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Information Systems

Designing A Dealer Service Management Information System Motorcycle with Unified Modeling Language (UML) Method

Fajar Mahardika, Nur Azizah

Faculty of Science and Technology, Institut Teknologi dan Sains NU Pekalongan, Indonesia

ARTICLE INFORMATION

Received: February 28, 2024
Revised: June 22, 2024
Available Online: June 23, 2024

KEYWORDS

Motorcycle Service Workshop; Unified Modeling Language; Motorcycle Dealer Service Management Information System; Object Oriented

CORRESPONDENCE

Phone: +62 878-0296-7608
E-mail: fajarmahardika@itsnupekalongan.ac.id

A B S T R A C T

Some motorbike service workshops generally do not use information technology, so there are several obstacles found in their business processes. Where the process of recording service data takes quite a long time because the data is still written manually using books, so there is still a lot of data that is still not neatly arranged. When inputting service data there are often errors, so that the service data is no longer accurate. Then checking, updating and searching for spare parts stock takes a long time, because there are no reports of spare parts stock that will run out or have already run out. So if there are consumers who need spare parts, it is often these consumers. The wait was quite long because the company checked manually by checking directly at the warehouse. The Unified Modeling Language design model can make it easier for system developers to design the system that will be created because of its object-oriented nature. This Motorcycle Dealer Service Management Information System can make it easier for workshop admins to process motorbike service data in Motorcycle Workshops. By using this Motorcycle Dealer Service Management Information System, you can save time and simplify admin performance in carrying out motorbike servicing and creating service transaction reports.

INTRODUCTION

Information and communication technology is currently developing very rapidly. This is a very important need for humans in carrying out daily activities. With the development of increasingly advanced information systems, humans can create various types of equipment as tools to carry out various activities to increase productivity. An information system is a piece of data that is processed and then becomes a form that is very meaningful for the recipient later and can be useful in making decisions for the present or the future [1].

One use of information systems is to manage motorbike dealer service management systems. Since now the number of motorized vehicles has tended to increase every day. As a result, in use with relatively long distances and frequent use of the motorbike as well as the owner's negligence in maintaining the machine, the motorbike needs to be serviced periodically or serviced due to certain circumstances. To facilitate motorbike service at motorbike workshops, it is necessary to create a motorbike dealer management information system. The use of this system is to help facilitate motorbike service at motorbike repair shops. In repair services, the term "service" refers to efforts to repair the condition and function of equipment damaged due to use. In the repair process, tools or spare parts are often replaced if damage is found to the item. Thus, repairs aim to return the item to its original condition [2].

Some motorbike service workshops generally do not use information technology, so there are several obstacles found in their business processes. Where the process of recording service data takes quite a long time because the data is still written manually using books, so there is still a lot of data that is still not neatly arranged. When inputting service data

https://doi.org/10.56211/hanif.v2i1.19

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Yahya, S., & Mahardika, F. (2023). Application of Rapid Application Development and Kano Model in Geographic Information System Development. The system is designed using the Rapid Application Development method and the Kano model to speed up the system analysis and development process. Analysis of user needs is carried out by involving the user directly, including in system design. The test results show that the animal crime reporting process can be carried out through a one-stop channel, data recapitulation only takes a short time, and distribution maps can be made automatically [3].

A sales and purchase transaction system for goods that is carried out manually using books and pens requires computerized data collection as a tool in collecting inventory data, because a computerized system can carry out most types of information processing that can be done by humans more quickly and with a lower error rate. less. To overcome problems that occur in the warehouse and customer service section, it is necessary to design a workshop management information system. The aim is to increase the competitive advantage of workshops in providing the best service to customers, not only in terms of service but also in terms of administrative services. By designing this workshop management information system, it is hoped that customers will be increasingly satisfied with the services provided by the workshop [4]. This can be the background for the author in making a Field Work Practice report with the title "Design Of A Motorcycle Dealer Service Management Information System Using The Unified Modeling Language (Uml) Method".

