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Designing a Website Based Management Information System for Bima Boarding House Using the Prototype Method

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ABSTRACT

Advances in information technology have encouraged various sectors, including boarding house management, to utilize digital systems. Kost Bima in Tamantirto Village, Bantul, faces challenges in recording tenants, verifying payments, and handling complaints, which are still done manually, thus being time-consuming and prone to irregularities. This study aims to design a website-based boarding house management information system as a solution. The system is designed for three users: admin (boarding house owner), tenants, and prospective tenants. The prototype method was used so that development involved user input at every stage, and in the process, two iterations were carried out to refine the system. The result is a system with features for room reservations, lease extensions, payments, complaint management, and tenant data. Black-box testing showed that all features worked well without bugs. In addition, User Acceptance Testing (UAT) was conducted with five assessment aspects: Learnability, Efficiency, Memorability, Errors, and Satisfaction. The UAT results showed an excellent score of 87.8%, indicating that the system is feasible for use.

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I. INTRODUCTION

Information systems play a very important role in supporting business development and success in today's dynamic digital era [1]. Not only do they facilitate data collection and storage, information systems also support business process optimization and managerial decision-making [1]. Data quality plays an important role because accurate, relevant, and timely information will support a more effective and accountable decision-making process [2]. One sector that requires the implementation of information systems is the boarding house rental business. Boarding house, short for indekos, means living in someone else's house with or without meals and paying monthly [3].

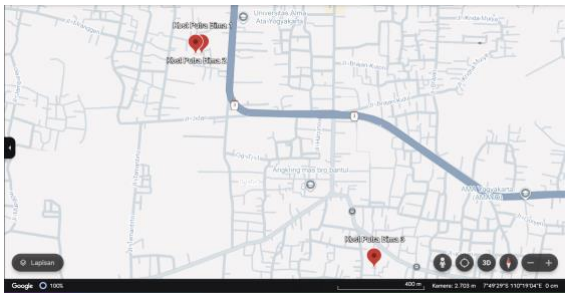

Fig.1. Map of Bima Boarding House Location

The Bima boarding house in Bantul, D.I. Yogyakarta, faces challenges in managing tenant data and payments, which are still done manually, potentially leading to recording errors and data loss. The complaint reporting process is also still carried out via WhatsApp messages, which makes it difficult for owners to handle and record complaints. Therefore, this study proposes the development of a website-based boarding house management information system to facilitate transactions, complaint submission, and more structured boarding house data management. The prototype method is used so that the system can be developed in stages by involving user input [4].

Previous studies have shown that website-based boarding house management information systems can improve boarding house management and facilitate interaction between managers and tenants. Research by Fitri et al. (2024) [5], Darlin et al. (2023) [4], and Chalidazia (2021) [6] states that this system allows tenants to search for boarding houses, make reservations, and pay online more easily. In addition, this system also helps boarding house managers in managing tenant data, payment reports, and monitoring room availability. Research by Al Ghiffari et al. (2020) [7] adds that features such as tenant data collection, financial reports, and complaint management are very important to maintain the smooth operation of boarding houses. The similarities in the difficulties of managing boarding house operations make this research a useful reference. The difference in the research conducted is the object of study, where the Bima Boarding House is the focus.

II. METHODOLOGY

2.1 Design Concept

Design or design engineering is a series of steps used to convert the results of system analysis into programming language, with the aim of explaining in detail how each system component will be implemented [6]. The design process includes the stages of drawing, planning, and organizing separate elements so that they can form a unified whole that functions in an integrated manner [8].

2.2 Management Information System (MIS)

Management is a series of processes aimed at achieving specific objectives by utilizing various resources through the implementation of functions within an organization [9]. Management Information Systems (MIS) are a combination of hardware and software used to collect, process, store, and present relevant information to support decision-making processes in an organization or institution [10]. MIS serves as a means of integration between organizational departments, covering finance, human resources, production, and marketing, in a unified platform [10].

In the context of this study, MIS is applied to boarding house management, hence it is called the Boarding House Management Information System. The application of MIS in boarding houses aims to manage data on rooms, tenants, payments, and reporting in an integrated manner. This is expected to replace the manual processes that are still commonly used by boarding house managers and support faster, more accurate, and more efficient decision making.

2.3 Website

A website is a collection of pages that present digital information in the form of text, images, animations, sounds, videos, or a combination of all of these, which can be accessed via the internet by users around the world [11]. Websites are often used to convey information to users. This can be information about companies, products, news, tutorials, articles, or other topics.

