

Optimizing Invoice Management: A Case Study of PT. Madina Mitra Teknik's Transition to a Laravel-Based Information System

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ABSTRACT: One business that engages in trading goods and services is PT. Madina Mitra Teknik. During the observations, Microsoft Excel was still used for manual invoice recording, even though the collection division had access to computer tools that may facilitate collection efforts. The goal of this research is to design an invoice-recording information system that can help manage existing invoices at PT. Madina Mitra Teknik in the collection section with development using the Laravel framework. Currently, no information system helps record invoices and their progress as they are issued and incoming payments, so the process of making reports takes time. The research process includes analysis, design, coding, and testing. The waterfall development method is employed. The output of this study is an invoice recording system, and the results of the black box testing show that every function has operated as intended. To ensure that the invoice recording information system is appropriate for use and implemented to support the invoice management process in the PT collection section, Madina Mitra Teknik conducted a portability test using three different browsers and found that all aspects of the system could be accessed without any issues.

Keywords: Invoice Recording, Recording Information System, Laravel



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INTRODUCTION

A business in the information technology industry, PT. Madina Mitra Teknik is situated in Depok City, specifically at Rukan Pesona View Jl. Ir. H. Juanda. One of the administrative tasks carried out by the corporate management division is keeping track of invoice entrance and exit of The Collection and Billing department of PT. Madina Mitra Teknik handles data processing for outgoing invoices and payments.

However, there are still several issues with this process, such as the continued use of Microsoft Excel for recording and updating purchase orders, which frequently results in duplicate data, The progress invoice has been released. This will be a challenge if management requests a report as soon as possible and the information is not current and accurate.

Having an invoice management system can assist in reducing the risk of problems recording invoices, and by using technology, the process of recording to producing reports can be streamlined with an information system that can connect interested parties in this topic. A web-based system is required to develop a system in the collection sector of PT. Madina Mitra Teknik because it facilitates linkages between components, namely through the use of the Laravel framework. Creating a solid information system requires a design that meets your needs.

METHOD

According to its website, Taylor Otwell built the open-source PHP 5.3 framework Laravel, which is distributed under the MIT License. Laravel was designed to assist developers, particularly those in creating websites with simple, elegant, expressive, and enjoyable syntax.

A web application with expressive and elegant syntax, Laravel attempts to combine development experiences from other languages, like Ruby on Rails, ASP.NET, MVC, and Sinatra and can reduce tasks that a general developer would typically handle on most web projects, like routing, sessions, and caching.

Laravel facilitates the creation of web goods through coding. This is demonstrated by the fact that Laravel is the most popular and extensively used php framework among developers, and it was listed in Webdesignmoo's 2014 edition of the best PHP framework.

Laravel Project Organization

- app/

This folder serves as a default location for written or configured code; all application project code, ranging from logic and configuration to other topics, is stored here. There are several other folders and files within the app folder, which will be discussed in more detail below.

- bootstrap/

This folder includes Laravel framework procedure files; several files in this folder should only be modified by seasoned Laravel users.

- vendors/

This folder contains all of the composer packages that we use in our application; it also contains the framework files for Laravel.

- public/

This folder contains assets that we use to store CSS, Javascript, Image files, or the necessary files (usually closely related to View - to build the front end).

- gitattributes

This file is a standard configuration file for version control systems, specifically Git, which are very popular these days.

- gitignore

This file contains some details about which folders Git will ignore.

- `phpunit.xml`

This file contains the default PHP Laravel Unit Testing configuration; it also handles loading composer dependencies and runs all tests in the `app/tests` directory. `artisan` This file is a file that functions to execute or run CLI `artisan` commands for Laravel.

- `composer.json` and `composer.lock`

These two files contain information about the composer packages that we will use for application requirements.

- `server.php`

This file contains procedures for running Laravel with an internal web server introduced in PHP version 5.4.

Model-View-Controller (MVC) is an approach to application development that divides data (model), display/frontend (View), and application logic (Controller). Based on these divisions, MVC builds applications by separating their main components, which include data manipulation, user interface, and control. The model is used to process queries or manipulate data to and from a database, while View is closely related to the interface/frontend of a web display, including HTML, CSS, and JS, as well as client data. A controller is the logic of a web, bridging communication between Model and View.

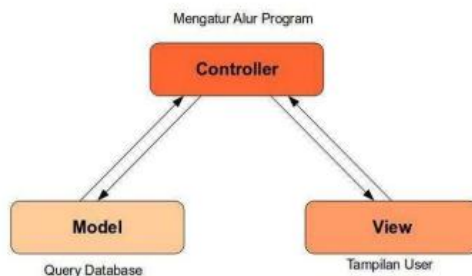


Figure 1. Process flow of MVC

The graphic below shows a Laravel simulation of the MVC procedure.

