

## Implementation of the Laravel Framework in the Development of Sales and Repair Information Systems at Vespa Clinic Kotabumi

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**Abstract :** The existence of realtime, fast and accurate information is very important for human survival. Website-based information systems provide accessibility for consumers to access information without time limitations and interactivity provided by producers to consumers by offering various interactive features as a form of online consultation. The aim of this research is to implement a website for sales and repairs using the Laravel Framework at Vespa Clinic Kotabumi (Vecko) and to facilitate management and bookkeeping that is fully recorded on the Web. The method used is Waterfall development with the application of blackbox testing methods and Mean Opinion Score. Researchers made the Vespa Clinic Kotabumi Workshop as the object of research. Data collection techniques in this study are interviews and observations. In this case, the creation of information systems is expected to increase income with faster and more efficient business processes and expand the reach of information. The results of the research are a form of implementation of the Laravel Framework in the sales and repair system at the Kotabumi vespa workshop equipped with attractive features for admin and customers consisting of reservation, product page, and confirmation. In this research, the Laravel Framework has succeeded in maximizing the development of the sales website. The sales system becomes more efficient and greatly helps transactions between sellers and buyers. The use of Laravel framework on this system has helped and facilitated the development of the system in this study.

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## Introduction

In today's global society, technological advances are happening quite rapidly. Humans now depend on information technology to provide and receive information (Indrajit, 2000). For humans to survive in the modern world, real-time, fast, and precise information is essential. Of course, various interested parties must be able to quickly and effectively obtain the necessary data and information (Sugiarto, 2023). Italy is where the scooter-style motorcycle manufacturer Vespa is produced (Yusuf, 2018). Vespa's distinctive shape makes it look very attractive. Because of its unique design, Vespa both classic and contemporary models have a loyal following around the world. However, there are various reasons why this type of car often experiences problems. Since not all workshops offer Vespa handling, information about Vespa workshops is important for Vespa riders to know.

The lack of an easily accessible and up-to-date sales and repair information system is a current problem. In order for orders, payments, and deliveries to be processed quickly,

adequate facilities are needed. Creating a sales and repair information system with features and This research was motivated by a number of previous studies. First, in connection with a web-based commodity rental market information system supported by the Laravel Framework (Nofiyati, 2021). The problem is the lack of advertisements or information from product owners, making it difficult for prospective tenants to understand and requiring them to work harder to get the desired commodity. In the case of website-based rentals that provide information about the goods being sold, the marketplace must be creative. These problems encourage the creation of a website-based Marketplace information system that is expected to help prospective tenants in finding rental items. The website can help clients find more information about the items they want and can be used by owners or operators of goods rental companies to advertise their companies. Second, the creation of an electronic goods inventory application using the Laravel Framework (Zulkifli, 2020). Problems arising from data entry errors caused by lost files, or scattered before the data is input. This is the main focus that needs to be resolved. With the help of this research, a computerized inventory application has been successfully developed. It can process data in real time, reduce data entry errors, and provide access to information on goods data to employees at the time of sales, so as to maximize services in the sales department.

Third, using the Laravel Framework to develop a purchasing and sales information system modeled by Apple Balam Store E-Commerce (Ardiansyah, 2019). The problem with the previous sales system was that although product data was constantly changing, marketing and promotion still relied on brochures and banners, increasing the cost of creating new materials. These problems led to the creation of an E-Commerce sales information system with adequate service characteristics. E-commerce sales have met customer expectations and simplified company operations for companies, allowing them to increase their marketing reach through product purchases and sales, promotions, online payments, and online transactions.

Fourth, Cindelaras Restaurant Medan City has integrated the Laravel Framework into its reservation system (Samsudin, 2021). To make it easier for customers to order the location and menu of food and drinks they like, a system is needed that can handle place and menu reservations for customers. Problems with the previous sales system, especially in food and beverage ordering services, are still one of the problems that often arise in several restaurants or restaurants. Therefore, we want a booking information system that can process bookings efficiently and successfully. The implementation of this system utilizes UML tools made using the PHP programming language, MySQL as a database server, and Laravel as a framework along with Waterfall development. By using this booking service information system, customers can book a table, browse the menu, and choose payment options such as m-banking or money transfer.

