

E-REGISTRATION AND HEALTH SERVICE CONSULTATION USING AGILE METHODS

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ABSTRACT

This research focuses on developing an E-Registration and Health Services Consultation system using the Agile method, which aims to increase the efficiency and effectiveness of health services. The main objective of this research is to design and implement a system that can make it easier for patients to register and consult online, reduce waiting time, and improve the quality of interactions between patients and health service providers. This research is motivated by the need to overcome the problem of limited access and inconvenience in conventional health services, which often require long waiting times and complicated administrative processes. Agile methods were chosen for their flexibility and adaptivity in software development, allowing development teams to respond quickly to changing user needs and preferences. This research uses an iterative approach, where development is carried out in cycles consisting of planning, design, implementation, testing and evaluation. Data was collected through user satisfaction surveys, interviews with stakeholders, and system performance analysis. The findings of this research indicate that the implementation of the E-Registration and Health Services Consultation system can significantly increase patient satisfaction, with a decrease in average waiting time and an increase in service accessibility. Apart from that, this system also supports better decision making by health service providers through integrated and real-time patient data management. This research makes an important contribution to the development of health information systems, offering valuable insights into the application of Agile methods in the development of responsive and user-centered health care systems.

Keyword: Health E-Registration, Agile Method, Online Health Service Consultation

INTRODUCTION

In the current digital era, the use of information technology in the health sector has become a strategic solution to overcome various challenges faced, including limited access and inconvenience in conventional health services. The development of health information systems, such as E-Registration and Health Service Consultation, is an important key in the transformation of health services that are more efficient,

effective and easily accessible to the public. However, developing information systems that are responsive to user needs and adaptive to environmental changes is a challenge that requires a special approach.

Advances in information technology in the health sector help speed up services to patients and meet applicable minimum standards. Therefore, the aim of developing this web-based clinic registration application is to make it easier for officers and doctors to find patient information. All clinical data is stored using a MySQL database and HTML and PHP programming languages. To design applications, he uses a prototyping model (Nasrullah, 2023). In the clinic, there is a lot of data that must be processed. However, the recording system which is still manual, starting from patient registration to diagnosis, has caused various problems, including lost data, difficulty finding data, and inefficiency in the registration process. The online patient registration application makes it easier for both patients and clinics, makes it easier to check registration quotas, and makes patient visit history easier (Rezy et al., 2023). The problem in this case study is the need for a system that allows patients to register for a queue and view their queue via the clinic website. (Rezy et al., 2023). Therefore, by building a patient registration information system using a website, it will be easier to operate patient registration (Germecca et al., 2024). This system design uses the agile method. The agile method was chosen because it can make the system more flexible and responsive to changing needs (Santoso et al., 2024). Studies show that online patient registration applications make it easier for both patients and clinics in the registration process, make checking registration quotas easier, and make patient visit history easier (Nurhayati & Nugraheni, 2023).

Through this research, the author conducted research and explained it under the title "E-Registration and Health Service Consultation Using Agile Methods" based on local case studies. It is hoped that this website will help make it easier for users to get a consultation queue without having to go to the clinic. In this way, users will feel more comfortable and satisfied in undergoing the experience of registering for health services online. Meet user needs and satisfaction before implementation.

In the last decade, information technology has transformed into a driving force in many sectors, including the health sector. The implementation of information technology in health services has opened up great opportunities to improve service quality and operational efficiency. One area that has experienced significant development is the electronic health service registration and consultation system (E-Registration and Consultation). This research aims to develop an E-Registration and Health Service Consultation system using Agile methods, which is expected to be able to overcome various challenges faced by conventional health services today.

This research was driven by the need to create efficient and effective solutions in dealing with problems such as long waiting times, complicated administrative processes, and difficulties in getting access to quality health services. By implementing

the Agile method, it is hoped that the system developed will be able to adapt quickly to changing user needs and preferences, while ensuring more responsive and flexible product development. This research takes place in the broader context of improving health services through information technology, exploring how E-Registration and Consultation systems can provide solutions to existing problems and how Agile methods can contribute to the development of more adaptive and user-centered health systems. Thus, this research focuses not only on the technical aspects of system development, but also on its impact on the quality of health services provided to the community.