The author attaches previous research related to the author's research. Previous research is as follows: Mahardika, F., Mustofa, K., & Suseno, A. T. (2023). The success of a company in achieving sales targets is greatly influenced by good marketing. Company strategy is a directed form in the field of marketing. CV ICON TEKNO is committed to providing technology solutions and providing good customer support. web-based information system so that companies can process it to market goods according to consumer product needs. Integration and coordination are important elements in efforts to synchronize the company's sales process so that if done well, cost efficiency is achieved and the company benefits[5]. Mahardika, F., & Marcos, H. (2017). Application of the Welch Powel Graph Algorithm in Course Scheduling and Case Study Assistant Schedules for the STMIK Amikom Purwokerto Assistant Forum. Scheduling is a routine job that is always done by assistants who join the assistant forum so that there are no clashes between lecture schedules and assistant schedules. The problem of scheduling lectures and assistants is very close to the problem of optimization. In the study of Discrete Mathematics, graph theory is very helpful in creating a scheduling system. It is hoped that this theory can answer the problems that occur in arranging assistant schedules and lecture schedules carried out by members of the STMIK Amikom Purwokerto Assistant Forum[6]. Mahardika, F., Sandi, M., & Naufal, A. R. (2023). Implementation of a Dealer Management Information System for Web-Based Motorcycle Service Using Extreme Programming. Currently service stores have not been able to take advantage of developing technology for the automotive business where companies still use manual systems to serve consumers and are inefficient. Providing satisfactory service alone is not enough because there is no timely and accurate information to consumers regarding the availability or availability of bicycle spare parts. motorcycle. This research aims to help improve service services using technology to make it easier and save time in motorbike workshops [7].

Mahardika, F., Fitriani, A., & Al'Amin, M. (2023). System Testing at the Dealer Management System Service Using the Black Box Testing Method. In this case, the dealer management system service is one of the service workshop information system solutions created to assist the workshop business management process, starting from managing spare parts stock to service input transactions in the business. Generally, after an application is built, it needs to be tested to ensure that the application functions properly. black box method obtained 54 tests. Testing of the dealer management system was carried out using the black box testing method to determine the suitability of the functions of the features in the system with the prototype created. In this test, there were 69 test scenario items that were tested on the DMS and obtained 54 successful test results in accordance with the expected results and 15 test results that failed or did not match the expected results[8]. Hardianingsih, A., & Malaihollo, E. B. E. A. (2022). Design of Web-Based Used Motorcycle Sales Information System on Motorcycle Dealers. his often makes it difficult for consumers to see the motorbikes available at the Famously Motor showroom because this also has an impact on the decline in sales from the showroom. This research uses the PIECES approach, UML design and applications for web design with PHP and MySQL programming. Website-based motorcycle

sales information system at Famously Motor showroom can help potential customers to see available motorbikes without having to come directly to the showroom[9]. Suprihatin, E., Hendriana, T. I., Ginanjar, A. N., & Dahlia, A. (2022). Analysis of Accounting Information System in Supporting the Internal Inventory Control: A Case Study in Motorcycle Dealer. Based on the results of this study, it showed that accounting information system for spare parts inventory can support internal inventory control in the company due to the implementation of the elements of accounting information system and the elements of internal control [10].

METHOD

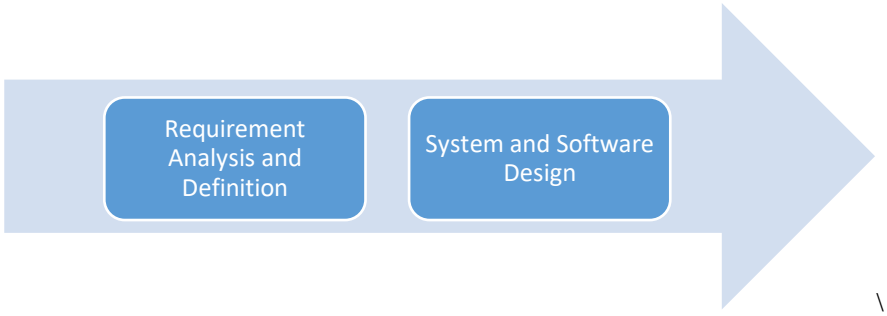

Figure 1. Waterfall [11]

The research method used in research to develop this system is the UML method with 2 stages. The steps of the UML method are described as follows:

1. Requirement Analysis and Definition At the Requirement Analysis and Definition stage, namely observing data, determining features, and creating system objectives through interviews with stakeholders in the company or related place. All steps are specified in detail and used as system qualifications. The results of the observation stage are then analyzed and used as material for developing a motorbike unit sales system [11]
2. System and Software Design At this stage, create a system design based on the system requirements that have previously been determined. At this stage the aim is to provide a system design that must be carried out, create an overview of the appearance and analysis of hardware and software requirements. The system design is designed using the Unified Modeling Language (UML) which consists of use case diagrams, class diagrams and activity diagrams [11].