Finally, the application of Laravel to the seafood buying and selling system (Nurkholis, 2023). CV Mini Plant Mandiri in conducting the seafood buying and selling system still uses a manual system with telephone and whatsapp social media, this greatly slows down the buying and selling process at the CV Mini Plant Mandiri company. Especially when partners want to order goods that still use a manual system through whatsapp, problems will often arise such as forgetting, missing and stacked messages which cause the company to experience difficulties because all messages or conversations are carried out on whatsapp. Thus, building a Seafood buying and selling system with CV Mini Plant Mandiri Case Study, using the Laravel Framework and the method used is Waterfall. The system is made using tools, namely Visual Studio Code, and MySQL as a database

storage so as to produce a system that can be used to carry out seafood buying and selling transaction activities at CV Mini Plant Mandiri. To avoid programmers writing the same script for each activity according to the guidelines set by each framework, the framework is a programming component that is prepared to be reused at any time (Solikin, 2022). Taylor Otwell developed the open-source and free Laravel web framework, which is built on PHP and designed for online application development using MVC architecture (Sirad, 2019).

There are slight variations between the MVC archetype structure and the MVC pattern structure in Laravel. The routing feature in Laravel connects user requests and controllers. As a result, the controller does not directly approve the request (Tengah, 2020). The PHP framework called Laravel is tailor-made to make creating web applications easier and faster. Periodically, users can review reports through the system (Maylinda, 2021). One of the most popular and powerful PHP frameworks for creating online applications is Laravel. The advantages of using Laravel include its simplicity in integrating with databases, its support for MVC (Model-View-Controller), which divides application functionality, and its security. (Damayanti (2020). By using the Laravel Framework, information systems can be further developed in the future with ease. New features, improvements, or customizations can be implemented quickly and without disrupting existing functions (Ardhiansyah, 2022).

Information systems provide information for management in making decisions and also for running company operations, where the system is a combination of people, information technology and organized procedures (Sutabri, 2012). Sales Information System is a business information subsystem that includes a collection of procedures that carry out, record, accumulate, store document data and sales information for the purposes of management and other interested parts, starting from the receipt of sales orders to payment and financial records (Mahatmyo, 2014).

Vespa Clinic Kotabumi (Vecko) is a workshop that specializes in Vespa repair and sales. Along with the development of technology and the trend of digitalization, more and more people are looking for information and services through the internet, including looking for vehicle repair workshops. Consumer demand for services and goods is also increasing, but the work system that runs at Vecko has always experienced problems in distributing repair schedules because incoming customers always want to come first. Another problem is the availability of goods, customers who come on average are domiciled in different cities so they have to come a long way just to ensure the supply of goods. If the goods are empty or have run out, the workshop loses customers and suffers losses. Apart from the availability of goods, another problem is data and prices that are always changing.

From these problems Vecko feels the need to make changes to its sales system. Vespa Clinic Kotabumi (Vecko) feels the need to present themselves in the digital world by providing a Vespa sales and repair information system through a website. Based on these problems, researchers designed a website-based sales and repair information system. The sales and repair information system provides service features that can meet business needs and facilitate the transaction process so as to minimize obstacles and save time. The reason researchers chose Vespa Clinic Kotabumi (Vecko) as the object of research is because the system of work and buying and selling at the workshop is still conventional and this is an obstacle for Vecko. With the creation of the website, it is expected to improve customer service due to an integrated information system, improve customer service and experience in interacting with the workshop. Ease of accessibility as a workshop that focuses on Vespa, this workshop is expected to reach customers from various regions by providing information and services online.