In the context of this study, websites are used as the main medium in the development of the Boarding House Management Information System. Through the website, prospective tenants can view room availability, register, and book rooms online. For boarding house managers, the website serves to manage room, tenant, and payment data in a more practical, transparent, and integrated manner.

2.4 Prototype Method

According to McLeod & Raymon (2011), a prototype is a tool that provides an initial overview to developers and users about how a system will function, while the process of creating it is called prototyping [12]. This method is used to obtain an initial overview of the application, which is then evaluated by users and used as a reference for final development. The stages of prototyping include: communication (gathering requirements), quick plan (rapid planning), modeling quick design (initial modeling), construction of prototype (prototype creation), and deployment delivery & feedback (testing and feedback). The advantages of this method include actively involving users, accelerating development, facilitating the implementation of requirements, and improving communication. However, its disadvantages are brief analysis, lack of adaptability to change, and the potential for compromising long-term quality [12].

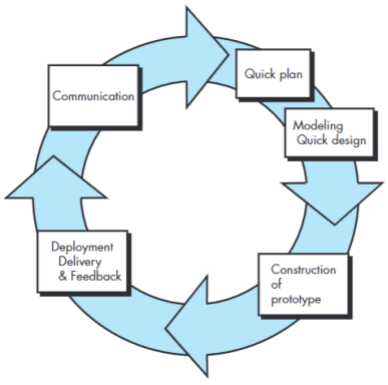

Fig.2. Prototype Method Stages [13]

2.5 Unified Modeling Language (UML)

According to Flowler in [14], Unified Modeling Language (UML) is a visual modeling language that serves to describe, design, and document object-based software systems. UML provides powerful tools for developers to describe and design systems in a more structured and

comprehensive manner [15]. Diagrams commonly used in UML include Use Case Diagrams, Activity Diagrams, Sequence Diagrams, and Class Diagrams.

2.6 Black Box Testing

Black box testing focuses on software functionality and therefore does not require access to or knowledge of the source code [16]. This method involves designing test cases based on predetermined specifications or requirements to ensure that the software behaves as intended.

2.7 User Acceptance Testing (UAT)

User Acceptance Testing (UAT) is testing conducted by end users to ensure that system functions work according to actual needs, not just technical specifications [17]. UAT assesses the extent to which the system meets the following aspects: Learnability (ease of understanding the system), Efficiency (speed of completing tasks), Memorability (ability to remember usage), Errors (error rate and corrections), and Satisfaction (user satisfaction and comfort) [18].

2.8 Communication

This stage involves communicating with Kost Bima to identify the boarding house management process, including tenant registration constraints, rental procedures, and complaint management, as well as analyzing needs in order to formulate effective solutions.

2.9 Quick Plan

After communication, rapid planning was carried out, which included technology selection, system design flowchart creation, and user identification.

2.10 Modeling Quick Design

At this stage, several system modeling activities were carried out using Unified Modeling Language (UML). This modeling included the creation of designs in the form of use cases, activity diagrams, sequence diagrams, as well as database and user interface designs. This stage referred to the results of interviews with users, where the prototypes created were based on information obtained from interactions between researchers and users.

2.11 Construction of Prototype

This stage translates the system design into code using the PHP and JavaScript programming languages with the CodeIgniter framework. The previously prepared design is converted into program code, covering the workflow, user interface, relationships between entities, and menus that have been designed and agreed upon by researchers and users. The database design is also compiled based on the previously designed class diagram.

2.12 Deployment, Delivery, and Feedback

The system that has been built is tested to ensure that the software works properly. The testing methods used are blackbox testing and User Acceptance Test (UAT).

III. RESULTS AND DISCUSSION

3.1 Iteration I

3.1.1 Communication

Based on interviews, the main problems at Kost Bima include a lack of information about rooms, prices, facilities, and manual booking, payment, and complaint reporting processes, which are prone to data loss, delays, and management difficulties. The proposed solution is to develop a website-based Kost Management Information System. Functional Requirements Analysis:

Admin: login, edit profile, confirm payment, manage complaint categories, respond to complaints, manage room data, facilities, tenants, Telegram notifications, logout.

Tenant (*penyewa*): login, edit profile, view room info and lease period, extend lease, pay and upload proof, input and check complaint status, Telegram notifications, logout.