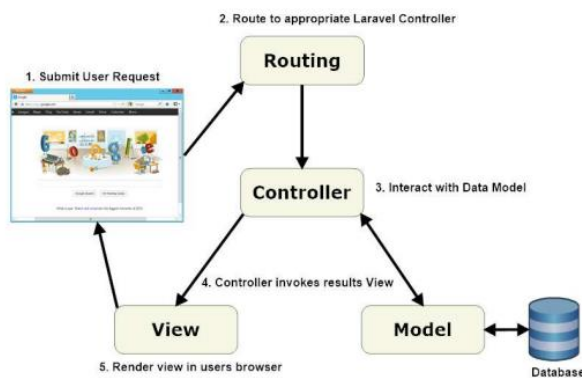


Figure 2. Laravel simulation of the MVC procedure

Laravel has the following benefits:

- **Expressive**

Laravel is an expressive PHP framework; this means that, despite never having studied or used it, a programmer is expected to understand the syntax when they see it. Laravel

adopts a different strategy by eliminating flagging parameters and opting to create two distinct functions.

- **Easy to use**

The Eloquent ORM is one of the things that makes Laravel so easy to use. Laravel has minimal complexity when it comes to routing issues. Creating a website is just a matter of sending a request for page x and expecting the user to respond. In such cases, Laravel uses a very basic routing principle.

- **Easily accessible**

Laravel was developed with the most comprehensive documentation available. The Code Developer from Laravel itself is dedicated to always including complete documentation whenever the latest version is released.

One of the drawbacks of using Laravel is that it contains default files, such as vendors, which should not be removed arbitrarily because doing so will result in a very large website. In addition, installing and downloading the Laravel library requires an internet connection.

RESULT AND DISCUSSION

User Interface (UI) and User Experience (UX) Design

- Login Page

The files for the login data input system design in the form of user and password can be seen in the image below. The login page is a form for the Invoice Recording system's main page.



Figure 3. UI/UX Login Data Input System

- Dashboard

The primary page that appears whenever a user logs in is called the Dashboard page design. The image below shows the dashboard page.

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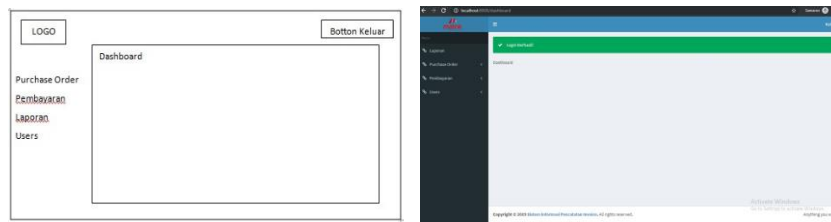


Figure 4. UI/UX Dashboard Page

- Purchase Order

As seen in the image, the form's design is a data design for keeping track of purchase orders.

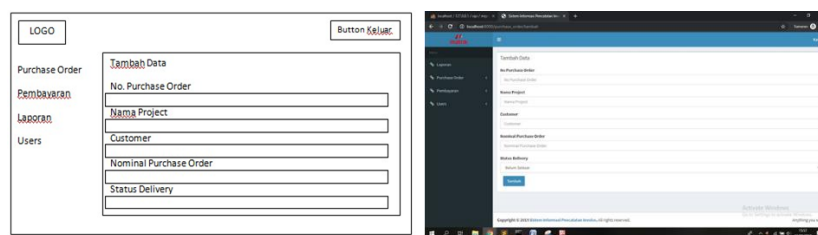


Figure 5. UI/UX Purchase Order Page

- Payment

As seen in the image below, the payment form design allows the user to enter payment data.

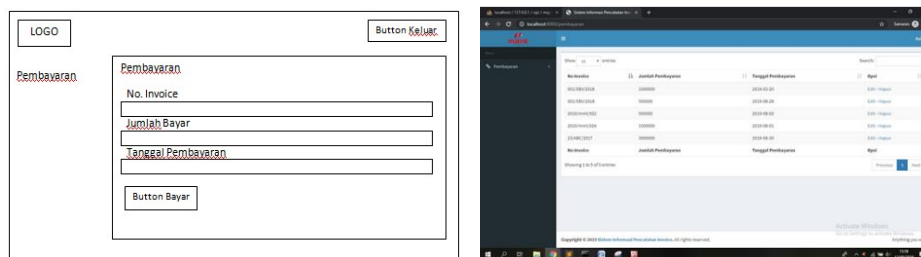


Figure 6. UI/UX the payment Page

- Reports Page

As seen in the image below, the report page design allows visitors to read or print reports.