RESULTS AND DISCUSSION

1. Analysis
    a. Motorcycle Dealer Service Management Information System Flowchart

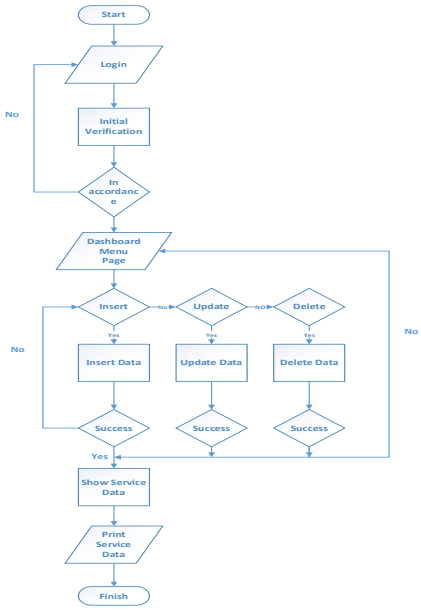

Figure 2. Flowchart Diagram

b. Use Case Diagrams

This diagram describes the functionality of the system and how the system input and output works. The following is a usecase diagram of the system:

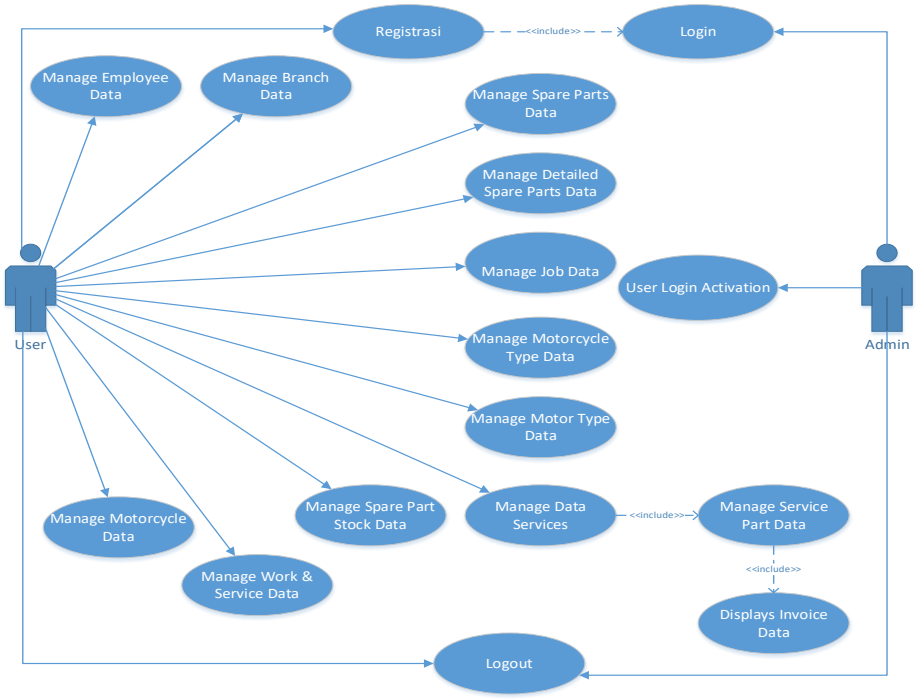

Figure 3. Use Case Diagram

There are 2 actors in the Usecase Diagram above, namely Admin and User. Where Admin is the user providing access. User is the user who will access the website and enter the system. And Admin is the user who holds the data in the system.

c. Activity Diagram

Activity diagrams or often known as activity diagrams are system modeling that functions as a visualization of the flow or processes running in the system being developed.

