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## Web-Based Administration Applications For Motorcycle Dealers Using FAST Framework

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### ABSTRACT

Administrative management is very important in business, including the motorcycle sales business. The existence of an integrated system to handle administrative activities is absolutely necessary to increase work efficiency and tidy up the storage of related documents. In this research, the development of an administration system for motorcycle dealers will be carried out using the FAST Framework. FAST Framework was chosen because of its ability to support rapid application development. In this study, FAST Framework will be carried out in five stages, namely scope definition, problem analysis, requirements analysis, logical design and physical design for the development of motorcycle dealer administration applications, so that applications will be produced that suit user needs. The results of this study will be used to collect data on license plates, collect data on vehicle registration, collect data needs. The results of this study, an application has been produced that will facilitate business administration and service customer data needs. The resulting application has been tested and can run well to handle the necessary business administration needs. Through the application produced by this research, consumers also no longer need to come directly to the dealer to check the status of motor vehicle registration because it can be done online.

Keywords: FAST, Administrative, Web, Application, Vehicle Registration

### 1. INTRODUCTION

Along with the rapid development of automotive technology, especially motorcycles, has made motorcycles no longer a luxury item, but have become a major necessity that must be owned by every household to facilitate family mobilization and transportation. According to Ridhwan Mustajab, as reported by dataindonesia.id, the number of motorcycle sales in the domestic market will be 5.22 million units in 2022. This number has increased by 3.24% compared to the previous year of 5.06 million units. (Ridhwan Mustajab, 2023)

This resulted in the presence of many motorcycle dealers to meet the needs of motorcycle sales. However, unfortunately this development was not accompanied by an administrative system that could simplify the data collection process at motorcycle dealers. such as the registration of motorized vehicles, namely the collection of motorcycle down payment, the collection of vehicle registration plates, the registration of vehicle registration data, and the recapitulation of motorcycle sales, they are still written using a data ledger, so they are not yet computerized. Based on these problems, of course, it often causes errors in collecting correspondence, sales and consumer data, where these problems make the work longer and inefficient for making data collection reports and from a security perspective it is not good because it is still written in the data collection ledger which results in records in the book being corrupted. is lost. With the problems that arise with the existing system in processing motorized vehicle correspondence data such as motorcycle down payment data collection, vehicle registration plate data collection, vehicle registration data collection, and motorcycle sales recording, it becomes an obstacle in the service process provided by the company to customers.

In addition, the factors that become obstacles in the implementation of public services in the vehicle registration field are grouped into two, namely: first, internal factors of the public bureaucracy, secondly external factors, namely in the form of community dynamics and the growth and development of problems faced by the community as the

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party being served.(Brian Roy Monteiro, 2019)

Norris in a study entitled Development of Sales Applications at Nayla Stores Using the PHP Programming Language concluded that the existence of the system helps administrators in carrying out stock-taking of small warehouses in Nayla stores. The system can perform simpler supplier data management, the system can perform simpler customer data management, the system can perform simple product data management and the system can display monthly sales report data along with the profit results of these sales. (Athariq Besten Norris, 2018)

The purpose of this research is to build a web-based administration application using the FAST method that it will make it easier for customers to check the status of vehicle plates and vehicle registration certificate without having to come to the office and facilitate the admin in collecting data.

### 2. LITERATURE REVIEW

Anisah in a study entitled Design of Counseling Guidance Administration Information System at SMA Negeri 1 Tempilang with the FAST Model concluded that a computerized information system can assist the counseling department in managing data related to counseling guidance administration so that when you want to make a counseling report, you can quickly make it, and all information related to counseling guidance can be obtained quickly and easily as needed.(Anisah Anisah, 2019)

Ariani, et al, in a study entitled Designing a Web-Based Library Information System with the Framework For The Application Of System Thinking (FAST) Method concluded that the library information system website makes it easier for students to borrow books, students can find out what books are available in the library, makes it easier for admins or library staff to manage library data, such as book data, member data, borrowing and returning books, and provides an easy service process for its users.(Fattya Ariani, 2019)

Misriati, et al, in a study entitled Employee Data Processing Using the FAST Method at PT Asia Berjaya Mobilindo concluded that the employee data processing system using a website with the FAST method and UML can improve services to employees in applying for leave, payroll and attendance. (Titik Misriati et al., 2019)

