, as well as a significant amount of time and energy.
5. Publications by SMP N 1 Tigo Lurah, Solok Regency are still limited, namely in printed or oral form.

The proposed new system is an alternative to the current system's problems, and it can also be used as a comparison and assessor of the old system. The new system will not completely replace the current one. The following factors influence the efficiency and effectiveness of the new system's operational activities:

1. The dissemination of information or publication of SMP Negeri 1 Tigo Lurah Solok Regency is carried out through the use of an online system or website.
2. Receiving or searching for information can be done online via the website.
3. Online registration is available for new student participants.
4. Can online display activities carried out through the school gallery.
5. Can help student participants understand the subject matter more easily.
6. Can reduce operational costs by eliminating the need for continuous printing and transportation.
7. Prospective students can view the subject's content.

This study's design modeling employs UML (Unified Modeling Language) diagrams. The SDLC's second stage is this one. The Unified Modeling Language (UML) is a visual modeling method for object-oriented design tools or a language that has become a standard in software system visualization, design, and documentation. Following an examination of the current system. Use-case diagrams are used to determine what functions are in a system and who has the authority to use these functions. More information can be found in Figure 2.
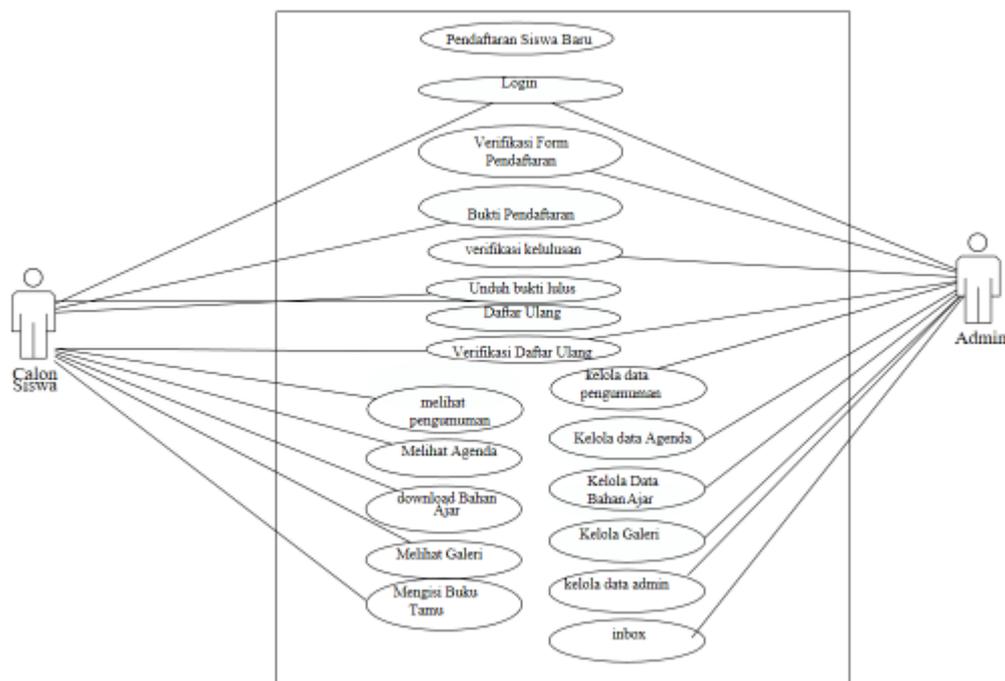
Figure 2. Proposed use-case diagram

According to Figure 2, the proposed use-case diagram.

1. At SMP Negeri 1 Tigo Lurah, Solok Regency, there is a single system that covers the entire information system.
2. There are two actors who carry out activities: administrative personnel and prospective students.
3. The Actor will carry out 18 Use-case Diagrams, which include.

Admin : Login, Registration verification, graduation verification, download proof of graduation and re-registration, re-register verification, manage gallery, announcements, agenda, teaching materials, access guestbook inbox.

View the agenda, view announcements, download teaching materials, view galleries, browse guestbooks, register new students, login, download proof of registration, re-register.

