

# Analysis and Design of Monitoring Information System in the General Affairs Division

Charles Liustanto<sup>1)\*</sup>, Verri Kuswanto<sup>2)</sup>

<sup>1)2)</sup> Buddhi Dharma University  
Jl.Imam Bonjol No. 41 Karawaci Ilir, Tangerang, Indonesia

<sup>1)</sup>chrslsius36@gmail.com

<sup>2)</sup>verri.kuswanto@ubd.ac.id

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## Abstract

With the rapid advancement of technology, the surrounding environment must adapt to these developments. This can be seen in the industrial sector, which is starting to adopt information systems to support its activities. However, this adaptation is not uniform, and some areas have yet to adopt information systems to support their operations, such as at PT. Diansurya Global, particularly in the General Affairs Division. In this division, all activities are conducted traditionally, such as managing vehicle orders, monitoring the availability of drivers and vehicles, and storing vehicle data, which is still in hardcopy format. Therefore, a monitoring information system is needed to assist the activities in the General Affairs Division. PT. Diansurya Global is a company that produces and exports metal equipment. Consequently, a monitoring information system is designed to provide real-time information on the availability of drivers and vehicles, which accelerates the determination of routes and delivery schedules. Additionally, this system can also assist other divisions in placing operational vehicle orders, thus preventing duplicate or uncommunicated orders due to the documentation within the system. System testing is conducted using the user acceptance testing method to ensure that the features meet user needs. This monitoring information system can also be used to store information such as vehicle administration data, including payment history for administrative costs and maintenance history for operational vehicles.

## I. INTRODUCTION

Information system technology is one of the developments in information technology, offering benefits such as creating, storing, managing, and retrieving data that holds value for its recipients.

A system is a combination of several organizations or work networks that share a common goal, which is to achieve a specific objective [1], and information is not used to make decisions but rather to narrow down a few choices from many possible decisions [2]. Information systems can be developed using various models, such as desktop, web, and mobile applications, which allow users to leverage these models for many purposes, including monitoring.

PT. Diansurya Global is a company that produces and exports metal equipment, where sales and delivery activities to customers take place. However, in the General Affairs Division, which is responsible for scheduling deliveries, there is no system available for monitoring to support the scheduling of goods deliveries. General Affairs is a division of a company responsible for the operational activities of the organization and the well-being of employees, including aspects such as appearance, provision of stationery, and employee consumption. [3]. The ordering and scheduling activities are still conducted manually using phone calls or vehicle request forms. Furthermore, the storage of vehicle administrative data is solely based on documents archived by the accounting division when processing payment requests. Additionally, slow communication regarding the availability of drivers and vehicles poses a challenge for the General Affairs Division in scheduling deliveries. Therefore, a monitoring information system is needed to support the work conducted at PT. Diansurya Global, particularly in the General Affairs Division, in organizing delivery schedules and storing vehicle administrative information.

\* Corresponding author

Based on the description of the problems above, it is proposed to design a web-based information system in the form of a Monitoring Information System aimed at assisting operational activities, particularly in the General Affairs Department. This design will be conducted using the user acceptance testing method. The purpose of using this method is to align with all the needs of the users. The implementation of user acceptance testing will be carried out in the form of distributing questionnaires using a Likert scale, with the expectation that the user acceptance testing method will ensure that the designed system meets the needs of its users. Therefore, this research is titled “Analysis and Design of Monitoring Information System in the General Affairs Division”.