## Research Methods

In general, research methods are ways used to obtain data with specific purposes or uses (Ramdhan, 2021). In this study, system development was carried out using the Waterfall method. The Waterfall research method is a software development method that is carried out sequentially, starting from the planning, analysis, design, implementation, and testing stages. This method is carried out with a systematic approach and runs sequentially, therefore it is called Waterfall (waterfall) (Wahid (2020)). This method is one of the methods in the System Development Live Cycle (SDLC). The Waterfall method is known as systematic development because the work is carried out sequentially, which is what characterizes this method. The SDLC Waterfall research method is carried out through several stages, namely, (1) Planning, (2) Analysis, (3) Design (4) Coding, (5) Testing, (6) Maintenance (Jurnal (2021)).

Data collection technique is a method used in collecting data related to this research (Herwin, 2014)). In this study, researchers used several techniques in finding and collecting information and data needed in the study. Researchers made the Vespa Clinic Workshop Kotabumi as the object of research. Data collection techniques in this study were carried out by interview and observation. An interview is communication between two or more parties that can be done face-to-face, when one party acts as an interviewer and the other party acts as an interviewee with a specific purpose, for example to obtain information or collect data (Fadhallah, 2021). Interviews in this study were conducted to obtain information through question and answer interactions with sources related to the use of the Laravel Framework in developing sales and repair information systems at Vespa Clinic Kotabumi. The observation technique is a way of collecting information about objects or events that are visible or can be detected with the five senses. In some cases, information obtained through observation has a better level of accuracy and trust (Pujaastawa, 2016). Observation is carried out in this study to observe the system and situation that occurs at Vespa Clinic Kotabumi.

## Research Results And Discussion

### Research Results

This research aims to develop a website-based sales and repair information system for the Vespa Clinic Kotabumi (Vecko) Workshop. This information system is designed to meet the needs and facilitate access to buying and selling and repairs. This project is expected to increase income with faster and more effective business processes and expand the reach of information. This system aims to facilitate management and bookkeeping that is recorded completely on the web. The implementation of the Laravel Framework in the development of a web-based Vespa sales and repair information system is divided into two accesses, namely admin and user. The components of the Vecko information system include:

1. *User (Customer): Services, Products, Reservations, and Reservation Checking. This feature is designed to make it easier for customers to make transactions and check their status.*
2. *Admin: Dashboard, Order, Reservation, Order Product, and Service Product. This feature is designed to make it easier for managers to manage customer data, transactions, stock, and reports..*

The information system development method used includes the stages of Needs Analysis, System Design, System Implementation, and System Testing. In the Needs Analysis stage, the research team collaborated with the Kotabumi Vespa Clinic Workshop to

determine the needs of the information system needed. This stage is carried out by conducting interviews with the Kotabumi Vespa Clinic Workshop (Vecko) to find out the needs of the information system needed. The System Design stage is carried out by designing a data flow diagram (DFD) and use case diagram to describe the system workflow. The System Implementation stage is carried out using the Laravel framework and MySQL as a database. The System Testing stage is carried out by conducting system trials on users and admins to determine system performance.

The evaluation results of this system show that the developed system has good performance and can be used smoothly. The research team also evaluates the system that has been developed using system performance measurement methods, such as measuring system response time, process time, and the number of system errors. The evaluation was conducted using the system performance measurement method by measuring system response time, process time, and the number of system errors. The evaluation results show that the developed system has good performance and can be used smoothly.

In developing this information system, the research team used an information system development method consisting of the stages of Needs Analysis, System Design, System Implementation, and System Testing. The Needs Analysis stage is carried out by conducting interviews with the Kotabumi Vespa Clinic Workshop (Vecko) to find out the needs of the information system needed. The System Design stage is carried out by designing data flow diagrams (DFD) and diagrams to describe the system workflow. The System Implementation stage is carried out using the Laravel Framework and MySQL as a database. The System Testing stage is carried out by conducting system trials on users and admins to determine system performance.

In the Needs Analysis stage, the research team conducted interviews with the Kotabumi Vespa Clinic Workshop (Vecko) to find out the needs of the information system needed. The results of these interviews are used as a basis for designing the information system needed by the Kotabumi Vespa Clinic Workshop (Vecko). The System Design stage is carried out by designing a data flow diagram (DFD) and use case diagram to describe the system workflow. The data flow diagram (DFD) is used to visually describe the system workflow, while the use case diagram is used to describe the interaction between the user and the system. The System Implementation stage is carried out using the Laravel framework and MySQL as a database. The Laravel framework was chosen because it provides a lightweight environment and is easy to develop. MySQL was chosen as the database because it has good performance and is easy to use. The System Testing stage is carried out by testing the system on users and admins to determine system performance. Tests are carried out to ensure that the developed system can run well and in accordance with user needs.

