



# Digital-Based Services in Admitting New Students at Madrasah Tsanawiyah Negeri 2 Jember

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**Abstract**— Technology development is currently developing rapidly, thus the need for responsive and efficient information is mandatory. One form of information technology that is widely used to share information is a website. The new Student Admission Process (Proses Penerimaan Peserta Didik Baru (PPDB)) carried out by MTs Negeri 2 Jember is currently done manually, using forms that various problems constantly occur. For instance, slow data input, registration files that are not neatly arranged, long registration queues and prospective students sometimes have difficulty getting information about the school and the enrollment process. For this reason, information technology is needed in the form of a school website that can assist in the PPDB process at MTs Negeri 2 Jember. Based on the background of the problems above, a web-based PPDB system was built using the MVC (code) concept and the waterfall method, which has several stages, namely analysis, design, implementation, testing, and maintenance. (*Abstract*)

**Keywords**—development, technology, students admissions, digital based services (*key words*)

## I. INTRODUCTION

Technological developments are currently developing rapidly over time thus the need for responsive and efficient information is required. The rapid development of technology allows a technological system to take part in a process. In this era of rapid globalization, there is abundant use of mobile device technology or mobile phones that have highly sophisticated supporting applications.[1] This encourages the public to make adjustments by developing the technology. Therefore, they are not left behind in the current era of globalization.

One form of information technology that is most widely used to share information is websites. Website is a method for exposing information on the internet, whether in the form of text, images, sound or video that is interactive and has the advantage of linking one document to another that can be accessed via a browser.[2] Website attends as a medium that provides information on the internet. The use of computer technology is the main requirement to demonstrate the quality of a school's academic field and is the primary capital in winning competition with other schools. One of them is the acceptance of new students (PPDB) that is carried out in an online system.

The existence of the application of an online system means that the school has utilized existing technology, thus the use of this technology can reach more prospective students.

Meanwhile, MTs Negeri 2 Jember quietly applies a manual school registration system. This system is designed to implement automation techniques in the selection of new student admissions (PSB) starting from the registration process, selection process to announcement of selection results, that is carried out online and on a real-time basis. The general objectives are to enhance the quality of education services, create an integrated, accurate and transparent new admissions system, carry out new student admissions more practically and efficiently, provide an accurate school database, provide information access facilities for the community immediately, efficient and precise.

This new student admission (PPDB) application aims to provide more effective and efficient information system performance. Because with the management of the PPDB application, it is easier to get information about schools and school registration. This application utilizes the MVC concept in creating and building a website-based school registration application (PPDB) at MTs Negeri 2 Jember. Laravel is an open source, PHP-based web application framework, using the Model View Controller (MVC) concept.[3] Meanwhile, Model View Controller or MVC is a method for creating an application by separating data from the display and how to process it. With Laravel, the MVC concept is greatly simplified because there are special functions that shorten our lines of code.

The website-based PPDB application at MTs Negeri 2 Jember uses the MVC concept. By using this application, it is intended that it will make it easier for the community, especially parents, to obtain complete information about the MTs Negeri 2 Jember, starting from school registration information, school profiles, school background and the vision and mission of the school. The existence of this online website, proposed that it will also be more useful and also make it easier for prospective registrants. Information about whether or not the prospective student is accepted can later be viewed directly on the MTs Negeri 2 Jember website. The planned that this online PPDB can give the impression of effectiveness and technology. And also can make it easier for the school and the prospective students in the process of registering new students.

II. METHOD

A. Waterfall

The method used in the implementation of this thesis is the waterfall method. According to Sukanto and Salahuddin, the waterfall method provides a sequential approach to software life starting from analysis, design, coding, testing and support stages.[4] The advantages of this development model include that each step is well explained, creating a product that is an ingredient or input for the next step, and errors can be identified at each step.

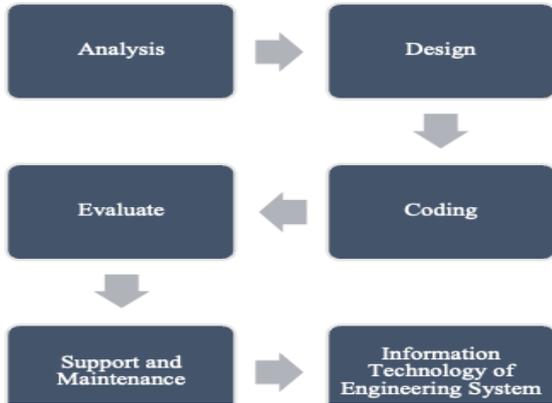


Figure 1. The stages of Waterfall method

The following are the stages of the waterfall according to, namely [5]:

1. Analysis

Analyzing Requirements for Software, this requirements gathering process is carried out intensively in order to better specify the software requirements needed thus they can be derived and what is necessary by the user. These requirements specifications require to be documented.