## II. LITERATURE REVIEW

An information system is a series of procedures carried out by people, data, and methods, which are then processed to produce outputs that hold value for each recipient [4]. An information system can also be defined as a collection of processes for collecting, storing, and analyzing information to achieve specific goals. The information conveyed must be of high quality, which is why there are three main pillars that define quality information: the information presented must be accurate, timely, and relevant [5]. Monitoring is the activity of overseeing a procedure and analyzing it to produce information that is useful for an organization or group. Monitoring is generally used as an activity to examine a process with the desired or achieved results [6]. The purpose of monitoring is to observe an ongoing process in order to receive feedback so that improvements can be made in the future [7][8]. The development of information systems generally produces an application that can be used to meet the needs of its users. An application itself is software designed to support and assist human activities, making them easier and faster [9]. Applications operate involving a series of resources such as hardware in the form of memory, storage, and others [10]. Applications have several bases, one of which is web-based. A website is a page that contains instruments for displaying information or data in the form of visuals, typography, audiovisuals, audio, or a combination of all these elements, thereby forming a network that is interconnected and linked by an address/link [11][12][13]. The design method used is the waterfall method. Waterfall is commonly used for system development that is systematic and sequential in nature. The steps involved in this method begin with analyzing the requirements [14]. After the requirements analysis, the system design is carried out using UML (Unified Modeling Language). UML is a language used to describe or visually represent software design models. It is typically used as an initial step in modeling, aimed at planning and designing through diagram forms. UML includes various diagrams such as activity diagrams, use case diagrams, class diagrams, and sequence diagrams. The use of UML is intended to make it easier for users to understand the flow or processes that are being implemented [15][16]. After the design is completed, system testing will be conducted using the user acceptance testing method. Black box testing is a stage in the testing process that aims to explain and analyze various processes present in a software system. This stage not only identifies and documents existing functions but also includes an in-depth analysis of potential errors that may arise within the system. Thus, black box testing helps ensure that the system operates as expected and can handle various issues that may occur [17]. User acceptance testing is a system testing method that relies on testing variables from the feedback of respondents who use the system, which is utilized for system development. [18][19]. The implementation of the user acceptance testing method is carried out using the Likert scale. The purpose of using the Likert scale is to collect feedback from respondents regarding their experience with the system. Generally, the Likert scale consists of 5 statements, as shown in Table 1:

TABLE 1  
 LIKERT SCALE

Code	Criteria	Scale
A	Strongly Agree	5
B	Agree	4
C	Neutral	3
D	Disagree	2
E	Strongly Disagree	1

## III. METHODS

The system development method used is the waterfall method. The waterfall method consists of 5 stages, as shown in Figure 1, which must be followed in order to develop the system so that it runs in an orderly manner and meets the desired objectives.

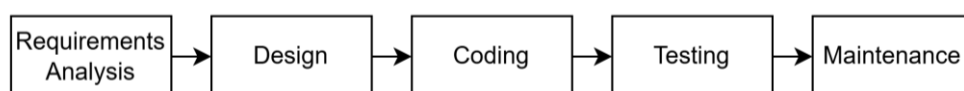


Fig. 1 Waterfall Method

### A. Requirements Analysis

As the initial stage, a requirements analysis is conducted by gathering all the necessary information to understand the overall needs and desires. This ensures that the system developed will meet the intended requirements and function effectively [14].

### B. Design

In the next stage, the system design is carried out using UML (Unified Modeling Language), which includes creating use case diagrams, activity diagrams, and class diagrams [15][16].

### C. Coding

After the design stage is completed, the next step is the coding phase. The coding is done using the PHP programming language and a MySQL database [20].

### D. Testing

The next stage, after the coding is completed, is system testing. This is done using the black-box testing method to test the system's functionality and conduct user acceptance testing (UAT) [18][19][20].

### E. Maintenance

Maintenance is carried out to fix errors discovered during testing, including both black-box testing and user acceptance testing. This phase ensures that any issues identified are addressed, and the system continues to function correctly and meets user expectations.

## IV. RESULTS

### A. Requirements Analysis

The researcher conducts an analysis to determine what the users need from the current process before implementing the system. After understanding these needs, the next step is to formulate the problem and identify the requirements for the system to be designed. Based on this, an elicitation of the desired features for the future system is created.