In the System Implementation stage, the research team used the Laravel framework and MySQL as the database. The Laravel framework was chosen because it provides a lightweight and easy-to-develop environment. Laravel also has features that facilitate the development of information systems, such as routing systems, templating systems, and database migration systems. MySQL was chosen as the database because it has good performance and is easy to use. MySQL also has features that facilitate the development of information systems, such as indexing systems, join systems, and transaction systems.

In the System Testing stage, the research team conducted system trials on users and admins to determine system performance. Tests are carried out to ensure that the system developed can run well and according to user needs. Tests are carried out using functional testing and non-functional testing methods. Functional testing is done to ensure that the

system can run according to its function, while non-functional testing is done to ensure that the system can run well under certain conditions, such as high user loads. The results of the Implementation of the Laravel Framework in the Development of a Web-Based Vespa Sales and Repair Information System which is divided into two accesses, namely admin and user, in the following components.



**Figure 1. User Home Page and Product View**

The User Home Page is an initial display that presents several main menus, including:

1. "About Us" menu: Provides information about the history, vision and mission, and contacts of the Vespa Clinic Kotabumi (Vecko) Workshop..
2. "Products" menu: Displays a list of products needed by customers, where users can view product details and directly purchase the desired product. Examples of products available are Vespa Excel Original P4K 4M Boring Block..
3. "Services" menu: Displays a list of services provided by Bengkel Vespa Clinic Kotabumi (Vecko), including servicing, modifications, and specialty work..
4. "Reservation" menu: Allows users to make online reservations for the services provided..
5. "Check Reservation" menu: Allows users to view the history of reservations that have been made..

This page can be accessed through the link <https://vespa.oneaimdeveloper.com>. If the user selects the "Products" menu, the user will be directed to the selected product details page. For example, if the user selects the product "Vespa Excel Original P4K 4M Boring Block", the user will be directed to the purchase page to purchase the product. On the purchase page, users can choose variations in size, color, and the number of products they want to order. After placing an order, users will receive confirmation via email and notification on their profile page.

The features available on this page allow users to access the necessary information and services in a very intuitive and practical way. This page is built using modern technology, so that users can access information and services quickly and efficiently. The system is built using the Laravel Framework, which allows developers to create flexible and scalable applications. The system also integrates the MySQL database as a database, which allows developers to create a consistent and efficient data structure.

## Discussion

To facilitate users, the system is built by optimizing performance and balancing speed and availability. This can be achieved by using techniques such as cache, file minify, and image optimization. The system is also built by optimizing server performance in order to process user requests with high efficiency. With this system, Vespa Clinic Kotabumi (Vecko)

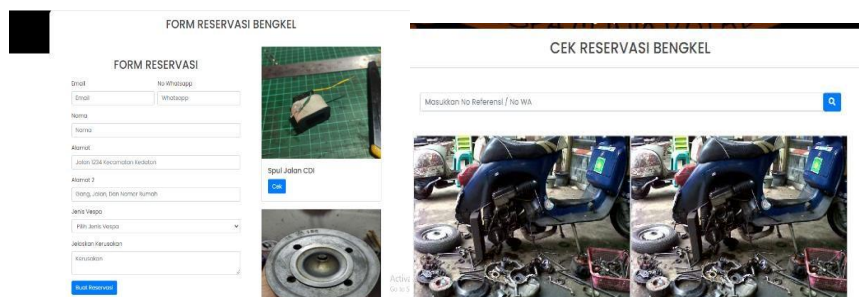
Workshop can promote the products and services they offer more widely and effectively. This can bring economic benefits to the company and allow customers to choose and purchase the products and services they need in a practical and efficient way.