Prospective Tenant (*calon penyewa*): view rooms, register, book a room, pay, and receive notifications about order status and payment.

3.1.2 Quick Plan

A solution plan was developed to address the existing problems, namely developing a web-based system with PHP (CodeIgniter), using Laragon as a web server, MySQL for the database, and HTML and Bootstrap interfaces to make it easily accessible and user friendly.

3.1.3 Modeling Quick Design

1. Use Case Diagram

Use case diagrams are used to identify system functions and actors that interact with those functions, as shown in Fig. 3.

Fig.3. Use Case Diagram

Based on Figure 3, the system has three main actors: admin, tenants, and prospective tenants. Admins can manage

all data and payment confirmations, tenants can manage their profiles, extend leases, make payments, and submit complaints, while prospective tenants can register, edit their profiles, book rooms, and make payments.

2. Activity Diagram dan Sequence Diagram

This study describes 16 activity diagrams and sequence diagrams, including:

1) Activity Diagram and Sequence Diagram for Login
2) Activity Diagram and Sequence Diagram for Registration
3) Activity Diagram and Sequence Diagram for Viewing Rooms
4) Activity Diagram and Sequence Diagram for Editing Profiles
5) Activity Diagram and Sequence Diagram for Booking Rooms (Prospective Tenants)
6) Activity Diagram and Sequence Diagram for Extending Tenancies (Tenants)
7) Activity Diagram and Sequence Diagram for Payment (Tenant and Prospective Tenant)
8) Activity Diagram and Sequence Diagram for Payment Confirmation (Admin)
9) Activity Diagram and Sequence Diagram for Complaint Input (Tenant)
10) Activity Diagram and Sequence Diagram for Managing Complaint Category Data (Admin)
11) Activity Diagram and Sequence Diagram for Complaint Data Management (Admin)
12) Activity Diagram and Sequence Diagram for Location Data Management (Admin)
13) Activity Diagram and Sequence Diagram for Room Data Management (Admin)
14) Activity Diagram and Sequence Diagram for Managing Facility Data (Admin)
15) Activity Diagram and Sequence Diagram for Managing User Data (Admin)
16) Activity Diagram and Sequence Diagram for Viewing Room and Tenant Data

3. Class Diagram

Figure 4 illustrates the tables that are related in the boarding house management information system database.

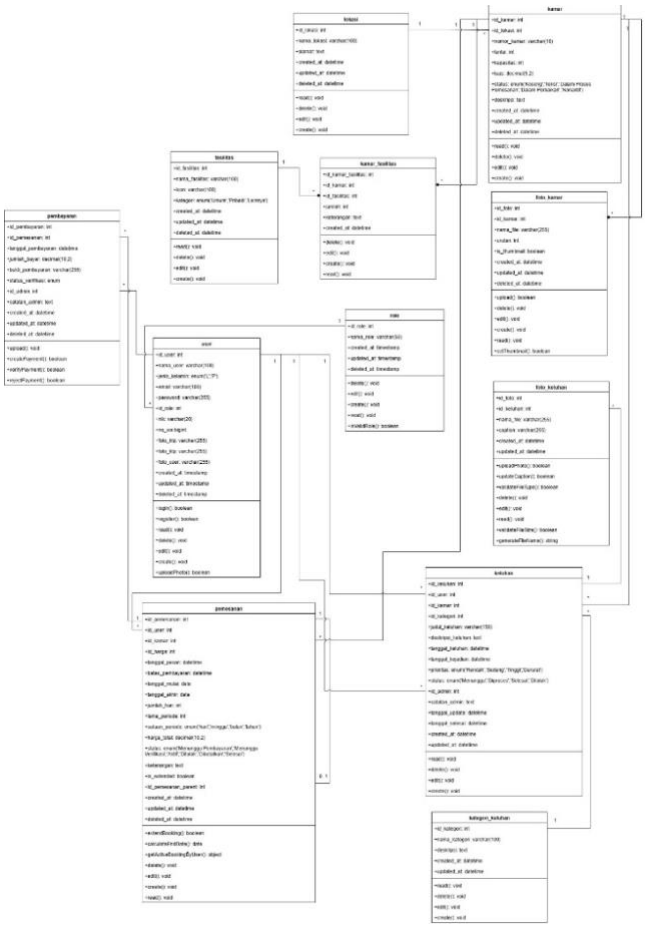

Fig.4. Class Diagram

3.1.4 Construction of Prototype

Figure 5 shows a preview of the Bima Boarding House Management Information System page in iteration I. This prototype has several functions, including a dashboard, payment confirmation, boarding house management, complaints, and system settings.