### B. Design

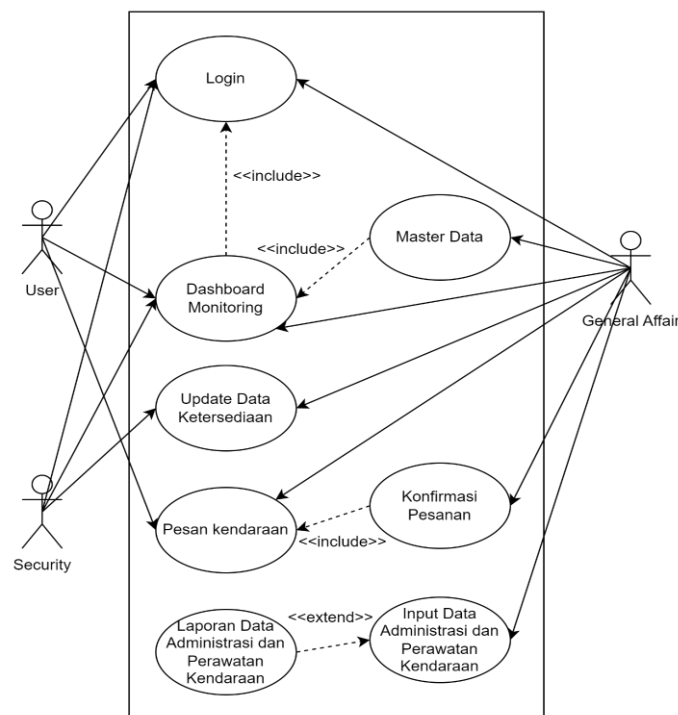


Fig. 2 Use Case Diagram

In Figure 2, the use case diagram depicts 3 actors: General Affairs, User, and Security. This use case diagram illustrates the specific permissions and interactions each actor has with the system. Each actor needs to log into the system to access all available features according to their access level. General Affairs can access master data, confirm orders, and input vehicle administration and maintenance data. User can only access vehicle booking. Security can only update the status of the data displayed on the dashboard.

Based on Figure 3, there is a class diagram that illustrates the database structure along with the primary keys for each database table. The class diagram provides a visual representation of the database tables, their attributes, and how they are related to each other, highlighting the primary key for each table to ensure data integrity and relationships between entities.