2. Design

Software design is a multi-step process that focuses on the design of website program creation including data structures, software architecture, interface representation, and coding procedures. At this stage, translate software or website requirements into a program at a later stage. The software design that has been created and produced at this stage needs to be documented.

3. Coding

The Prompt design program code using a predetermined programming language must be translated into a software program. The result of this stage is that the computer program created must be in accordance with the design that was generated at the design stage.

4. Evaluate

This stage performs testing that focuses on the software from a logical and functional perspective, and ensures that everything has been tested. This step is taken to minimize errors and ensure that the output produced is as preferred.

5. Support and Maintenance

There may be changes to the software when it is sent to users. This change can occur due to an error that appears and is not detected when testing at the testing stage or a new environment that requires the software to adjust. The support or maintenance phase can repeat the development process starting from specification analysis to changes to existing software, but not to creating new software.

B. MVC (Model, View, Controller)

MVC (Model, View, Controller) is a design pattern or method used in software or application engineering that clearly separates data (Model) from the user interface or display (View) [6].

The implementation of the MVC model has three parts, namely, separating the data (Model) from the view (View) and how to process it (Controller). Each part can be explained as follows:

1. Model

The MVC pattern has a layer called a Model that represents the data used by the application along with the business processes associated with it.

2. View

This screen contains all the details of implementing the user interface and also manages the display or output that appears on the screen (images, videos and so on).

3. Controller

This screen provides detailed program flow and screen transitions, and is also responsible for holding events created by the user from the View and updating Model components using data entered by the user and also executing several commands to be executed in the model.

III. RESULT & DISCUSSION

New Student Acceptance System (PPDB) in this study to describe broadly and in detail to assist in creating a website-based application system.

A. Use Case Diagram

Use case is a model to describe the behavior of the system that will be made.[7] Use case illustrates an interaction between one or more actors with the system to be created. In conclusion, use case is a sequence of steps that describes the interaction between actors and systems related to the application domain. An explanation of each of the symbols contained in the class use case diagram.

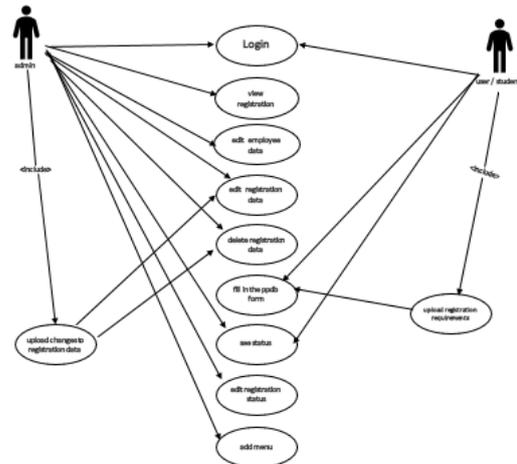


Figure 2. Use Case Diagram for Website-based PPDB

The use case in Figure 2 has 2 users, namely admin and students, each of whom can manage data and access it as follows [8]:

1. Admin, can log in, view registration, edit employee data, edit registration data, delete registration data, view status,

edit registration status, add menus and upload changes to registrant data.

2. Students, can login, fill out the registration form and upload the registration requirements.

**B. The Design of User Interface**

User interface design is the process of creating an effective communication medium between humans and computers [9]. The following is the input design as a user interface:

1. Interface Design for the Front View of the School Website (HOME)

This is the home display of the MTs Negeri 2 Jember website. Which contains header and footer sections. And there are also several menus such as home, profile, PPDB and login menus.