1) Admin

a) Activity diagram menu login admin

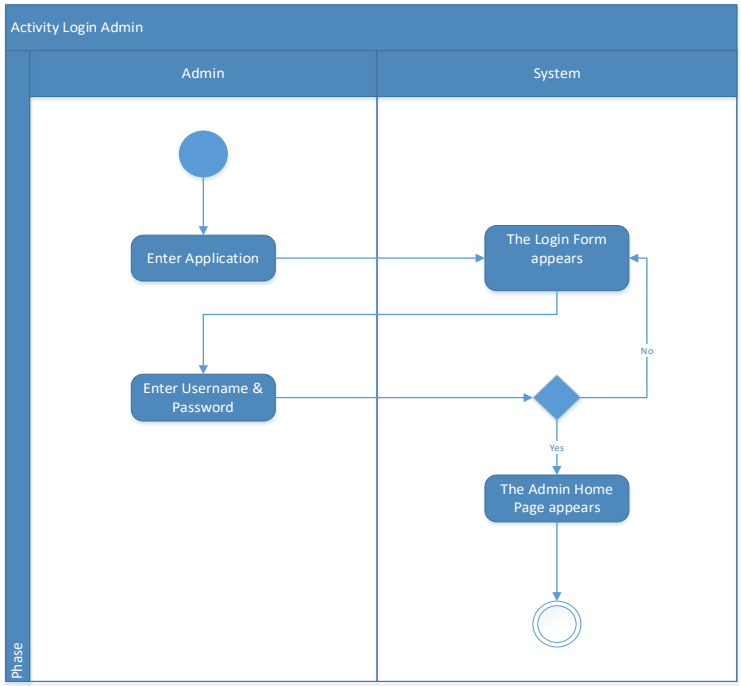

Figure 4. Activity Diagram of Admin Login Menu

 https://doi.org/10.56211/hanif.v2i1.19

The activities of the Login diagram are described in figure 4. The Login flow will start when the admin enters the application, then the System will display the Login form. Next, the admin is required to fill in the appropriate username and password, then the system will carry out verification. If the username and password are correct, the system will display the admin dashboard / homepage menu. Meanwhile, if the username and password are incorrect, the admin will be asked to enter the data again

b) Activity diagram menu aktivasi Login Use

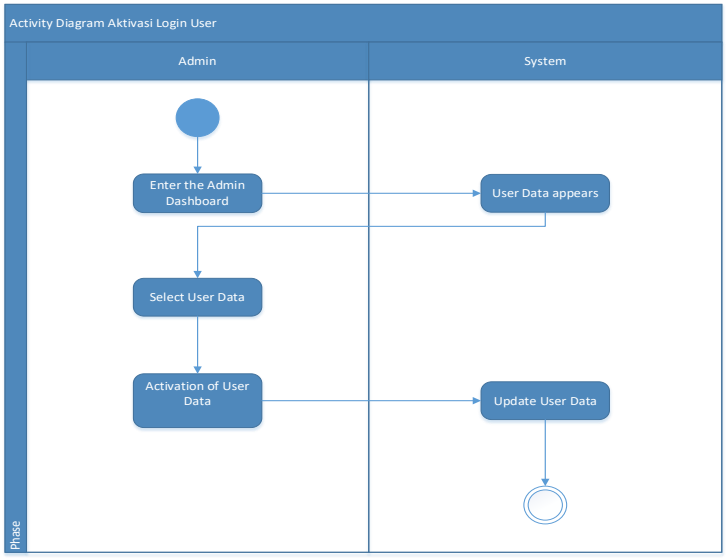

Figure 5. Activity Diagram User Account Activation Menu

The activities of the user account activation diagram are described in Figure 5. The activation flow will begin when the admin successfully logs in, then the system will display the admin dashboard. Next, the system will automatically display the registration data of all users. This is where the main task of an admin is to activate user accounts, by selecting the user data to be activated, then on the action icon select the edit menu, then change the account status to active. After that the data will be automatically updated in the system and stored in the database