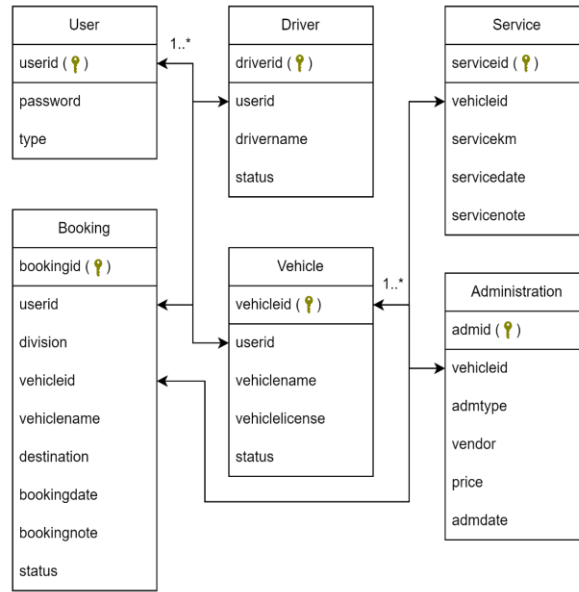


Fig. 3 Class Diagram

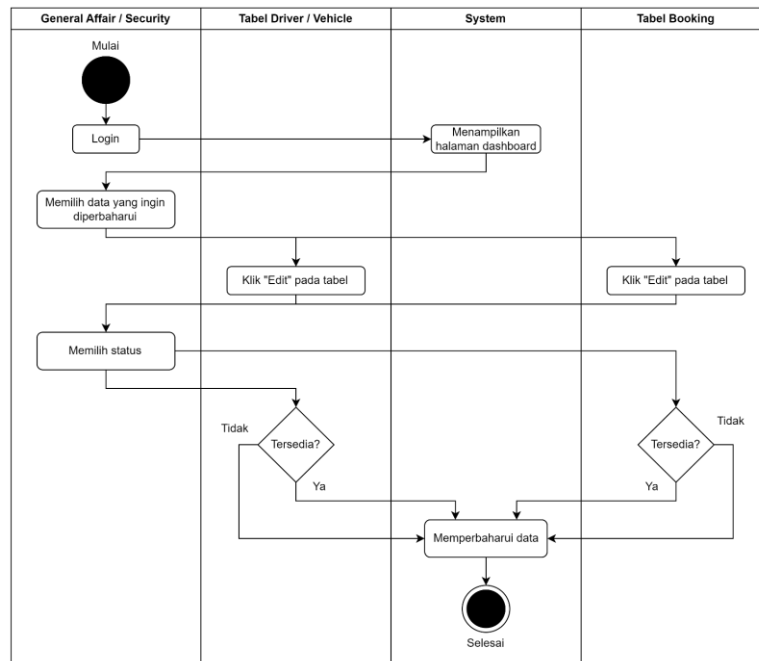


Fig. 4 Activity Diagram for Status Update

In Figure 4, the activity diagram illustrates the process for updating data that can be performed by General Affair and Security on vehicle, driver, and booking data from their respective dashboard pages. This diagram outlines the sequence of actions and decisions for updating this information based on user interactions. Figure 5 defines the activity diagram for the vehicle booking process conducted by the User. Once the booking is made, the status will be updated by General Affair and Security depending on whether the booking is approved or rejected. This diagram shows the flow of activities, including how the status of the booking is managed by the relevant actors.

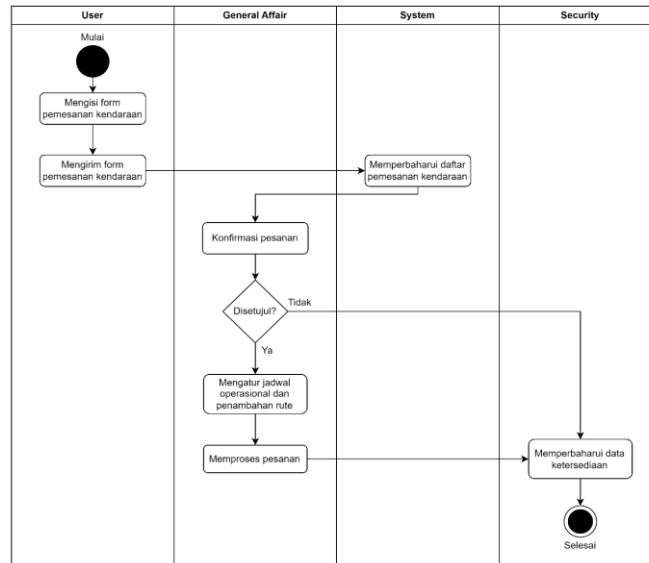


Fig. 5 Activity Diagram for Vehicle Booking

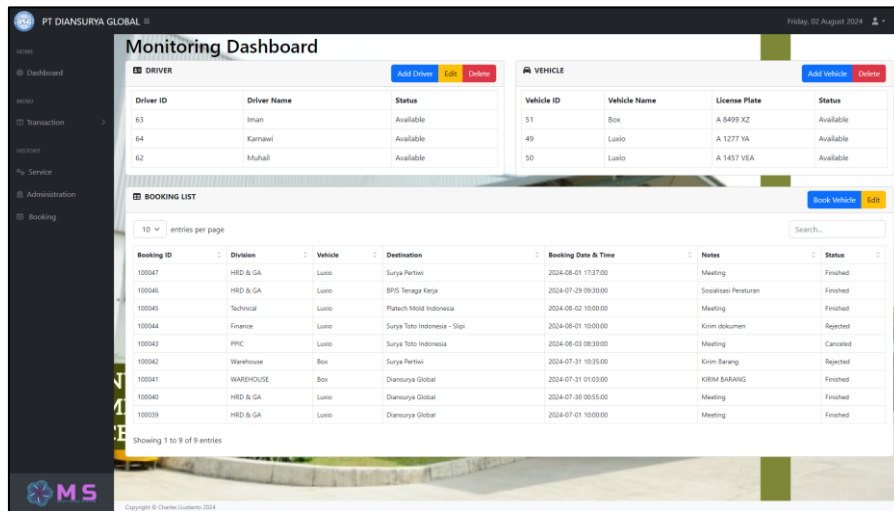


Fig. 6 Dashboard General Affair

In Figure 6, the overall dashboard design is shown, displaying the available features. There are 3 tables used for monitoring: the Driver table, the Vehicle table, and the Booking table. In both the Driver and Vehicle tables, there are 3 buttons that is Add used to add new data, Edit used to modify the status of an entry, Delete used to remove data from the table. In the Booking table, there are 2 buttons that is Booking used to make a vehicle booking and Edit used to update the status of the booking. This dashboard design allows users to efficiently manage and monitor the relevant data across the different tables.