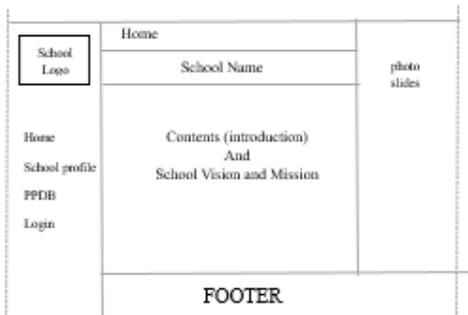


Figure 3. Interface Design for the Front View of the School Website (HOME)

**2. Login Form Interface**

The front view of the website, that is when students or admins want to enter the school website. This display contains the school logo, username, password, admin and login.

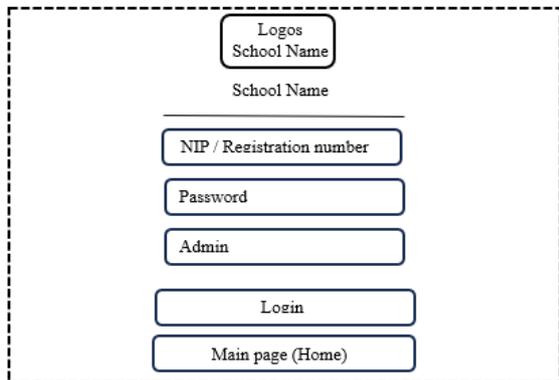


Figure 4. Login Form Interface

**3. School Profile Interface Design**

On the school profile menu, this menu will explain or describe in general and briefly about the school profile and the history of the school.

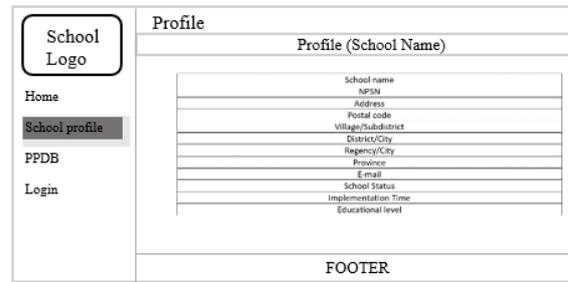


Figure 5. School Profile Interface Design

**4. PPDB Interface Design**

In this PPDB menu, students who choose register will be displayed and required to fill in some personal data that is available on this menu. After all data has been filled in, click the register button at the bottom right. If there is a successful entry, it means that you have registered, and get a User name and password, that will be used to log into student data.

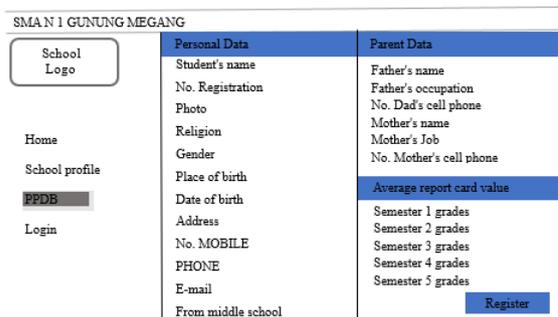


Figure 6. PPDB Interface Design

**5. User Profile Interface Design**

After filling in the personal data and clicking the register button, the prospective student is required to log in to the login menu, by entering the user's name (*Nomor Induk Siswa (NIS)*) and password.

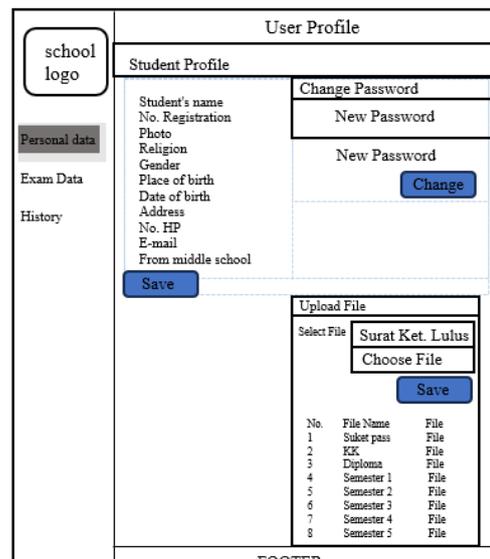


Figure 7. User Profile Interface Design

6. Admin dashboard interface design (employee)  
 In this menu, the admin dashboard manages employee data, exam data, student data and views of applicants who have registered.