Afif and Dewi, in a study entitled Archival Information System to Support Internal Letter Data Collection Using the FAST Method at the Ministry of Defense Personnel Bureau concluded that it is necessary to create a special webbased application in order to help ministry employees to accelerate employee performance in recording existing letters, speeding up the search for letter data and facilitating the reporting of letters that have been data so that the information provided is not late and accurate to convey.(al Afif & Catur Nugrahaeni Puspita Dewi, 2020)

Halim in a study entitled Sales Information System at TB Harmonis Using the FAST Method concluded that this information system can improve the performance, effectiveness and efficiency of TB Harmonis Palembang, with this information system the sales transaction process becomes faster, more effective and efficient, and the process of making reports can be made faster.(R.M. Nasrul Halim, 2020)

Prasetyo in a study entitled Designing a Web-Based Inventory and After-Sales Service Management System (SIPENIPAL) Using the FAST Method (Case Study: PT. Anugerah Global Inti Persada) concluded that by creating a Web-Based Inventory and After-Sales Service Management System (SIPENIPAL), the entire process of managing goods data and after-sales services is carried out using the system and with the system it can make it easier for employees to search for goods data automatically by only entering the keywords of the goods data they want to search for.(Eka Budhy Prasetyo, 2020)

Muanas and Fitri Sufriyanti, in a study entitled The Role of the FAST Application System on the Effectiveness of Internal Control of Accounts Receivable (Case Study at PT. KEA Panelindo) concluded that the use of the FASt application system as an information system for companies is very important in providing information or reports that are really fast and accurate and effective on internal control of accounts receivable. (Muanas & Fitri Sufriyanti, 2018)

Dasril Aldo, et al, in a study entitled FAST Method for System Development Inventory concluded that Analysis and Design of Inventory Systems at the Kepri Mall Electronic Heaven Store using the FAST method can help process accurate data reporting and manage incoming and outgoing goods data properly. (Dasril Aldo et al., 2021)

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Merlin Puspitasari, et al, in study entitled Library Management Information System Design Using FAST Method (Framework for the Application System Thinking) (Case Study: SMAN 1 KATON) says that the test results on the library management information system using the FAST method using the ISO 25010 test obtained 88.8% test results for functional suitability and usability aspects obtained 79.5% results, so it can be concluded that this system is declared good for use. (Merlin Puspitasari et al., 2021)

Warjiyono, et al, in study entitled FAST Method & PIECES Framework: Analizing & Design of Sales Information System on Website Base concluded that with a sales information system using the FAST method, Tegal Cheap Bags can manage sales faster and more efficient and effective, data and information are easily available and sales reports are available quickly. (Warjiyono et al., 2020)

Dudi Parulian, et al, in study entitled Application of FAST (Framework For The Application System Thinking) Method in Library Management System concluded that with this system, students can track which books are still available for borrowing easily and can borrow or return book through the application. (Dudi Parulian et al., 2022)

### **3. METHOD**

The FAST method (Framework for the Application of System Thinking) is a method that supports the design of systems that can manage data and information more efficiently, effectively, accurately and on time. The FAST method consists of phases Scope Definition, Problem Analysis, Requirements Analysis, Logical Design and Physical Design. (Ani Oktarini Sari & Elan Nuari, 2017)

1. Scope Definition

This stage is the first step in the information system design process. In the scope definition stage, the scope of the problems that occur in the research is defined.

- 2. Problem Analysis
  - Problem analysis is carried out to define the scope and problems in developing information systems.
- 3. Requirement Analysis

Needs analysis is determining what system needs are needed in the information system, namely user needs and system needs.

4. Logical Design

The design method uses an object-oriented design method using UML as a design tool.

5. Physical Design

This is the stage of translating logical design into the physical form of an application, including user interface design and detailed design.

(Lonnie D. Bentley & Jeffrey L. Whitten, 2007)

The development of administrative applications at Motorcycle Dealer was made using the FAST method with detailed stages as follows:

a. Needs Analysis

Requirements analysis is an activity that aims to collect, analyze the list of requirements needed in the application, and is carried out to find out all the entities involved in the application. The analysis of the needs needed in this application, namely, user needs analysis and system requirements analysis.

1) User Needs Analysis

In this web-based administration application there are two users who can access this application, namely admin and customer.

Table 1
User Descriptions

No.	User	Description
1	Admin	This is the main user in the application who has all the access in this application.
2	Customer	This is the second user after the admin who has limited access in this application.