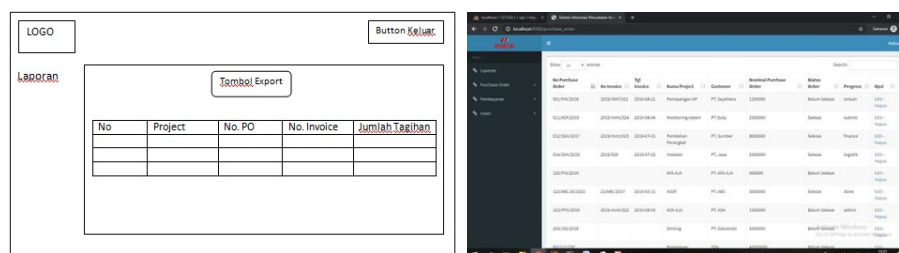


Figure 7. UI/UX Reports Page

- Users page

As seen in the image below, the user's page design is a collection for managing system users.

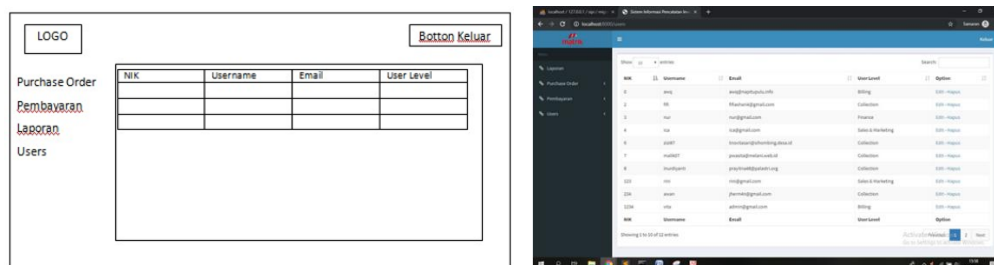


Figure 8. UI/UX Users Page

Systems Evaluation

1. System Configuration:

- Intel Core i5 processor
- Monitor
- RAM: 10 GB
- Memory 512 GB.

2. The machine is equipped with the following software:

- Xampp 7.2
- MySQL
- Sublime Text 3
- Laravel 5.8; 5.
- Web browsers: Chrome 76.0, Mozilla Firefox 68.0.2, Internet Explorer 11; 6.
- Windows 10.

The purpose of this black box testing

The purpose of this black box testing method is to identify functional errors in the program. The invoice recording information system program is being implemented using the black box testing method, which is a program test that prioritizes testing the functional requirements of a program. Black box testing is conducted by giving the program several inputs, which are then processed by the application to produce output that is desired and also by the program's basic function. The method is to identify functional errors in the program. The invoice recording information system program is being implemented using the black box testing method, which is a program test that prioritizes testing the functional requirements of a program. Black box testing is conducted by giving the program several inputs, which are then processed by the application to produce output that is desired and also follows the program's basic function.

Table 1: Black Box Testing Login Level

No	Scenario Testing	Test Case	Results Expected	Results Testing	Conclusion
1	Enter the username as a registered collection	Click the "Login" button	Displays Dashboard Collection	As expected	Valid

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2	Enter username as Billing	Click the "Login" button	Displays Dashboard Billing	As expected	Valid
3	Enter username as Finance	Click the "Login" button	Displays Dashboard Finance	As expected	Valid
4	Enter username as Finance	Click the "Login" button	Displays Dashboard Sales Marketing	As expected	Valid

Table 2. Black Box Login Testing Table

No	Scenario Testing	<i>Test</i>	Results Expected	Results Testing	Conclusion
		<i>Case</i>			
1	Enter the password and username that correspond to the user that registered.	Click the "Login" button.	The main course will appear on the login menu.	In line with expectations	<i>Valid</i>
2	Enter a password and username that differ from those you registered.	Click the "Login" button.	The error message "Login Failed!"	In line with expectations	<i>Valid</i>
3	You entered your username but left out your password.	Click the "Login" button.	The message "Please fill in this field" displays.	In line with expectations	<i>Valid</i>
4	e-exit button	Click the "Logout" button.	The Dashboard is where the system reacts.	In line with expectations	<i>Valid</i>