2) User

a) Activity diagram menu registrasi User

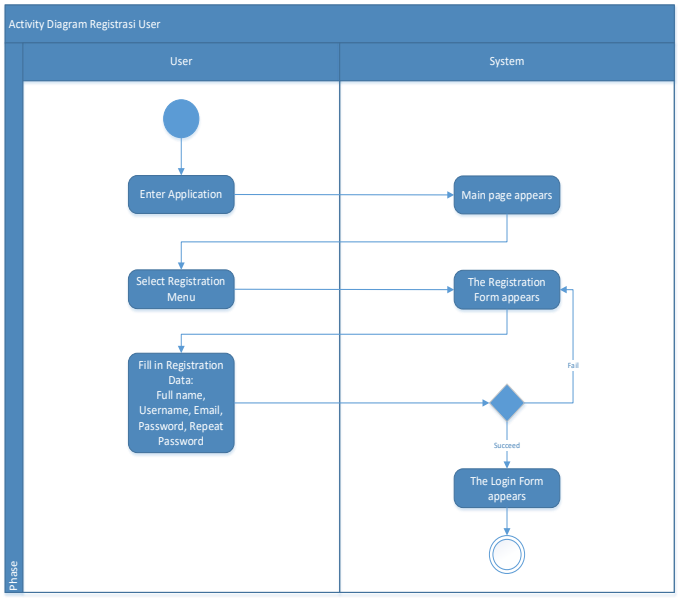

Figure 7. Activity Diagram of The User Registration Menu

The activities of the Registration diagram are described in Figure 7. The Registration Flow will start from the user selecting the Registration menu, then the System will display the Registration menu. Next, the user is required to fill in the registration form contained in the system, then the form will be processed by the system to display a successful message in filling out the form, but if filling in the form fails then the flow will be returned to the Registration menu display, in order to refill the form. If the filling process is successful, the user will immediately enter the Login form display

b) Activity Diagram Menu Login User

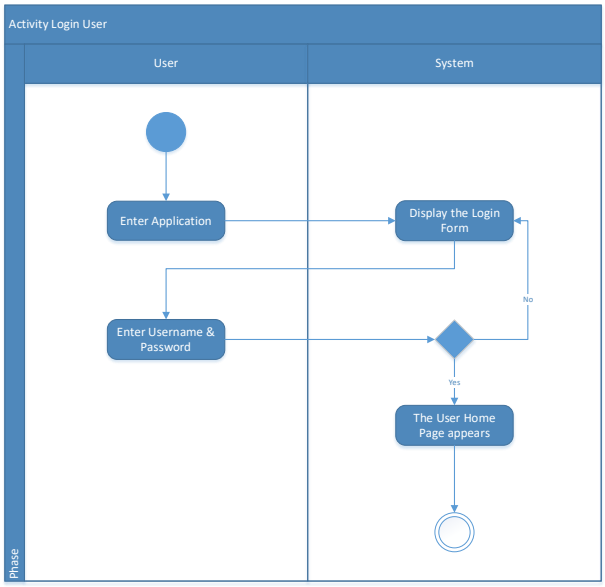

Figure 8 Activity Diagram User Login Menu

The activities of the Login diagram are described in Figure 8. The Login flow will start when the user enters the application, then the system will display the Login form. Next, the user is required to fill in the username and password that match the data during registration, then the system will carry out verification. If the username and password are correct, the system will display the user's dashboard/homepage menu. Meanwhile, if the username and password are incorrect, the user will be asked to enter the data again.