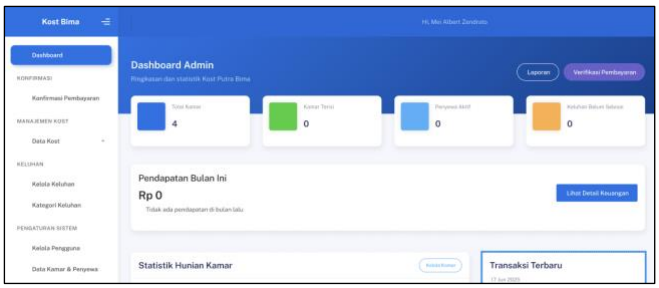

Fig.5. Admin Dashboard Page

3.1.5 Development Delivery and Feedback

After review, users provided feedback to improve the prototype, including adding password reset and OTP features, changing notifications to email, creating PDF invoices, financial reports (PDF and Excel), Google Maps links and location photos, managing payment accounts, and admin features to disable and reset passwords. The landing page display was also adjusted to include information about the location of the boarding house.

3.2 Iteration II

3.2.1 Comunication, Quick Plan, Modeling Quick Design

The initial design outline (use case, activity, sequence, class diagram, database, and interface) formed the basis for the prototype, but some models were adjusted after testing to support additional features resulting from user evaluation.

1. Use Case Diagram Evaluation

The use case diagram was adjusted based on user evaluations, with the addition of financial report features (PDF and Excel), password reset, PDF invoice download, notification management, and data search accessible to all actors.

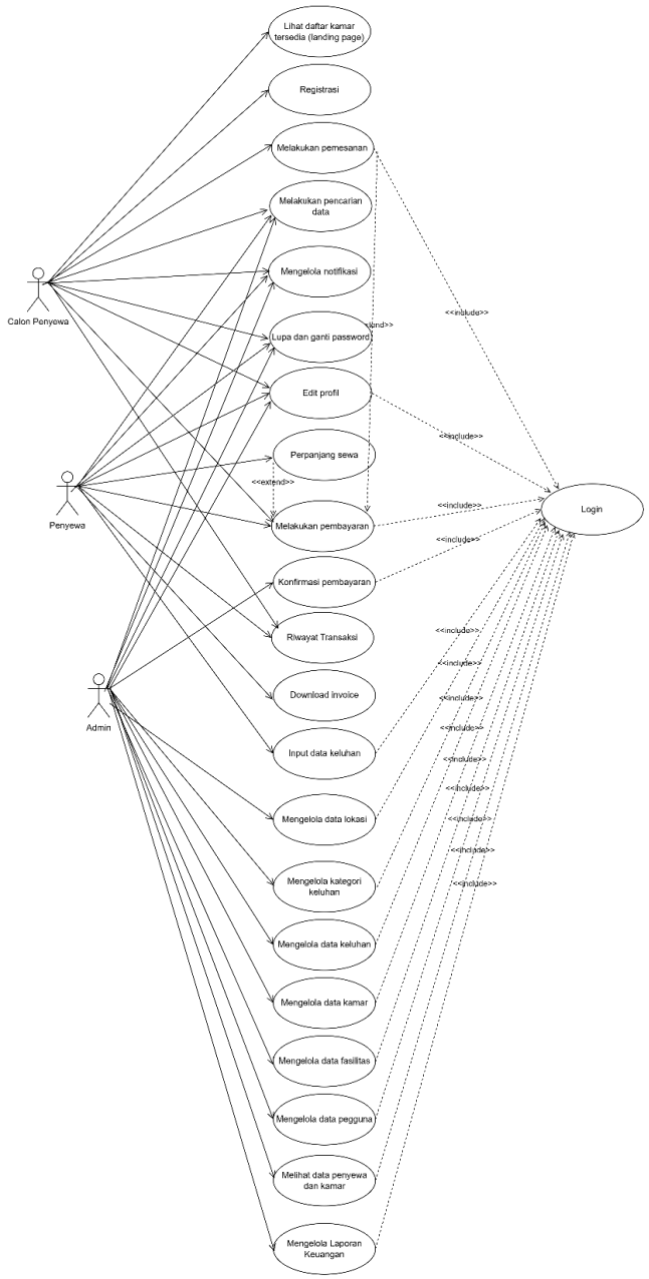

Fig. 6. Use Case Diagram Evaluation

2. Evaluation of Activity Diagrams and Sequence Diagrams

The prototype evaluation results led to several changes and additions to the diagrams, both Activity Diagrams and Sequence Diagrams, as follows:

Adding Diagrams (Activity and Sequence):

1) Activity Diagram and Sequence Diagram for Forgot Password (All Roles)
2) Activity Diagram and Sequence Diagram for Manage Notifications (All Roles)
3) Activity Diagram and Sequence Diagram for Manage Financial Reports (Admin)
4) Activity Diagram and Sequence Diagram for Data Search (All Roles)
5) Activity Diagram and Sequence Diagram Download Invoices (Tenant)
6) Activity Diagram and Sequence Diagram Manage Accounts (Admin)

Diagram Changes (Activity and Sequence):

1) Activity Diagram and Sequence Diagram Manage User Data (Admin)

3. Class Diagram Evaluation

Several new tables have been added to support functional requirements, such as room_prices (*harga_kamar*), accounts_payable (*rekening_bayar*), complaint_history (*riwayat_keluhan*), notifications (*notifikasi*), otp, and lease_extensions (*perpanjang_sewa*), to record price history, payment accounts, complaint status, notifications, email verification/password reset, and lease extensions that were not accommodated in the initial design.

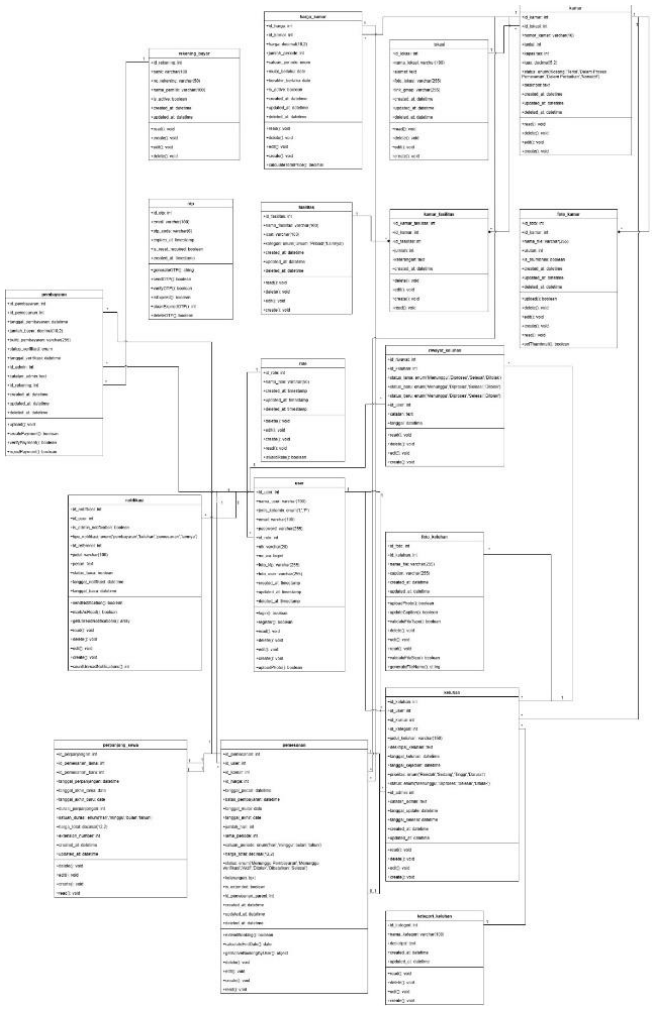

Fig.7. Class Diagram Evaluation

4 Construction of Prototype

Prototype development in iteration II was carried out by improving and adding features based on the results of user requirements analysis. Figure 8 shows one of the system implementations, namely the financial report management page by the administrator.

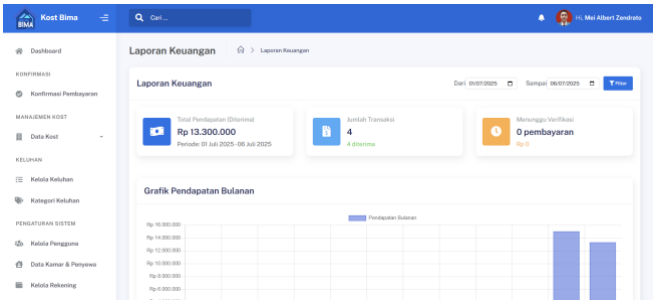

Fig.8. Manage Financial Reports Page (Admin)

5 Deployment Delivery and Feedback

1. Black Box Testing

The results of the black box testing conducted in this study are presented in the following tables:

1) System Testing on the Landing Page

The results of system testing on the landing page are shown in Table I.