Table 3 Black Box Test Table Collection Page

No	Scenario Testing	<i>Test Case</i>	Results Expected	Results Testing-Testing	Conclusion
1	Go to the "Purchase Orders" menu. "	Select "Purchase Order" from the menu.	Display purchase order data	As predicted	<i>Valid</i>
2	Select the "Plus" buy order information.	Select "Purchase Order" from the	A purchase order form emerges.	As predicted	<i>Valid</i>

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3	Complee the data purchase	Select the "Plus" button	Stored information	As predicted	<i>Valid</i>
4	Modifying purchase orders for data	Select the "Update" button	Modifications to purchase order data preserved	As predicted	<i>Valid</i>
5	Examine the buy order list on the following page.	Activ ate the "Next" button	Purchase orders are shown on the next page.	As predicted	<i>Valid</i>
6	Go back to the page "Previous"	Select the "Previous" button.	Go back to the page	As predicted	Valid
7	Looking for information Purchase orders	Activate the "Search" button.	Displaying the data search results	As predicted	Valid
8	Merubah "show entries" yang ditampilkan	Select "Show" 10 be 25.	Purchase order list page with 10–25 entries	As predicted	Valid

Table 4: Examining Payments in a Black Box Collection Test Table

No	Scenario Testing	<i>Test Case</i>	Results Expected	Results Testing-Testing	Conclusion
1	Opt for the "Payment" menu.	Select the "Payment" menu.	It shows the payment list page.	As predicted	Valid
2	Look up payment information.	Activate the "Search" button.	Shows statistics From search results	As predicted	Valid
3	View the invoice list on the following page.	Activate the "Next" button.	The next page displays the payment list.	As predicted	Valid
4	Go back to the "Previous" page.	Activate the "Previous" button.	Go back to the payment page from earlier.	As predicted	Valid
5	Modifies the "show entries" that are shown	Select "Show" 10 be 25.	Page of the payment list with 10 to 25 entries	As predicted	Valid

Table 5: Test Table for Black Box Collection Viewing Reports

No	Scenario Testing	<i>Test Case</i>	Results Expected	Results Testing	Conclusion
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1	Click the "Report" menu.	Go to the "report" menu	It shows the report list page.	As predicted	<i>Valid</i>
2	Look up report information.	Select "Search" from the menu.	shows statistics from search results	As predicted	<i>Valid</i>
3	View the report list on the following	Select "Next" from the menu.	On the following page, there is a report list.	As predicted	<i>Valid</i>
4	Go back to the "Previous"	Select "Previous"	Go back to the report's earlier page.	As predicted	<i>Valid</i>
5	modifies the "show entries" that are shown	On "Show," 10 turns into 25.	There were initially 10 to 25 entries on the report list page.	As predicted	<i>Valid</i>
6	Get the report's data.	Click the "Export" button.	downloaded report information	As predicted	<i>Valid</i>

Table 6. Black Box Collection Testing Table Manage Users

No	Scenario Testing	Test Case	Results Expected	Results Testing Testing	Conclusion
1	Click the "Users" menu.	Click the "User" menu.	Displays user data	As predicted	<i>Valid</i>
2	To add user data, select "Add Users."	"Add Users" will open.	Muncul <i>form</i> data <i>user</i>	As predicted	<i>Valid</i>
3	Enter information to add user data.	Select the "Plus" button.	Data tersimpan	As predicted n	<i>Valid</i>
4	Modifying user data	Select the "Update" button."	Perubahan data <i>user</i> tersimpan	As predicted	<i>Valid</i>
5	On the following page, view the user list.	Select "Next" from the menu.	Tampil list user halaman berikutnya	As predicted	<i>Valid</i>
6	Go back to the "Previous" page.	Select "Previous"	Kembali ke halaman sebelumnya	As predicted	<i>Valid</i>
7	looking for the data user	Select "Search" from the menu."	Menampilkan data hasil pencarian	As predicted	<i>Valid</i>
8	Modifies the "show entries" that are shown	On "Show," 10 turns into 25.	Halaman list user semula 10 menjadi 25 <i>entries</i>	As predicted	<i>Valid</i>