Figure 3 is the page for participant login. This website login view is an access to enter the dashboard of this application. At this stage students enter the username and password obtained when registering previously. If prospective students do not have an account, participants can click the register link in this application.
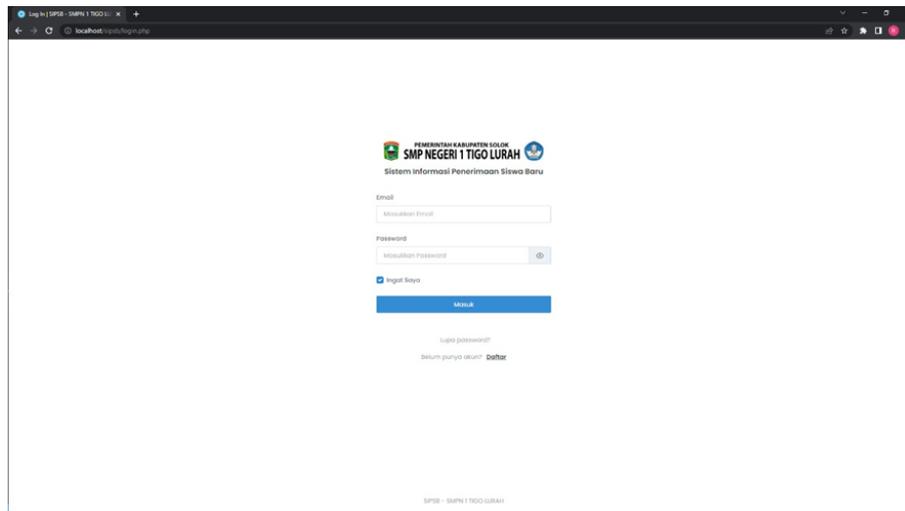
Figure 3. Website Login View

In Figure 4 the register login view is a page for registering new participants. On the register page, participants can enter their email and password and then click the register button. Then automatically a notification will be sent to the email. The registered account can be used to login to this application.

Figure 4. Register login view

Figure 5 is a dashboard display for participants who already have an account. On this page, prospective participants are asked to fill out a registration form by filling in all personal data and parental data as shown in Figure 6.
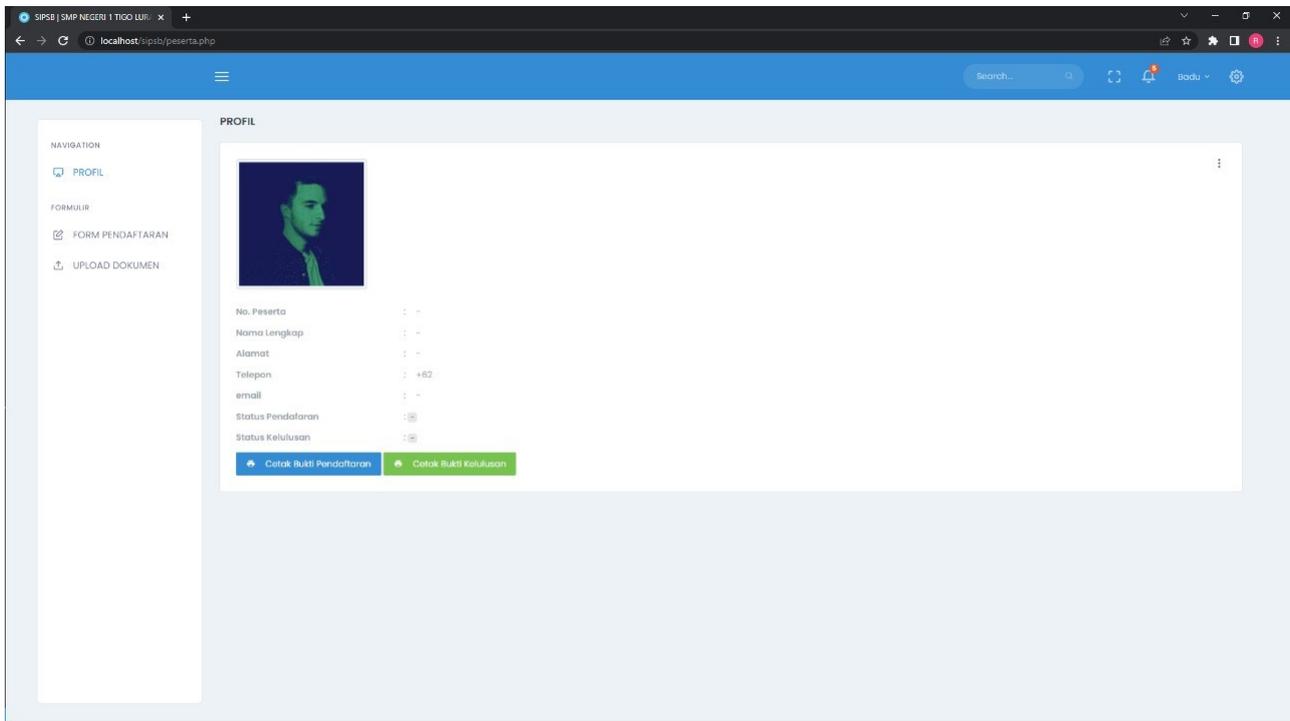
Figure 5. Dashboard participant view