TABLE I. SYSTEM TESTING ON THE LANDING PAGE

No.	Function	Test Scenario	Expected Result	Status
1.	Home Page	Access the main website page	The homepage is displayed with a hero section, room search, kost information, location, rooms, facilities, and contact.	Valid
2.	Navigation Menu	Click menu "Tentang Kami"	The page displays information about the kost's history, vision, and mission.	Valid
		Click menu "Lokasi"	The system displays a list of kost locations with address and status information.	Valid
		Click menu "Kamar"	The system displays a list of available rooms for rent.	Valid
		Click menu "Kontak"	The system displays contact information.	Valid
3.	Room Filter	Select a location and click filter on the room page	Rooms corresponding to the selected location are displayed.	Valid
		Enter a minimum and maximum price range, then click filter	Rooms within the specified price range are displayed.	Valid
		Select several facilities, then click filter	Rooms that include the selected facilities are displayed.	Valid
4.	Room Details	Click on one of the rooms	Detailed room information, including photos, descriptions, facilities, and prices, is displayed.	Valid

2) System Testing for Prospective Tenants

The results of the system testing on prospective tenants are shown in Table II.

TABLE II. SYSTEM TESTING FOR PROSPECTIVE TENANTS

No.	Function	Test Scenario	Expected Result	Status
1.	Registration	Register a new account with valid data	Account successfully created and OTP sent to the user's email	Valid
2.	Login	Login with correct email and password	Successfully logged in and redirected to the dashboard according to role	Valid
		Login with incorrect email/password	Error message appears and remains on the login page	Valid
3.	Forgot Password	Click "Lupa Password" and enter email address	Password reset email is sent to the entered email address	Valid
		Input a new password	Password successfully	Valid

No.	Function	Test Scenario	Expected Result	Status
			changed and can log in with the new password	
4.	Edit Profile	Click "Edit Profil", modify data, then save	Profile data successfully updated	Valid
		Upload a new profile photo via edit form	Profile photo successfully updated	Valid
		Upload photo KTP via edit form	ID card photo successfully saved	Valid
5.	Change Password	Click "Ganti Password" and fill out the form with old and new passwords	Password successfully changed	Valid
6.	Room Booking	Select a room and fill out the booking form	Booking successfully created and redirected to the payment page	Valid
7.	Payment	Upload proof of payment for a booking	Proof of payment successfully uploaded and status changes to "Menunggu Verifikasi"	Valid
8.	Transaction History	Access the transaction history page	Displays all previous booking records	Valid
		Cancel an unverified booking	Booking successfully canceled and room becomes available again	Valid
9.	Data Search	Enter a keyword in the topbar search field	Displays search results from multiple entities	Valid
10.	Notification Management	Click the notification icon in the topbar	Displays the list of user notifications	Valid
		Click on an unread notification	Notification status changes to "dibaca"	Valid
		Click the delete icon on a notification	Notification successfully deleted	Valid
		Click on a notification with a link	Redirected to the related page of the notification	Valid
11.	Logout	Logout from the system	System returns to the landing page	Valid

3) System Testing for Tenants

The results of system testing on tenants are shown in Table III.