3) Squence Diagram

a) Admin

- Sequence Diagram Menu Login

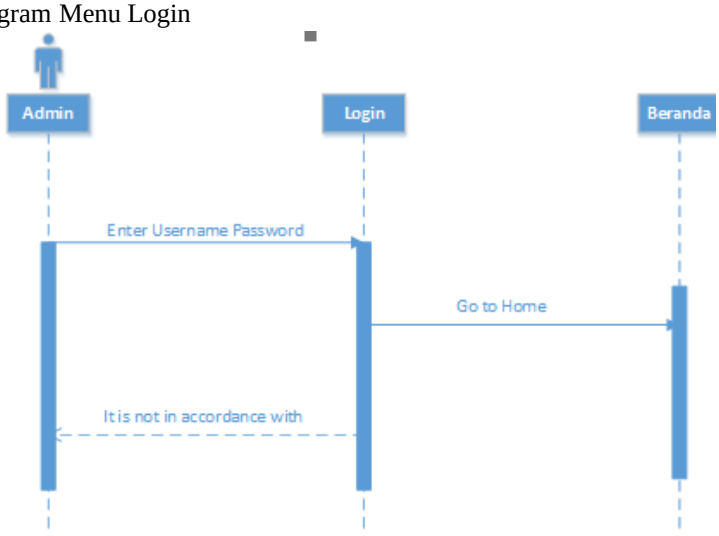

Figure 10. Login Menu Sequence Diagram

 https://doi.org/10.56211/hanif.v2i1.19

Figure 10 explains the sequence diagram of the admin login menu. Starting with the admin entering the username and password, if the data matches then the system will display the home menu, but if it doesn't match then it will return to the login page.

- *Sequence Diagram* Menu Aktivasi Akun *User*\

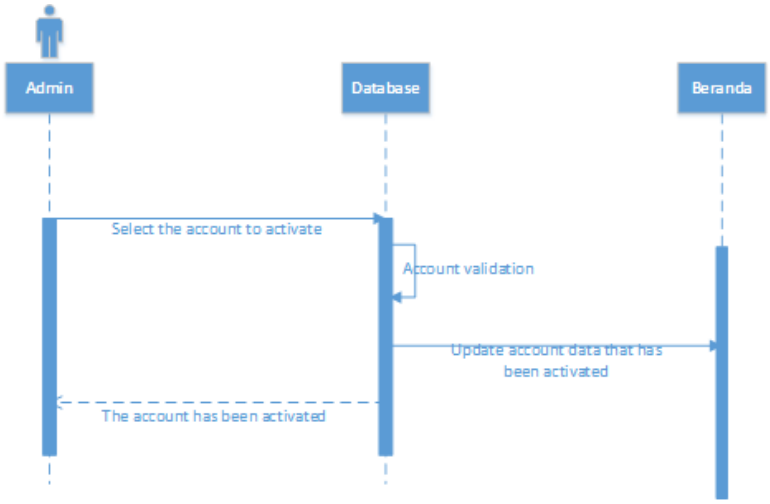

Figure 11. Sequence Diagram of User Account Activation Menu

Figure 11. explains the sequence diagram of the user account activation menu. Starting with the admin selecting the user account to be activated, then after the account has been successfully activated the data will be automatically saved in the database and the data will be automatically updated and entered on the home page

- Sequence Diagram Menu Logout

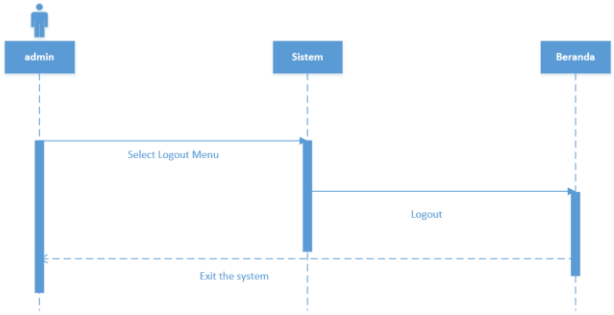

Figure 12. Logout Menu Sequence Diagram

Figure 12 explains the logout sequence diagram. To log out, you only need to press the log out button in the bottom left sidebar, then the system will automatically log out of your account and display the login page.