Table 7. Testing Table for Black Box Billing to Manage Payments

No	Scenario Testing	Test Case	Results Expected	Results Testing Testing	Conclusion
1	Choose the "Payment" menu.	Select the "Payment" menu.	Payment information is displayed.	As predicted	<i>Valid</i>
2	Click on the "Add Payment" option.	Go to "Add" payment.	A payment form appears.	As predicted	<i>Valid</i>
3	Enter payment details.	Activate the "Plus" button.	Stored information	As predicted	<i>Valid</i>
4	Changing payment details	Press the "Update" button.	Adapt stored payment information	As predicted	<i>Valid</i>
5	View the invoice list on the following page.	Activate the "Next" button.	The next page displays the payment list.	As predicted	<i>Valid</i>
6	Go back to the previous payment page.	Select the "Previous" button.	Go back to the payment page from earlier.	As predicted	<i>Valid</i>
7	Look up payment information.	Activate the "Search" button.	Shows statistics from search results	As predicted	<i>Valid</i>
8	Modifies the "show entries" that are shown	Select "Show," and 10 turns into 25.	Page of the payment list with 10 to 25 entries	As predicted	<i>Valid</i>

Table 8: Reports Viewing and Testing Black Box Finance Table

No	Scenario Testing	Test Case	Results Expected	Results Testing-Testing	Conclusion
1	Choose the "Report" menu.	Go to the "Report" menu.	A report data list shows up.	As predicted	<i>Valid</i>
2	Look up report information.	Click the button "Search"	Shows statistics from search results	As predicted	<i>Valid</i>
3	View the report list on the following page.	Activate the "Next" button.	On the following page, there is a report list.	As predicted	<i>Valid</i>
4	Go back to the "Previous" page.	Select the "Previous" button.	Go back to the report's earlier page.	As predicted	<i>Valid</i>

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5	Modifies the "show entries" that are shown	On "Show," 10 turns into 25.	Page 10 of the original report is changed to 25. <i>entries</i>	As predicted	<i>Valid</i>
6	Get the report's data.	Press the "Exports" button. "	downloaded report information	As predicted	<i>Valid</i>

Table 9: Black Box Testing for Sales and Marketing Table Viewing Reports

No	Scenario Testing	Test Case	Results Expected	Results Testing - Testing	Conclusion
1	Choose the "Report" menu.	Go to the "Report" menu.	A report data list shows up.	As predicted	<i>Valid</i>
2	Look up report information.	Activate the "Search" button.	shows statistics from search results	As predicted	<i>Valid</i>
3	Examine the report's next-page list.	Activate the "Next" button.	On the following page, there is a report list.	As predicted	<i>Valid</i>
4	Go back to the "Previous" page.	Select the "Previous" button.	Go back to the report's earlier page.	As predicted	<i>Valid</i>
5	modifies the "show entries" that are shown	On "Show," 10 turns into 25.	Page 10 of the original report list is now 25 entries.	As predicted	<i>Valid</i>
6	Get the report's data.	Click the "Export" button.	Downloaded report information	As predicted	Valid

Functional Testing

Three browsers have been chosen as comparisons for the system function testing, which is conducted by opening the page containing the function and simulating the system. Following functional testing, the following test results were obtained:

Table 10: Table of Functional Testing

No	Unit Examined	That Are Anticipated	Browser					
			Chrome		Mozilla		Internet Explorer	
			B	TB	B	TB	B	TB
1	<i>The Login Icon</i>	Shows The Homepage.	√		√		√	
2	<i>Remove Button</i>	Shows The Login Screen.	√		√		√	
3	<i>Update Button: Add a purchase order</i>	Save Information.	√		√		√	
4	<i>Modify Settings</i>	Shows The Purchase Order Form For Data Modification.	√		√		√	

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5	<i>Remove Choice</i>	Remove Purchase Order Information	√		√		√	
6	<i>Button Next Order of Purchase</i>	Shows The Following Page In The Purchase Order List.	√		√		√	
7	<i>Prior Purchase Order for Botton</i>	Shows The Page With The Prior Purchase Order List.	√		√		√	
8	<i>The Next Payment Button</i>	Shows The Page For The Next Payment List.	√		√		√	
9	<i>Prior to the Botton payout</i>	Shows The Page With The Previous Payment List.	√		√		√	
10	<i>Botton list users were added.</i>	Save The User's Data List.	√		√		√	
11	<i>User menu addition</i>	Presents The User's Form.	√		√		√	
12	<i>Click Next users</i>	Shows The Next Page In The Users List.	√		√		√	
13	<i>Botton Former Clientele</i>	Shows The Page With The List Of Prior Users.	√		√		√	

Information :

B = Successful,

TB = Not Successful

CONCLUSION

- The system implemented using the Laravel framework can help the collection department present invoice reports, to be submitted to PT management and finance staff. Madina Mitra Teknik can avoid creating and recurring it because it is available in the invoice recording system.
- The invoice recording information system uses the Laravel framework, which is designed for the collection section to prevent the potential for double inputted data so that it can help facilitate the validation of invoice recording.

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