






Room Booking Information System at Bali State Polytechnic using Pieces Method

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Abstract. Bali State Polytechnic is a vocational higher education that was established in 1987. Currently, Bali State Polytechnic has 7 departments and 34 study programs in regular classes. Bali State Polytechnic also has 19 student activity units. Each department, study program, and Student UKM has activities that are adjusted to their respective visions, missions, and work programs. These activities can be carried out outside or inside the Bali State Polytechnic environment. Within the Bali State Polytechnic environment, some rooms can currently be used to hold activities. These rooms are Widya Guna, Widya Graha, Widya Reka and Widya Padma. The room borrowing process is as follows. The borrower comes to visit the officer to see the date of room availability. After that, the borrower makes a room borrowing letter signed by an authorized official. Then, the borrower brings the letter to the room borrowing officer to be recorded manually on the room borrowing schedule. A common problem is that sometimes the officer forgets to record the date of the room borrowing. So there is more than one activity in one room on the same date. This certainly makes borrowers have to find solutions so that activities continue to run. Therefore, this study raises the title of Making a Room Borrowing Information System at Bali State Polytechnic with the PIECES Method.

Keywords: Information System, Room Booking, Pieces Method

1 Introduction

Bali State Polytechnic is a vocational higher education that was established in 1987. Currently, Bali State Polytechnic has 7 departments and 34 study programs in the regular class. The departments are the Tourism Department, Accounting Department, Business Administration Department, Electrical Engineering Department, Mechanical Engineering Department, Civil Engineering Department, and Information Technology Department.

Each department, study program, and Student UKM has activities that are adjusted to their respective visions, missions, and work programs. These activities can be

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A. A. N. G. Saptaka et al. (eds.), *Proceedings of the International Conference on Sustainable Green Tourism Applied Science - Social Applied Science 2024 (ICoSTAS-SAS 2024)*,

Advances in Economics, Business and Management Research 308,

https://doi.org/10.2991/978-94-6463-622-2_96

carried out outside or inside the Bali State Polytechnic environment. Within the Bali State Polytechnic environment, some rooms can currently be used to hold activities. These rooms are Widya Guna, Widya Graha, Widya Reka and Widya Padma.

Based on an interview with one of the room loan officers, Mrs. Ni Made Sudani, the room loan process is as follows. The borrower comes to visit the officer to see the date of room availability. After that, the borrower makes a room loan letter that has been signed by an authorized official. After that, the borrower brings the letter to the room loan officer to be recorded manually on the room loan schedule.

The problem that is often experienced currently in the room loan process at the Bali State Polytechnic is errors in recording room loans. Borrowers can borrow rooms simultaneously due to recording errors that cause scheduling conflicts and difficulty in seeing evidence to see who borrowed first (Prasetyo & Wirawan, 2018).

Therefore, this study raises the title of Making a Room Borrowing Information System at the Bali State Polytechnic with the PIECES Method in evaluating the system used. The purpose of making this Information System is to make it easier for officers to record rooms that have been borrowed; make it easier for borrowers to see room availability on the specified date; make it easier for officers and borrowers to see the history of room loans; implement green tourism by saving paper when recording room loans and making room loan introduction letters (Puspitasari et al., 2019).

The PIECES method is one of the techniques used in the information system analysis stage to evaluate and design information technology-based solutions. PIECES uses 6 indicators in evaluating the system. These indicators are Performance, Information, Efficiency, Cost, Effectiveness, and Service. The PIECES method is usually used in the needs analysis or system evaluation stage. In the needs analysis stage, the PIECES method helps identify and clarify system needs by assessing various aspects such as the service life. From the various problems that have been raised above, this research aims to build a Building Loan Information System at the Bali State Polytechnic using the PIECES method (Fatoni et al., 2020).

In a previous study from Nugraha et al. (2023), in Design and Development of a Web-Based IT Project Management Information System at the WIT.ID Company Using the Scrum and PIECES Methods, the test results of the developed IT-project management information system through usability testing, a feasibility score of 86.4% was obtained, categorizing it as suitable for use.

In previous study from Sada et al. (2024), in Implementation of Pieces Framework Method As An Evaluation of User Satisfaction Level of Blibli Application, the overall average satisfaction score in all domains was 3.88 (SATISFIED). The average satisfaction level is 3.88 according to calculations using the PIECES framework for 6 domains. It can be seen that Blibli application users in the Rajeg Mulya area, Tangerang Regency RT005 RW007, are generally satisfied included in the SATISFIED category. The use of the Blibli Application service has good and useful functions that make users feel very satisfied in using it, this can be concluded from the calculation of the questionnaire. However, some respondents continue to give relatively low survey scores. Improving the quality of the Blibli application customer service uses this as one of the inputs or references.

In previous study from Septiani et al. (2023), The PeduliLindungi application produced an average score of 4.02 in the SATISFIED category, so it can be said that the PeduliLindungi application meets the parameters of user satisfaction. The results of this study can be used as a basis for developing and improving the system for the relevant government so that the quality of the PeduliLindungi application is always maintained.

From Sapial et al. (2012), an observation is conducted regarding the booking process of a classroom which is done manually. Based on the observation, it is shown the importance of a flexible web-based application system that can properly manage booking records of classrooms.

2 Methodology

This section will explain the stages of the research that will be carried out. The stages of the research can be explained as follows.

2.1 Data Collection

The steps in data collection carried out in this study, the first is a literature study carried out by searching for documents from previous studies related to the problem of renting rooms. This literature study was carried out to find references and make comparisons in creating the system. Furthermore, the interview method was carried out to collect the information needed in the study.