TABLE III. SYSTEM TESTING FOR TENANTS

No.	Function	Test Scenario	Expected Result	Status
1.	Login	Login with correct email and password	Successfully logged in and redirected to the dashboard according to role	Valid
		Login with incorrect email/password	Error message appears and remains on the login page	Valid
2.	Forgot Password	Click "Lupa Password" and enter email address	Password reset email is sent to the entered email address	Valid
		Input a new password	Password successfully changed and can log in with the new password	Valid
3.	Edit Profile	Click "Edit Profil", modify data, then save	Profile data successfully updated	Valid
		Upload a new profile photo via edit form	Profile photo successfully updated	Valid
		Upload photo KTP via edit form	ID card photo successfully saved	Valid
4.	Change Password	Click "Ganti Password" and fill out the form with old and new passwords	Password successfully changed	Valid
5.	Lease Extension	Select the initial transaction and fill out the extension form	Lease extension successfully created and redirected to the payment page	Valid
6.	Payment	Upload proof of payment for extension	Proof of payment successfully uploaded and status changes to "Menunggu Verifikasi"	Valid
7.	Transaction History	Access the transaction history page	Displays all booking and extension records made previously	Valid
		Cancel an unverified extension	Extension successfully canceled	Valid
8.	Download Invoice	Click "Download Invoice" on a transaction	Downloads the payment invoice PDF file	Valid
9.	Complaint Submission	Create a new complaint	Complaint successfully created with status "Menunggu"	Valid
		Access the complaint list	Displays all complaints with their statuses ("Menunggu", "Diproses", "Selesai", "Ditolak")	Valid
		Click on a complaint	Displays complaint details and handling history	Valid
10.	Data Search	Enter a keyword in the topbar search field	Displays search results from multiple entities	Valid
11.	Notification Management	Click the notification icon in the topbar	Displays the list of user notifications	Valid
		Click on an unread notification	Notification status changes to "dibaca"	Valid

No.	Function	Test Scenario	Expected Result	Status
		Click the delete icon on a notification	Notification successfully deleted	Valid
		Click on a notification with a link	Redirected to the related page of the notification	Valid
12.	Logout	Logout from the system	System returns to the landing page	Valid

4) System Testing for Admin

The results of the system testing on the admin are shown in Table IV.

TABLE IV. SYSTEM TESTING FOR ADMIN

No.	Function	Test Scenario	Expected Result	Status
1.	Login	Login with correct email and password	Successfully logged in and redirected to the dashboard according to role	Valid
		Login with incorrect email/password	Error message appears and remains on the login page	Valid
2.	Forgot Password	Click "Lupa Password" and enter email address	Password reset email is sent to the entered email address	Valid
		Input a new password	Password successfully changed and can log in with the new password	Valid
3.	Edit Profile	Click "Edit Profil", modify data, then save	Profile data successfully updated	Valid
		Upload a new profile photo via edit form	Profile photo successfully updated	Valid
		Upload photo KTP via edit form	ID card photo successfully saved	Valid
4.	Change Password	Click "Ganti Password" and fill out the form with old and new passwords	Password successfully changed	Valid
5.	Payment Confirmation	Approve booking payment	Payment successfully verified	Valid
		Reject payment with a reason	Payment rejected and notification sent to tenant	Valid
6.	Manage Payment Accounts	Add a new payment account	Payment account successfully added	Valid
		Edit payment account data	Payment account data successfully updated	Valid
		Delete payment account	Payment account successfully deleted from the system	Valid
7.	Manage Locations	Add a new location	New location successfully added and displayed in the location list	Valid
		Edit location data	Location data successfully updated	Valid
		Delete location data	Location successfully deleted from the system	Valid
8.	Manage Facilities	Add a new facility	Facility successfully added to the system	Valid
		Edit facility data	Facility data successfully updated	Valid
		Delete facility	Facility successfully deleted from the system	Valid
9.	Manage Rooms	Add a new room	New room successfully added to the system	Valid
		Edit room data	Room data successfully updated	Valid
		Delete room	Room successfully deleted from the system	Valid
10.	Manage Complaint Categories	Add a new complaint category	Complaint category successfully added	Valid
		Edit complaint category	Complaint category data successfully updated	Valid
		Delete complaint category	Complaint category successfully deleted from the system	Valid
11.	Manage Complaints	View complaint list	Displays all complaints with status filter	Valid
		Update complaint status to "Diproses"	Complaint status successfully updated and notification sent to tenant	Valid
		Update complaint status to "Selesai"	Complaint status successfully updated and notification sent to tenant	Valid
		Add handling notes	Handling notes successfully added to complaint	Valid
		Reject complaint with a reason	Complaint successfully rejected and notification sent to tenant	Valid
12.	View Room and Tenant Data	View tenant list	Displays all active tenants	Valid