RESEARCH METHOD

Research Design

This research adopts a development research design using the Agile method as the main framework in developing the E-Registration and Health Services Consultation system. The Agile method was chosen because of its ability to support product development that is iterative and responsive to changing user needs and preferences. This research design involves several main stages which are described as follows:

1. **Need Identification and Planning:**

The initial stage of this research involved identifying user and stakeholder needs through surveys, interviews, and focus group discussions. The information collected at this stage is used to determine the main features and functionality of the Health Services E-Registration and Consultation system to be developed.

2. **System Design:**

Based on the identified needs, the development team designs the system architecture and user interface. This stage involves technology selection, interface prototyping, and user interaction design.

3. **Iterative Implementation and Development:**

Following Agile principles, system development is carried out in iterative cycles that include coding, testing, and evaluation. Each iteration produces a version of the system that can be tested and evaluated to ensure that the system evolves according to user needs.

4. **System Testing:**

The developed system is tested to ensure its functionality, reliability and security. Testing involves end users in usability testing to evaluate user experience and obtain feedback for further improvements.

5. **Evaluation and Improvement:**

Based on feedback from system testing, system evaluation and improvements are carried out. This stage aims to ensure that the system meets user expectations and established quality standards.

6. **Implementation and Rollout:**

Once the system meets all quality and usability criteria, the system is ready to be implemented and rolled out for use by end users.

7. Monitoring and Maintenance:

After launch, the system is continuously monitored and maintained to ensure smooth operations and to address any technical issues that may arise.

This research design emphasizes collaboration between developers, users and other stakeholders in the development process, as well as adaptation to changing needs and conditions during the system development life cycle. Through this approach, the research aims to produce an E-Registration and Health Services Consultation system that is not only innovative and effective but also easy to adapt and update according to technological developments and user needs.

Table 1. Overview Of Stages In The Development Process

| Stage | Description |
|--|---|
| Need Identification & Planning | Identify user and stakeholder needs through surveys, interviews, and FGDs to determine system features. |
| System Design | Design system architecture and user interfaces, select technologies, and create prototypes. |
| Iterative Implementation & Development | System development in an iterative cycle including coding, testing, and evaluation. |
| System Testing | Test systems for functionality, reliability, security and usability. |
| Evaluation and Improvement | Evaluate the system based on testing feedback and make improvements. |
| Implementation and Rollout | Implement and roll out the system to end users. |
| Monitoring & Maintenance | Monitor and maintain systems for smooth operations and resolve technical issues. |

Implementation of UML

UML (Unified Modeling Language) is a language modeling software in the design and engineering industry software that has become the standard for visualizing, designing, and logging device systems soft (I. K. Dewi dan M. Nur, 2022) Santoso et al., 202. This research aims to create an online queuing system for inpatient registration by implementing Unified Modeling Language (UML) modeling, especially through using Use Case Diagrams (J. Friadi dkk., 2023). Use case diagrams show communication between actors—system and administrator—as well as actions or use cases can be done by each actor . Activity diagram model used to describe data or control flow, as well as structured actions that occur within a system (D. S. Purnia,

2022). Sequence diagrams applied to represent interactions between objects in a system. This diagram shows what is the sequence of method calls or messages sent between objects Shela, dkk, 2023),. By using third This diagram is to show how system interactions and workflows work, this research will provide an in-depth explanation regarding the use of the system under study.

Use Case Diagrams

It is a visualization used to explain the interaction between the administrator as an actor and the system. This diagram graphically illustrates the use cases that an administrator can perform when using the system. This diagram helps readers understand the main functions of the system and how administrators can use them to achieve those goals. To consider all user needs during the final system design and implementation process, this diagram can also be used to guide the system development process (A. Ramdhani dan A. M. Thantawi,.2024). The following is the use case diagram that has been created

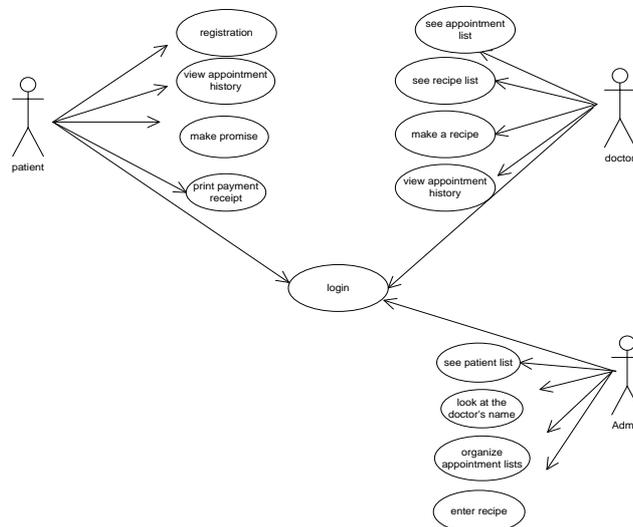


Figure 1. Use Case Diagram

Activity Diagrams

Activity diagram is a description of a use case with a flow of activities; This can be used to model a sequence of system processes depicted vertically. This could be a menu sequence or a business process in the system (J. S. Pasaribu,. 2021)