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### - Admin

Admin as an administrator who manages this web-based administration application, which uses this application to carry out processes such as the following:

- Admin can add, change, and delete license plate data.
- Admins can add, change, and delete vehicle registration certificate data.
- Admins can add, change, and delete motorcycle down payment data.
- Admin can add, change, and delete motorcycle sales data.
- Admin can view and print reports.

### - Customer

Customer is the second user in the application who can use the application to carry out processes such as the following:

- Customer enters NIK to check the status of license plate and vehicle registration certificate.
- Customers can view their license plate data and status.
- Customers can view their vehicle registration certificate data and status.

### 2) System / Application Requirements Analysis

- The system requirements that are expected to exist in this web-based administration application are:
- Existing applications must be able to be easily understood by users.

- The application must be able to provide information about the status of license plates and vehicle registration certificate.

- Existing applications will use a database for data storage media so that data searches are easier and faster, and minimize damaged and lost files.

- The application will be able to create and print reports.
- Existing applications will make it easier for admins to process data.
- The existing application can later be accessed online to make it easier for customers.

### 3) Making Design with FAST Method

In making this application the author uses the fast method. The following authors will describe the process regarding the stages in the FAST method in this application. Starting from the scope definition stage, problem analysis, requirements analysis, logical design and physical design.



Fig 1 Stages of the FAST Method (A Novianti & R P Sari, 2022)

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### b. Scope Definition

The scope of the problem studied in this study is the creation of a web-based administration application at Motorcycle Dealer regarding data collection problems that have not been computerized before at Motorcycle Dealer. This administrative application will provide convenience for license plate data collection, vehicle registration data collection, motorcycle down payment data collection, and motorcycle sales data collection at Motorcycle Dealer which previously still used ledgers in its data collection. Recording or data collection in the ledger still has many shortcomings and is less accurate so that it can allow errors that risk losses. So, this later application will make it easier for the administration and customers. This application will provide system needs such as, the admin manages license plate data, the admin can manage vehicle registration certificate data, the admin can add motorcycle down payment data, the admin can add motorcycle sales, the admin can view and print reports and check the status of license plates and vehicle registration certificate will be made online so that customers do not need to come to the office.

### c. Problem Analysis

The problem analysis stage is the stage of identifying problems that occurred at Motorcycle Dealers before and to analyze the problem in order to find a better understanding of the problems that occurred in the previous system. From the results of the problem analysis that has been carried out at Motorcycle Dealers, it can be seen in the following table.

No.	Problem	Cause	Solution
1	Time to collect plate data takes a long time	The license plate registration system is still written manually	The new application will provide a plate data collection menu
2	Time to collect vehicle registration certificate data takes a long time	The vehicle registration certificate data collection system is still written manually	The new application will provide a vehicle registration certificate data collection menu
3	Motorcycle down payment has not been computerized	Motorcycle down payment is still written on paper	The new application will provide data collection for motorcycle down payment
4	Motorcycle sales records take a long time	The motorcycle sales summary system is still written in the ledger	The new application will later have to provide for data collection on motorcycle sales
5	Generating reports takes a long time	The old system is still written in the ledger.	The new application will provide reports and can be printed
6	Customers have to come to the office just to check the status of the license plate and vehicle registration certificate	The system is not yet online, resulting in customers having to go to the office	The new application will be made online.

Table 2 Problem Analysis

### d. Requirements Analysis

At this stage of analyzing needs is the stage for analyzing the needs of the application to be made. This needs analysis is in the form of functional needs and non-functional needs.

- Functional needs include the needs of each user of this web-based administration application seen in the following table.



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#### Table 3 Functional Requirements

No.	User	Description	User Requirements
1	Admin	Admin as an administrator who manages website-based administration applications	<ul> <li>Admin can do plate data collection</li> <li>Admin can do vehicle registration certificate data collection</li> <li>Admin can update license plate and vehicle registration certificate data</li> <li>Admin can perform data collection motorcycle down payment</li> <li>Admin can collect data on motorcycle sales</li> <li>Admin can recap reports</li> </ul>
2	Customer	Customer as the second user in the application that can access the web online	<ul> <li>Customers can enter NIK to see the status and data of license plates and vehicle registration certificate.</li> <li>Customers can view license plate status online</li> <li>Customers can see the vehicle registration certificate status online</li> </ul>