This figure 6 is a list of all prospective participants' personal biodata and parental data.
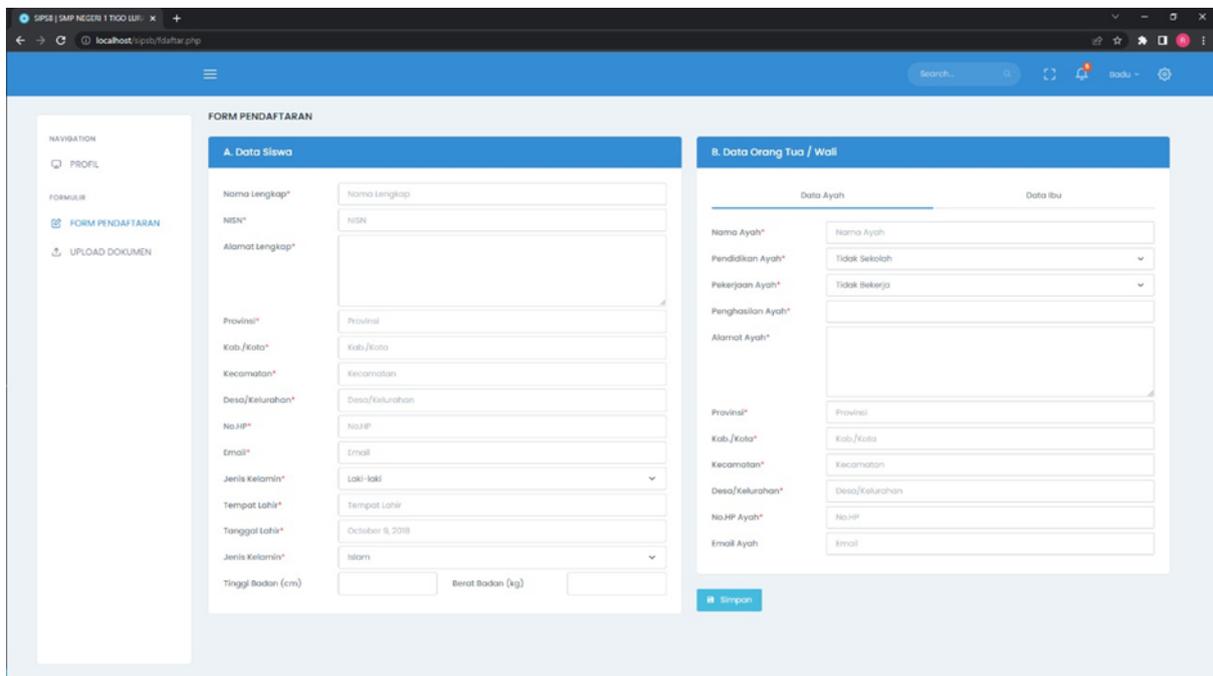

Figure 6. form register view

Figure 7 This is a page display for uploading the documents required for registration. The uploaded document is a comple-

mentary document from the contents of the participant registration form. Participants immediately click the upload button and a green button will appear when successful. After the success caption or green color appears, the prospective participant's data is automatically stored in the application.
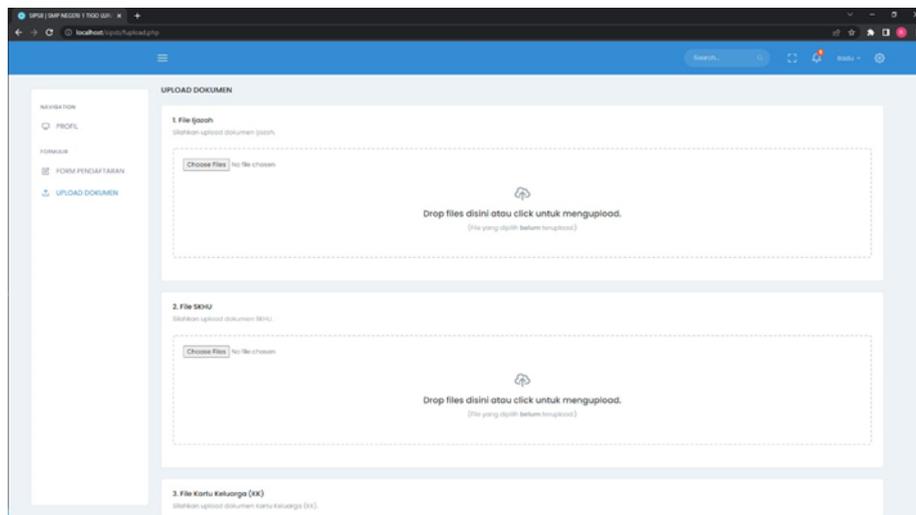