**Figure 2. Product Detail View and Payment Checkout Form View**

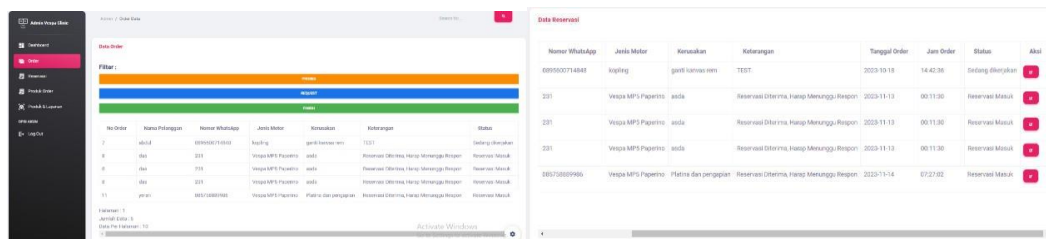
The checkout form page is a page that displays product details for users who want to continue the purchase to the payment stage. This page displays product information selected by the user, such as product name, price, quantity, and total price. After the user selects the product they want to buy, they will be directed to the payment page which can be seen in Figure 3. This payment page displays information about the total price to be paid by the user, as well as a choice of available payment methods.

The checkout form page is also a page that displays a form for users to enter customer information. The forms available in this page include full name, address, phone number, and email address. Users must fill in the form correctly so that the payment process can be done smoothly. Once the user has filled in the form correctly, they can proceed to the payment page to complete the purchase. This checkout form page is very important in the online purchasing process because it allows users to double-check the details of the product to be purchased and enter customer information correctly. By using the checkout form page, Bengkel Vespa Clinic Kotabumi (Vecko) can ensure that the purchase process runs smoothly and users can purchase products or services easily and safely.



**Figure 3. Workshop Reservation Form Display and Reservation Check Page Display**

The Reservation page is a page where users can fill out a form to enter the problems experienced. The Reservation Check page is a page to make it easier for users to see the progress of the reservation whether it has been completed or not. There are several menus including Email, Whatsapp No, Name, Address and users will be given the option to choose a payment method.



**Figure 4. Display of Order Page and Reservation Page**

On the Administrator's Main page there is a display that allows the admin to access several menus, namely the Dashboard, Order, Reservation, User Products, and Products & Services menus via the link <https://vespa.oneaimdeveloper.com/admin>. The Administrator's Main Page on the Vespa Clinic Kotabumi (Vecko) Workshop information system allows the admin to access several important menus including:

1. *Dashboard*: Display resumen charts on transaction, reservation, and product statistics.
2. *Order*: Displays information about the current status of reservation work, from reservation confirmation, completed service, to incoming or ongoing reservations.
3. *Reservasi* – Displays the same information as the Order menu, but the admin can change the action status according to the current progress..
4. *Produk User*: Display a list of products that have been ordered by the user.
5. *Products & Services* - Displays a list of products and services that will be marketed by the Kotabumi Vespa Clinic Workshop. (Vecko).

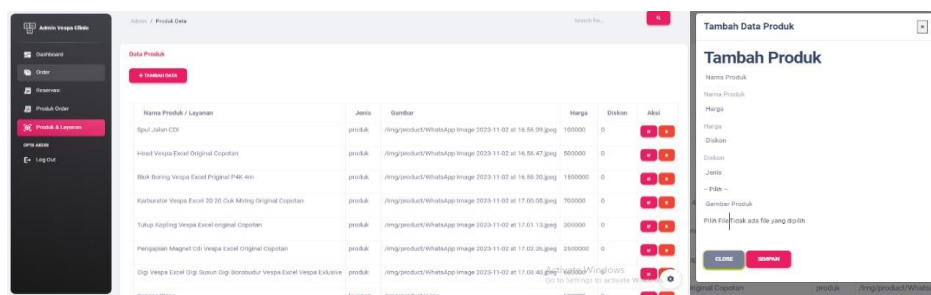
The Order page displays information about the current status of the reservation process. The statuses provided include: Not Yet Worked, Service Completed, Incoming Reservation, and Ongoing. The Reservation Data page is almost the same as the Order menu, but the admin can change the action status according to the latest progress. The Edit Reservation Data page allows the admin to change the status according to the current progress, namely, Not Yet Worked, Service Completed, Incoming Reservation or Ongoing. The Order Product page is a display that displays incoming orders from user purchases.