2.2 System Analysis

Information System analysis and design are used to create and manage information systems in carrying out their basic business functions. In this study, the system analysis uses the PIECES analysis framework (Performance, Information, Economy, Control, Efficiency, Service), namely the process of comparing system weakness analysis. A system is a collection of components or networks of procedures that work together to form a network to achieve certain goals or objectives. In this PIECES analysis, the old and new systems will be compared, and functional and non-functional requirements will be defined in software development (Anwardi et al., 2020).

2.3 System Design

System design is one of the phases in the waterfall method which is a system design process by breaking down the needs for both hardware and software. System design in this study was carried out with 3 processes, namely UML (Unified Modeling Language) design, database design, and system interface design.

2.4 Implementation of Results

The stage of realizing the software design as a program or program unit. Unit testing ensures that each unit meets its specifications. The implementation stage of the system design in this study is the process of implementing the design into the PHP programming language.

2.5 System Testing

The system testing stage is carried out on each program unit or program integrated and tested as a complete system to ensure that the software meets the specifications when testing directly to users.

3 Result and Discussion

3.1 Result

Data collection was conducted using an interview method with Mrs. Made Sudani as the room reservation officer. Interviews were also conducted with students who had reserved rooms at the Bali State Polytechnic. From the results of interviews with both parties, we can conclude that the workflow to reserve the Bali State Polytechnic building is as follows: 1) The admin determines the reservation date and the room that the client wants to reserve; 2) The admin checks the availability of the room on the reservation list that has been recorded by the administrator; 3) If the room is unavailable on a specific date, the admin has 3 options. The first is to reschedule the reservation date. The second is to change the room. The last is by negotiating regarding rescheduling and canceling the reservation; 4) If the room has not been reserved, the client can directly submit a letter signed by the leader to the administrator; 5) After the administrator receives the letter, the client's reservation data will be immediately recorded, indicating that the building has been reserved on that date. The workflow to reserve the Bali State Polytechnic building can be seen in Figure 1.

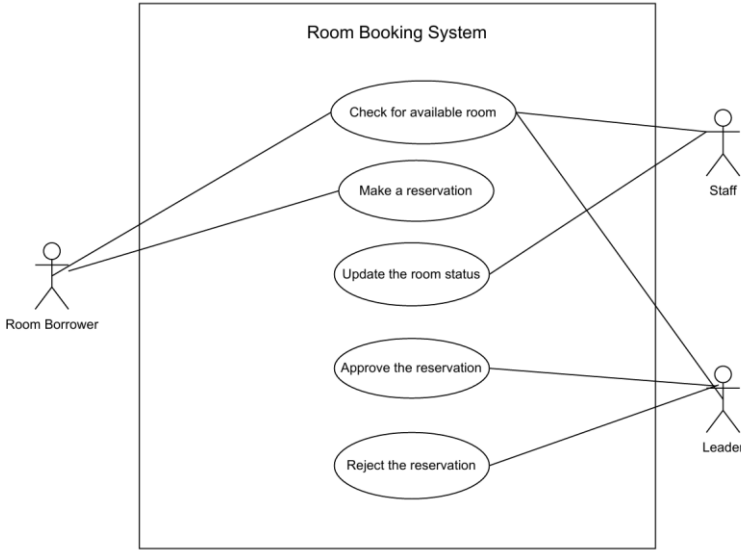


Figure 1. Use Case Diagram

3.2 Discussion

From the data collection that has been carried out, the analysis using the pieces method for the room rental system at the Bali State Polytechnic is as follows as shown in Table 1.

Table 1. Analysis of the room rental system at the Bali State Polytechnic

| No | Analysis | Old system | New system |
|----|-------------|---|---|
| 1 | Performance | Still using a manual system, namely by recording room loan data on paper based on incoming room loan application letters. | Utilizing information technology to speed up time and performance in taking action on room loans by utilizing the internet network. |
| 2 | Information | Information about room rentals is still inaccurate and not on target, because the information used is still using paper media, so the information provided is still from one person to another. | Need an application that can provide accurate and targeted information about room rentals. |

| No | Analysis | Old system | New system |
|----|------------|--|--|
| 3 | Economy | In recording information about room rentals, we still use paper, ink and other office stationery which is quite excessive. | By utilizing web-based information technology, minimizing the use of paper, ink and other office stationery. |
| 4 | Control | Data security is still not guaranteed, so it is too easy for anyone to access it, as a result people who are not interested in it can take, damage and delete the data. | Requires authentication, so not everyone can access it, because only people with interests can access it, besides that, data about room rentals will not be damaged or lost, |
| 5 | Efficiency | A lot of time is wasted on room borrowing activities because room borrower applicants must come to the household room to apply for a room borrowing application and sometimes the room borrowing officer is not in the room. Sometimes room borrowing information data is inputted, processed and copied excessively, so it is considered quite inefficient. | Time is not wasted because the activity of borrowing a room is made easier by a web-based computer system, so that applicants for borrowing a room no longer need to come to the General Bureau room, because applicants for borrowing a room can apply for permission to use the room anytime and anywhere by utilizing a web-based computer system application and internet network. |
| 6 | Services | The system is still manual using paper and whiteboard media which requires applicants to come to the household room to obtain information on room loan data, so it is quite time consuming to obtain the required information services and information services are still difficult to provide and receive by room loan applicants. | Applicants can directly access the application anytime and anywhere to obtain information on room rental data by utilizing the internet network. |

4 Conclusion

Based on the research that has been conducted, a web-based room loan system application has been created at Politeknik Negeri Bali. The system application that has been built can provide solutions and convenience for applicants to submit room loan applications. The web-based application system that has been designed also

provides solutions and convenience to the staff of the room loan system at Politeknik Negeri Bali.

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