No.	Function	Test Scenario	Expected Result	Status
		View tenant details	Displays complete tenant information	Valid
		View tenants per room	Displays room list with corresponding tenant information	Valid
		View tenants with lease period almost ended	Displays tenants with remaining lease period ≤ 30 days	Valid
		Send reminder to tenant	Reminder email or WhatsApp message successfully sent to tenant	Valid
13.	Manage Users	Add a new user	User successfully added to the system	Valid
		Edit user data	User data successfully updated	Valid
		Deactivate user account	User account successfully deactivated	Valid
		Activate user account	User account successfully reactivated	Valid
		Reset user password	User password successfully reset to default	Valid
		Delete user	User successfully deleted from the system	Valid
14.	Manage Financial Reports	View financial report with date filter	Displays payment data according to the selected date range	Valid
		Print financial report	Downloads financial report file	Valid
15.	Data Search	Enter a keyword in the topbar search field	Displays search results from multiple entities	Valid
16.	Notification Management	Click the notification icon in the topbar	Displays the list of user notifications	Valid
		Click on an unread notification	Notification status changes to "dibaca"	Valid
		Click the delete icon on a notification	Notification successfully deleted	Valid
		Click on a notification with a link	Redirected to the related page of the notification	Valid
17.	Logout	Logout from the system	System returns to the landing page	Valid

The black box test results showed that all functions worked as expected, so the system was validated by users.

2. User Acceptance Testing

The population of this study includes administrators, active tenants, and prospective tenants of Kost Bima. Total sampling was used for administrators and 24 active tenants, while incidental sampling was used for prospective tenants, which involved selecting respondents who happened to access the website and were willing to fill out the questionnaire, including through social media. The questionnaire consisted of 10 questions and was given to 130 respondents: 1 administrator, 24 active tenants, and 105 prospective tenants who were willing to fill it out.

The formula used to calculate the UAT test results on the boarding house management information system is presented in equation 1 [19] below.

$$Qn = \sum_{i}^{5} F(i) * scale\ (i)$$

$$P = (\frac{Total\ Qn}{N})/5 * 100 \quad (1)$$

Explanation:

Qn = Question (1,2,3...n)

F(i) = Frequency of answers

Scale(i) = Likert scale

P = Percentage

N = Number of respondents

TABLE V. QUESTIONNAIRE QUESTIONS FOR RESPONDENTS

No.	Question
Learnability Aspect	
Q1	I find this system easy to understand [20].
Q2	I find the features in this system easy to use [21].
Efficiency Aspect	
Q3	I find the system easy to use for room booking [21].
Q4	I did not encounter any part of the system that felt slow or unresponsive [22].
Memorability Aspect	
Q5	I can easily remember how to use the website even after not using it for a long time [22].
Q6	I do not experience difficulties in recalling the location or certain features on the website after some time of not using it [22].
Errors Aspect	
Q7	All features in the system function properly [21].
Q8	The system displays clear and appropriate error messages when users perform invalid actions [22].
Satisfaction Aspect	
Q9	I find the interface attractive, easy to understand, and suitable for my needs [21].
Q10	I have a good experience when using this system [20].

The UAT instrument was developed based on five aspects of usability (learnability, efficiency, memorability, errors, and satisfaction) using a 1-5 Likert scale. The questions were validated through expert judgment by a lecturer specializing in information systems to ensure their suitability for the indicators being measured.

Based on the UAT, percentage values for the five aspects were obtained as assessment indicators, with a summary provided in Table VI.

TABLE VI. RECAPITULATION OF UAT TESTING BASED ON INTERVAL VALUES

No.	Aspect	Percentage	Description
1.	Learnability	88.2%	Very Good
2.	Efficiency	89.4%	Very Good
3.	Memorability	88.5%	Very Good
4.	Errors	83.2%	Very Good
5.	Satisfaction	89.7%	Very Good

The average UAT score is obtained by calculating the average of the five aspects:

$$\frac{88{,}2 + 89{,}4 + 88{,}5 + 83{,}2 + 89{,}7}{5} = 87{,}8$$

Of the five aspects of UAT, the cost management information system achieved an average satisfaction rating of 87.8% and was considered easy to learn, efficient, memorable, error-free, and satisfying for users.

IV. CONCLUSION

The Kost Bima management information system was successfully designed and developed using the prototype method through five main stages, namely communication, quick plan, modeling, construction, and feedback. During the development process, two iterations were carried out to refine the system according to user input. Black-box testing results showed that all features worked as needed without errors, while UAT showed that users rated the system as excellent in terms of ease of learning, efficiency, ease of recall, minimal errors, and high satisfaction levels. For future development, it is recommended that the system be made available in a mobile version (Android/iOS) for greater flexibility, and that it be integrated with a payment gateway so that the payment process can take place automatically and in real time without the need for manual verification.

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