b) User

1) *Sequence Diagram* Menu Registrasi

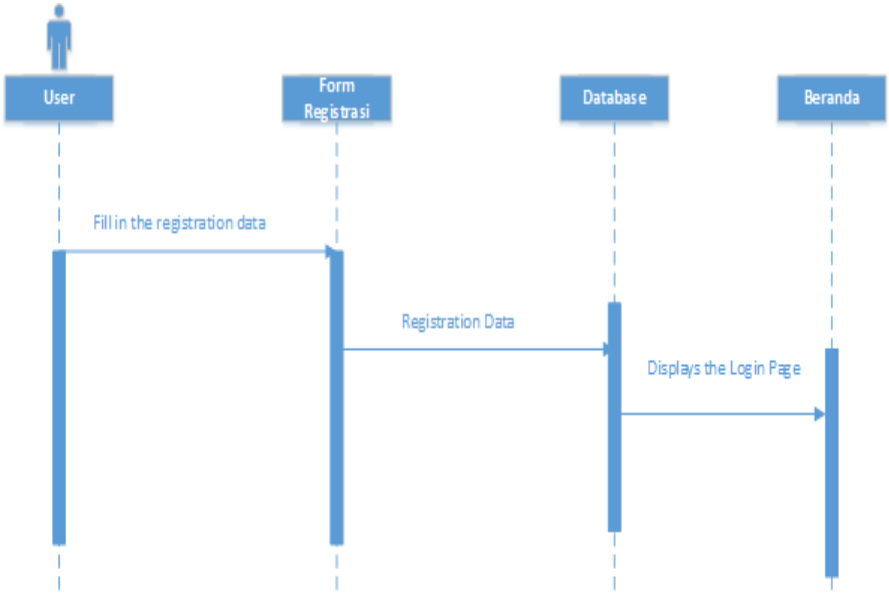

Figure 13 Sequence Diagram of the Registration Menu

Figure 13 explains the sequence diagram of the registration menu. Starting with the user filling in registration data in the registration form, then the data will be stored in the database. After successful registration, the system will display a login page

4) Class diagram

Figure 15 Class Diagram of Motorcycle Dealer Service Management System

Figure 15 depicts the class diagram of the motorbike dealer service management system. In it there are 16 classes, namely user class, role class, position class, branch class, employee class, motor type class, motor type class, motorbike class, spare parts master class, detail spare parts class, spare parts stock class, service work class, service input class , vehicle class, workmanship class, and part class

Discussion

This testing step is carried out to ensure that the software that has been created matches the desired details. This is also the assumption in this research. The procedure used is the User Acceptance Test (UAT). The author recommends that

 https://doi.org/10.56211/hanif.v2i1.19

this test be carried out at the same time to see the performance of the application being created. There are also UAT calculation results that can be seen in table 5:

Table 5. UAT Results

Question	Nilai					amount	Analysis (Amount / 15)	Percentage (Analysis /5*100)
	Ax5	Bx4	Cx3	Dx2	Ex1			
Is the UML Motorcycle Service Information System interesting?	40	18	0	0	0	58	3,8	77%
Is the UML presentation of information in the Motor Service Information System easy to understand?	35	8	3	0	0	46	3,0	61%
Can the UML Motor Service Information System be implemented?	25	12	6	0	0	73	4,8	97%
Can the Motorcycle Service Information System be understood easily?	20	28	6	0	0	54	3,6	72%
Is the Motor Service Information System data update updated?	20	30	3	0	0	53	3,5	70%
Can the Motor Service Information System monitor service?	10	28	6	0	0	44	2,9	58%
Are the data searches and filters in the Motor Service Information System good enough?	10	28	3	0	0	21	1,4	28%
Is the Motor Service Information System running well?	25	26	3	0	0	54	3,6	72%

From the calculations in table 7 the average value is 34.2 / 8 = 3.32 so the percentage value is 3.32 / 5 x 100 = 66.5%. This tests the acceptable hypothesis of the application with the user acceptance test being Fairly acceptable.

CONCLUSION

From the results of the discussion described in the previous chapters, it can be concluded that the existence of this Motorcycle Dealer Service Management Information System can make it easier for workshop admins to process motorbike service data in Motorcycle Workshops. By using this Motorcycle Dealer Service Management Information System, you can save time and simplify the admin's performance in carrying out motorbike servicing and preparing service transaction reports. Using this Motorcycle Dealer Service Management Information System can minimize errors in recording and collecting transaction data. With this Motorcycle Dealer Service Management Information System, the data stored is more structured and safer and the system becomes more effective and efficient.

After completing this Motor Dealer Service Management Information System design report, there are several things that can be considered to serve as a reference for developing a better system. Here are several things that can be noted for the development of this system:

1. Improve the appearance of the system to make it more attractive and interactive.
2. Developing the service input menu to be more user friendly.
3. The need to group menus according to specifications.

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