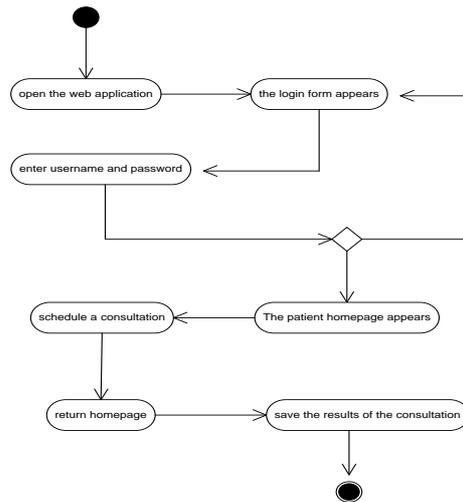


Figure 2. Activity Diagram System

Explanation :

The image you show is a flowchart that describes the process of using a web application for consultation. This is the sequence of steps a user takes when interacting with the system:

1. Opening the web application: This is the starting point where the user starts interacting with the application.
2. Login form appears: After the application is opened, the system will display a form to enter.
3. Entering username and password: Users are required to enter their identity and credentials for access.
4. The patient's main page appears: If the identity data entered is correct, the system will redirect the user to the main page.
5. From here, there are two options that users can do:
 - Scheduling a consultation: Users can book an appointment for a consultation.
 - Saving consultation results: If the user has carried out a consultation, he can save the results.
6. Return to main page: After scheduling a consultation or saving the results, users can return to the main page to continue using the application or complete the session.

This diagram does not show other options or possible errors that may occur during the process (such as entering an incorrect password or the system failing to save the consultation results), which are often included in flow diagrams to provide a more complete picture of all possible paths taken during interactions with the system.

RESULT AND DISCUSSION

Implementation of E-Registration Website and consultation Registration Page

When patients visit the website, they are immediately presented with a registration page, which serves as a gateway to the main page. With a simple and easy to use interface, this registration page makes it easy for patients to enter user verification data such as name, email and password

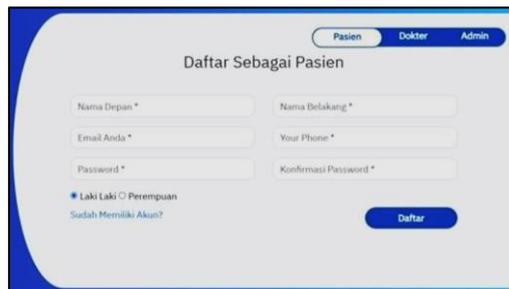


Figure 3. Registration Form

Patient Features

Patients can access the main page after entering the email and password they have created. This page has menus such as make a consultation appointment, my consultation appointment and consultation results. These menus have their respective purposes. Patients are easy with these functions.



Figure 4. Patient Features

Page Make an Appointment to Consult a Doctor

There is a details page showing appointment options on this page. This page contains columns showing specialties, doctors, consultation rates, appointment dates and times. This feature helps patients make patient appointments more easily.



Figure 5. Making a Consultation Appointment

Consultation History Page

The consultation history page contains information about the patient's appointment history with the doctor. This page contains information such as doctor's name, consultation fee, consultation time, consultation hours, and status. This page makes it easy for patients to view the patient's consultation history



Figure 6. History Page

CONCLUSION

Based on this research, understanding user needs, needs analysis, system design, and implementation are all parts of the system development process. The result is a web-based registration information system that meets the requirements and objectives. Appointment history, consultation results and prescription results are shown easily by this system. Implementation of this information system increases the efficiency and effectiveness of clinic operations. In addition, this system has the ability to protect user data by storing it in a database that can be accessed online. The existence of an information system improves patient service. Therefore, the objectives of creating and designing this information system have been achieved.

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