This system allows the admin to organize and manage transactions, reservations, and products quickly and efficiently. The pages provided greatly assist the admin in managing the information system of Bengkel Vespa Clinic Kotabumi (Vecko) in a more effective and efficient way. Common administrative activities performed by the admin include:

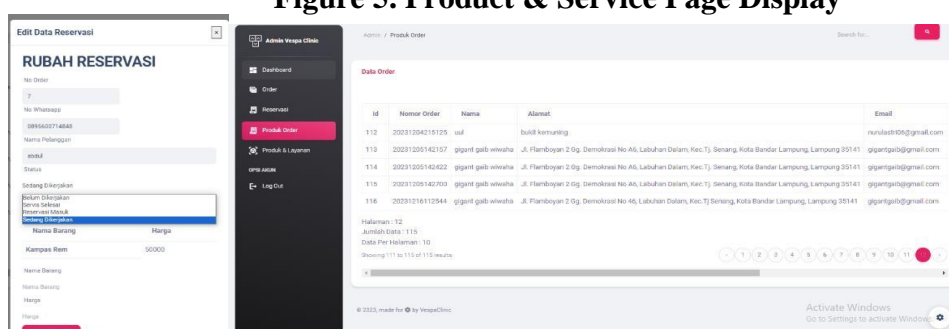
1. View the current status of reservation work.
2. Change the status of the reservation action according to the current progress.
3. Manage incoming orders from users.
4. Monitor transaction, reservation, and product statistics.
5. Add, edit, and delete products and services to be marketed.
6. Manage customer, transaction, and stock data.
7. Reporting to management on the current situation in the information system.

Thus, the system allows admins to manage information systems quickly and efficiently, thereby facilitating business processes and obtaining accurate and relevant information.





**Figure 5. Product & Service Page Display**



**Figure 6. Display of Reservation Data Edit Page and Order Product Page**

The "Products & Services" page is a display that shows all the products that will be marketed by the Kotabumi Vespa Clinic Workshop (Vecko). On this page, the admin can perform operations to add and delete products directly. The "Add Product" page is where the admin can fill in the form to add new products or services that will be marketed. Forms available on this page include:

1. **Product Name:** This field is used to enter the name of the product or service that will be marketed.
2. **Price:** This field is used to enter the price of the product or service to be marketed.
3. **Discount:** This field is used to enter the discount that will be given for each product or service.
4. **Type:** This field is used to identify whether the product or service will be marketed.

Admins can edit these fields according to their needs in adding new products or services. After filling in the form correctly, the admin can save the changes that have been made. The "Products & Services" page will automatically update the product or service data that has been changed by the admin.

## Conclusion

This research successfully developed a website-based sales and repair information system using the Laravel Framework that proved to be able to improve the efficiency of the sales process and provide significant assistance for transactions between sellers and buyers. The system has two main menus, namely a menu for users and a menu for admins that includes various features such as services, products, reservations, reservation checking, dashboards, orders, order products, and service products. The implementation of this system has been successful at Bengkel Vespa Clinic Kotabumi (Vecko), with test results showing that the use of this framework can significantly speed up application development. The information system development method used includes the stages of needs analysis, system

design, system implementation, system testing, and system performance evaluation, all of which are successfully implemented. The needs analysis stage is carried out by conducting interviews with the Kotabumi Vespa Clinic Workshop (Vecko) to find out the needs of the information system needed. The system design stage is carried out by designing a data flow diagram (DFD) and use case diagram to describe the system workflow. The system implementation stage is carried out using the Laravel Framework and MySQL as a database. The system testing stage is carried out by testing the system on users and admins to determine system performance. In this study, researchers also evaluated the system that had been developed using the system performance measurement method by measuring system response time, processing time, and the number of system errors.

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