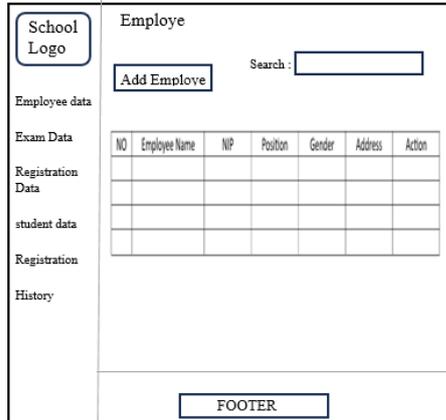


Figure 8. Admin dashboard interface design (employee)

7. The Test Evidence Interface Design

Figure 9 is a student test card for carrying out the school entrance examination. Evidence of this test card is obtained when students have registered and determined their exam schedule.

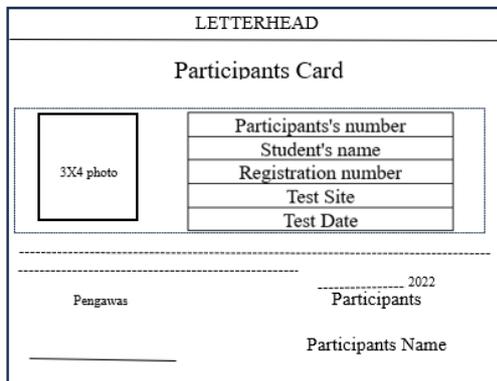


Figure 9. The Test evidence Interface Design

8. The Exam Results Evidence Interface Design

Figure 10 is a student exam result card. Through this card students can find out and show the results of the examination.

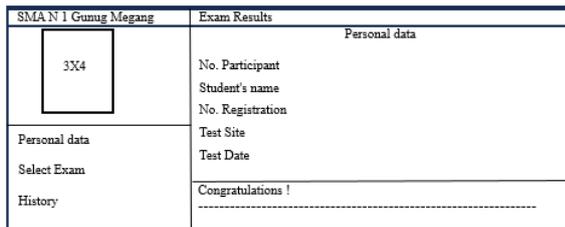


Figure 10. The Exam Results Evidence Interface Design

C. The Display of PPDB Onlie MTs N 2 Jember

This will display the website-based PPDB MTs N 2 Jember Application page interface. Which will later display parts of

the website such as the home page, school profile, PPDB, Login, and also the school admin page.



Figure 11. The display of website PPDB MTs N 2 Jember

The author concludes that the utilization of the 2023 Online New Student Admissions (PPDB) application at MTs N 2 Jember is outstanding, however there are still a number of problems related to implementing new student admissions using the PPDB Online 2023 application at MTs N 2 Jember. For example, the deficiency of budget allocations for updating hard disk facilities, applications that often crash when used on inappropriate devices, and population data on the community that has not been updated. Therefore, this becomes input material for the Office of the Ministry of Religion Jember Subsidiary Jember Regency as an application maker in developing the PPDB Online 2023 application at MTs N 2 Jember in the future.

D. Test run

Blackbox testing is a technique used to test this website.[9] Black Box Testing is a testing method that focuses on the functional requirements of the software without testing the website design and the program code.[10] The test results can be seen in the following table.

Table 1. The result of Testing

No	Test Case	Output	Result
1	Select menu <i>home</i>	displays <i>home</i>	Qualified
2	Select the school profile menu	Displays school profile	Qualified
3	Select the menu of PPDB	Displays the PPDB menu	Qualified
4	Select menu <i>login</i>	displays <i>login</i>	Qualified
5	Select the employee data menu	Displays the employee data	Qualified
6	Select the students data menu	displays the students data	Qualified

IV. CONCLUSION

The conclusions obtained after designing a website-based school registration application (PPDB) at MTs N 2 Jember using the MVC concept are as follows:

1. This website-based PPDB application can make school registration easier because it has changed the system from manual to online and has utilized computers that makes performance or implementation more effective.

2. The framework used is the CodeIgniter framework can maximize the use of PHP in the website development process. This framework is compatible with the MVC concept due to this framework follows the MVC structure. This framework is a general framework; thus, it is straightforward to update and reuse in subsequent PPDB implementations.

3. Data storage for MTs N 2 Jember registrars in the school enrolment application (PPDB) is done digitally and online using the internet, making it undemanding for schools to access data and process the data.

4. Many users carry out the registration process using mobile phones, laptops, thus the decision to develop a website using responsive design techniques is highly necessary.

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