Based on the user acceptance testing conducted through a questionnaire with a total of 10 questions, as shown in Table 2, a total of 14 respondents from the company that has used the designed system were involved. After receiving all the responses from the participants, a weighting of each question is performed, as shown in Table 3.

TABLE 2  
QUESTION TABLE

Code	Question
Q1	Is this system easy to understand?
Q2	Are the features in this system easy to use?
Q3	Do the features in this system meet the needs?
Q4	Is the information displayed in the system easy to understand?
Q5	Does this system facilitate the monitoring process?
Q6	Is this system suitable for implementation at PT. Diansurya Global?
Q7	Are the errors that occur in the system resolved effectively?
Q8	Do all the features in this system function properly?
Q9	Is the appearance of this system appealing and comfortable to use?
Q10	Are you satisfied with using this system?

TABLE 3  
 WEIGHTED SCORES OF QUESTIONNAIRE RESPONSES

Question	Respondent					Weighted Score				
	A	B	C	D	E	A	B	C	D	E
Q1	6	5	3	0	0	42,9%	35,7%	21,4%	0%	0%
Q2	3	10	1	0	0	21,4%	71,4%	7,1%	0%	0%
Q3	2	8	4	0	0	14,3%	57,1%	28,6%	0%	0%
Q4	5	8	1	0	0	35,7%	57,1%	7,1%	0%	0%
Q5	6	6	2	0	0	42,9%	42,9%	14,3%	0%	0%
Q6	6	5	3	0	0	42,9%	35,7%	21,4%	0%	0%
Q7	2	5	7	0	0	14,3%	35,7%	50%	0%	0%
Q8	2	10	2	0	0	14,3%	71,4%	14,3%	0%	0%
Q9	7	5	2	0	0	50%	35,7%	14,3%	0%	0%
Q10	4	7	3	0	0	28,6%	50%	21,4%	0%	0%

The next step, after weighting all the responses received, is to convert the results into percentages in order to draw conclusions from the completed questionnaire, as shown in Table 4.

TABLE 4  
 RESULTS OF QUESTIONNAIRE RESPONSE VALUES

Question	Respondent					Total	%	Avg
	A x 5	B x 4	C x 3	D x 2	E x 1			
Q1	30	20	9	0	0	59	84%	82%
Q2	15	40	3	0	0	58	83%	
Q3	10	32	12	0	0	54	77%	
Q4	25	32	3	0	0	60	86%	
Q5	30	24	6	0	0	60	86%	
Q6	30	20	9	0	0	59	84%	
Q7	10	20	21	0	0	51	73%	
Q8	10	40	6	0	0	56	80%	
Q9	35	20	6	0	0	61	87%	
Q10	20	28	9	0	0	57	81%	

## V. DISCUSSION

The User Acceptance Testing (UAT) method has proven to be effective in ensuring that the developed system meets the needs and expectations of end users. UAT involves users testing the system directly under real-world conditions, allowing for the identification of issues that might not be apparent during development or technical testing phases. The effectiveness of UAT lies in its ability to gather direct feedback, assess system alignment with user needs, enhance system adoption, and reduce the risk of operational errors. Overall, UAT is an effective method for ensuring system quality, improving user satisfaction, and accelerating the implementation process by ensuring the system is ready for optimal use by end users.

## VI. CONCLUSION

After conducting the user acceptance testing, the results showed an approval rate of 82%, indicating that the system meets the users' needs and expectations. The system's easy-to-understand interface helps users operate it more effectively. With this system, the monitoring process in the General Affair division has become more accurate and efficient. Additionally, users find it easier to make vehicle bookings, which helps reduce common errors such as double booking. The inclusion of the Administration and Service features also makes it easier for General Affair to store vehicle data, thereby reducing the need for physical storage space and improving data management.

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