Figure 7. Upload Participant View

Figure 8 is the admin display page for managing registrant data. The data of participants who have entered will be verified by the admin to determine participants who can participate in the next stage.
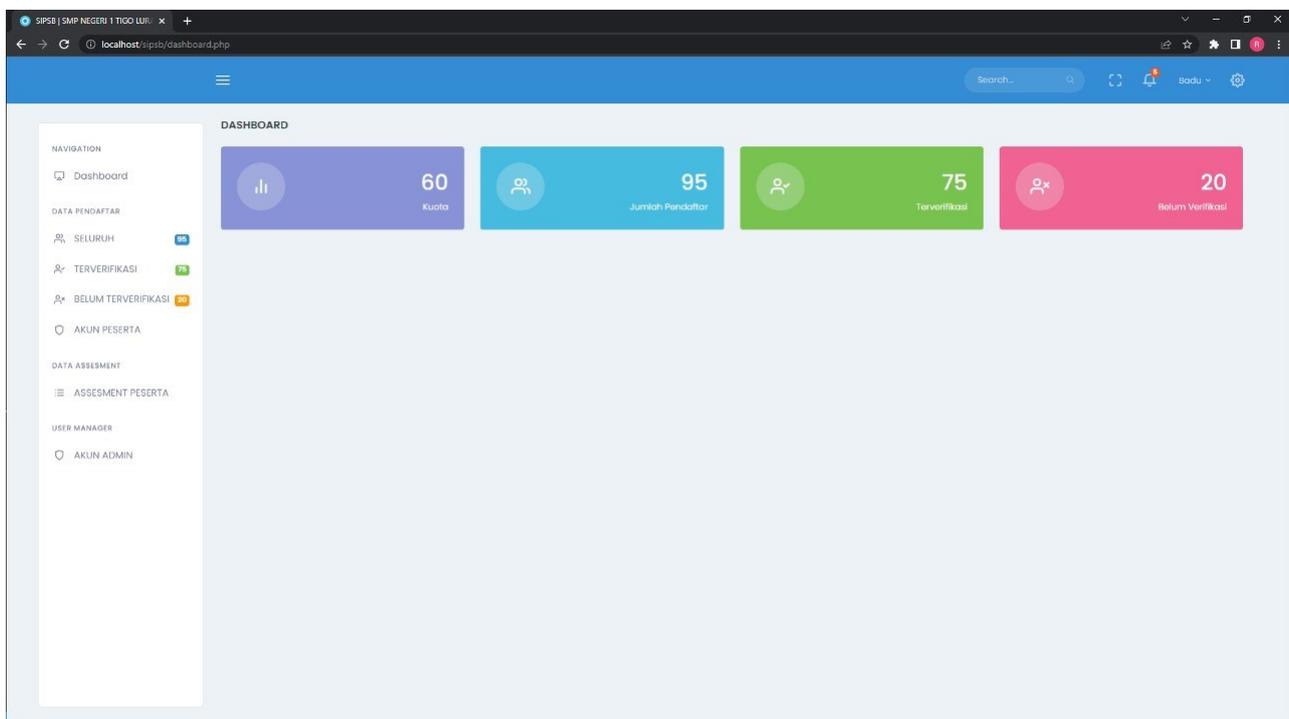

Figure 8. Dashboard admin view

4. CONCLUSION

The stages in developing an information system at SMP Negeri 1 Tigo Lurah, Solok Regency resulted from the previously described research and discussion. SMP Negeri 1 Tigo Lurah's information system for graduating new students is accessible via school announcements, agendas, teaching materials, galleries, and registration. This information system is equipped with additional features, such as downloading teaching materials, which make it easier for student participants to obtain teaching materials. Suggestions for future research applications based on school graduation results are available via the Android operating system and other smartphone operating systems.

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