Non-functional requirements in this research are hardware requirements used to conduct research. These needs include:

1) CPU: AMD Ryzen 5 5600X 6-Core 3.7GHz Processor, 16GB DDR4 RAM, 1TB Hard Disk

- 2) Mouse
- 3) Keyboard
- 4) 1920 x 1080 resolution monitor
- 5) 50 MBPS internet connection
- e. Logical Design

At this logical design stage is a stage that explains the design of the system model description that will be made in the application. The system modeling that will be made will use an object-oriented design method using UML (Unified Modeling Language) design which includes Use Case Diagram, Activity Diagram, and Sequence Diagram.

f. Physical Design

At this physical design stage is the final stage of designing the system to be created which is the stage of translating the logical design that we have made using UML into the physical form of the application which includes designing the user interface and design details.

### 4. RESULT

The data collection system for license plates and vehicle registration certificate and the collection of license plates and vehicle registration certificate by customers that was running before can be seen in the following figure.



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Fig 2. Flowchart of the previous License Plate and vehicle registration certificate System

The previous vehicle sales data collection system and down payment data collection can be seen in the following figure



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Fig 3. Flowchart of the previous Vehicle Sales and down payment Data Collection System

Use Case Diagram of the web-based administration application at the proposed Motorcycle Dealer can be described as in Figure 4 below.



Fig 4. Use Case Diagram of Administration Application

The design of the Main Page and Login Menu on the web-based administration application at Motorcycle Dealer can be seen in Figures 5 & 6 below.

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Fig 5 Design of Main Page Menu Design

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Fig 6. Design of Login Menu Design

In the dashboard menu design image above illustrates the design of the dashboard menu page which includes displaying the number of vehicle registration certificates that have been taken and those that have not been taken and also displays the number of plates that have been taken and those that have not been taken.

In the vehicle registration certificate data menu design picture above describes the design of the vehicle registration certificate data menu page in which there is a table that displays the vehicle registration certificate data that has been added, and there is also an add data button to add new vehicle registration certificate data.

The design of the vehicle registration certificate Data Add Menu and Plate Data Menu on web-based administration applications at Motorcycle Dealer can be seen in Figures 7 & 8 below.

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Fig 7. Design of Menu Design for Adding vehicle registration certificate Data

Fig 8. Design of Plat Data Menu Design

In the picture of the design of the vehicle registration certificate data add menu above describes the design of the vehicle registration certificate data add menu page in which there are several filling tables to add new vehicle registration certificate data.

In the plate data menu design picture above describes the design of the plate data menu page in which there is a table that displays the added plate data, and there is also an add data button to add new plate data.

The design of the Add Plate Data Menu and the Vehicle Sales Menu in the web-based administration application at Motorcycle Dealer can be seen in Figures 9 & 10 below.



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Fig 9. Design of Add Plat Data Menu Design

Fig 10. Design of Vehicle Sales Menu Design

In the picture of the design of the added plate data menu above describes the design of the added plate data menu page in which there are several filling tables to add new plate data.

In the picture of the design of the vehicle sales data menu above describes the design of the vehicle sales menu page in which there is a table that displays vehicle sales data that has been added, and there is also an add data button to add new vehicle sales data.

The design of the Add Vehicle Sales Data Menu and the Vehicle Advance Menu in the web-based administration application at Motorcycle Dealer can be seen in Figures 11 & 12 below.

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Fig 11. Design of the Add Vehicle Sales Data Menu Design

Fig 12. Design of the Vehicle Advance Menu Design

In the design picture of the added vehicle sales data menu above illustrates the design of the added vehicle sales data menu page in which there are several filling tables to add new vehicle sales data.

In the picture of the design of the vehicle down payment data menu above describes the design of the vehicle down payment menu page in which there is a table that displays the vehicle down payment data that has been added & there is also an add data button to add new vehicle down payment data.

Menu Design Add Vehicle Advance Data on web-based administration applications at Motorcycle Dealer can be seen in Figure 13 below.



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Fig 13. Design of Menu Design for Adding Vehicle Advance Data

In the picture of the design of the menu add vehicle down payment data above describes the design of the menu page add vehicle down payment data in which there are several filling tables to add new vehicle down payment data.

In accordance with the application implementation design that has been presented in section 4, an application program has been produced that is in accordance with the implementation design as follows. The system main page as shown in Figure 14 has been applied in accordance with the Use Case design in Figure 4 and the system main page design in Figure 5. All buttons and workflow objects in the system have been tested and work according to their function

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Fig 14. Main Page Display

The system Login and Dashboard pages as shown in Figure 15 have been generated according to the implementation in Figures 6 and 7 as well as the use case diagram in Figure 4. All buttons have been tested and are in accordance with the system flowchart.



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Fig 15. Login and Dashboard Page Display

The Motorized Vehicle Registration Page as shown in Figure 16 has been generated in accordance with the implementation in Figures 7 as well as the use case diagram in Figure 4. All buttons have been tested and comply with the system flowchart.



Fig 16. Vehicle registration certificate Data Page Display & Add vehicle registration certificate Data

The Recapitulation of Registration of Motor Vehicle Registration Pages as shown in Figure 17 is the result of the recapitulation of all motorized vehicle registration data and have been tested and comply with the system flowchart.



Fig 17: Print vehicle registration certificate Data Page Display

Vehicle License Plate Data Pages and the addition of vehicle license plate data as shown in Figure 18 are the results of the implementation of the system design in Figures 8 and 9. All buttons have been tested and are in accordance with the system flowchart.

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Fig 18. Display of Plate Data Page and Add Plate Data Page

The Recapitulation of Vehicle License Plate Data as shown in Figure 19 is the result of the recapitulation of all Vehicle License Plate Data and have been tested and comply with the system flowchart.

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Fig 19: Plate	Data Print Page Display

System testing is done to find out whether the system is functioning properly or not and to find errors in the system. This testing phase is carried out using the blackbox method, namely testing carried out to observe the results of execution through test data and functional checks of a software and testing is carried out.

Table 4

	Table 4					
	Login Page Testing					
No	Testing	Status				
1	Button Functionality	Good				
2	Input Box Functionality	Good				
3	Data Validation	Good				
4	System Flow	Good				

Table 5						
Main Page Testing						
No	Testing	Status				
1	Button Functionality	Good				

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2	Input Box Functionality	Good
3	Search Function	Good
4	System Flow	Good

Dashboard Page	e Testing
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No	Testing	Status
1	Button Functionality	Good
2	Menu Display	Good
3	System Flow	Good

Table	7	
-		

Input	: Data	Page	Testing

No	Testing	Status
1	Button Functionality	Good
2	Input Box Functionality	Good
3	Search Function	Good
4	System Flow	Good
5	Data Display	Good

Table 8	
Report Page 7	Testing

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No	Testing	Status	
1	Preview Button Functionality	Good	
2	Print Button Functionality	Good	
3	Data Display	Good	
4	System Flow	Good	

From the results of testing the above applications, it can be concluded that the resulting application has been running in accordance with the designed system flow and can run well, so it is feasible to be used to perform administrative data processing tasks for motorcycle dealers.

### 5. DISCUSSIONS

Based on the experience gained in the research process, we found that the obstacle to implementing this system was the motorcycle dealer's trust in the ability of their human resources to implement this application program. In addition, dealer owners still doubt the ability of the system to be updated in accordance with the needs of companies on a large scale and changes in government policy in the process of obtaining vehicle registration certificates in the future.

Therefore, it is better to conduct massive training for employees as application users so they can immediately implement this application program. Meanwhile, future system development will require more processing time to ensure this application can adapt well to policy changes made by companies and governments.

### 6. CONCLUSION

This web administration application aims to make it easier for admins to manage data and make it easier for customers to be able to check plate status online. Based on the application design that has been made before, the application has been designed and consists of several main menus which have their respective functions according to the needs of the admin. Such as the admin login page, dashboard page, license plate data page, vehicle registration

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data page, vehicle sales data page and down payment data page. Each page has buttons such as edit data, delete and print data and it runs fine after testing. Meanwhile, customer access to the application is also running well in accordance with the previous design where customers can check the status of the customer's number plate and vehicle registration certificate by entering the residence number on the main page. Based on the research that has been done, it can be concluded that web-based administrative applications at Motor Dealers after being computerized can make it easier for admins to manage data more effectively, efficiently and can easily search data. This application can also control data reports better and data can be printed directly and makes data storage easier. This application has been proven to make it easier for customers to check the status of license plates and vehicle registration certificates without having to come to the office.

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