

Implementing Laravel Framework for E-Commerce: Case Study at Indonesian Farmer Shop Center

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ABSTRACT

This paper aims to implement e-commerce using the laravel framework. The implementation of e-commerce is applied to the Indonesian Farmer Shop Center (TTIC) in the city of Padang, especially in the sales section precisely sales and payment transactions. This e-commerce can make it easier for consumers to purchase products in TTIC. For making e-commerce using the laravel framework. For e-commerce creation use the laravel framework. Its data storage uses a MySQL database.

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1. Introduction

West Sumatra is an area where most of the people live by farming, thus, the local government attempts to make this region as an area that has strong food security through food self-sufficiency. The government establishes the Toko Tani Indonesia Center to serve the sale of household needs, such as rice, cooking oil, and vegetables for the city of Padang and its surroundings. TTIC is under the Food Service and was inaugurated in July 2019 by the governor of West Sumatra and it is expected to be a pilot project for the Food Service throughout Indonesia. The purpose of the existence of TTIC in Padang is to assist the people to get cheap and easy necessities such as rice, vegetables, sugar, oil and so on. In addition, the purpose of the existence of TTIC in Padang is to maintain the stability of prices for basic necessities in the society.

Since it was inaugurated in July 2019, many people of Padang City did not know detail about the existence of TTIC, this is because the promotion and transaction processes carried out by TTIC Padang only use Facebook and Instagram media for promotional media. For the transaction process, TTIC also uses Facebook and Instagram to display products and announce prices for these products. If the society wants to buy, the next transaction process will use WhatsApp which is managed by an employee at TTIC Padang city. Definitely, it will make it difficult for people to transact, especially if there is a product update and product price. This update can make people to be confused whether the price of the product has been updated or not due to the price list is only displayed in the photo gallery on the media. Employees who are in charge of conducting transactions with the society, it will also experience difficulties in confirming the latest prices or updating the prices of products sold by TTIC in the city of Padang.

With the advances of information technology that have entered all areas of life, it is necessary to create an e-commerce to facilitate the society in making purchases of basic necessities at TTIC Padang. The use of e-commerce as a means of selling transactions of basic necessities in the society is a necessity to facilitate the society in making transactions and to facilitate the TTIC of Padang in the transaction process.

2. Literature Review

2.1 E-Commerce

E-commerce or it is well-known as electronic commerce, it is the purchase and sale of goods or services that use internet technology. Transactions in e-commerce occur either from business to business (B2B), business to consumer (B2C), consumer to consumer, or consumer to business [1]. E-commerce is a new system or paradigm in the business world, which shifts the traditional trade paradigm to electronic commerce, namely by utilizing ICT (Information and Communication Technology) technology or in other words internet technology. General definition of e-commerce: The process of buying, selling, both in the form of products, services, or information, which is done through the internet media [2]. According to Molla [3] E-Commerce has 16 advantages, namely increase in revenue, reduce operation cost, Reduced costs of purchasing and procurement, Increased customer loyalty and retention, Reduced marketing costs, Improved supplier relationship, Overall satisfaction, Reduced cost of maintaining information, Product / service differentiation, Improved customer relationship, Improved competitive position, Extending firms reach (market), Improved process speed, improved external communication, Improved company image, and Improved internal communication. From a business perspective and from a customer perspective, e-commerce has several advantages [4]. From a customer perspective, the advantages of e-commerce are Convenience: Every product is at the tip of your fingers on the internet, literally. Type in the product you are looking for into your favorite search engine and every option will appear in a well-organized list in a matter of seconds.

Timesaving: With e-commerce there is no driving in circles while looking and digging in hopes of finding what you need. Stores online offer their full line as well as use warehouses instead of store fronts—products are easy to locate and can be delivered to your door in just days.

Options, options, and options: Without driving from store to store the consumer can easily compare and contrast products. See who offers the best pricing and have more options to choose from. While a physical store has limited space, the same store on the internet will have full stock. Easy to compare: Side by side comparisons are readily available and easy to do. When products are placed online, they come with all the specifics, and they want you to compare them with others, know they have the best options and come back for more

Easy to find reviews: Because the competition is high, companies' online want you to look at other consumer reviews. Good and bad reviews are on every site, not only can you see if the product is liked, you can also see the reasons behind the thumbs up or down.

Coupons and deals: With every online business wanting you, more and more coupons and deals can't be avoided, which are totally great for customers. With major sites that act as department store, you may find items up to 80% off. Take advantage of the competition and find the best price available.

Meanwhile, in terms of the e-commerce business, it has advantages including increasing customer base, increasing sales, expanding business reach, recurring payments made easy, and instant transactions.

2.2 Laravel Framework

Laravel framework is a web development framework (MVC) that designed to improve the quality of software by reducing the cost of initial development and ongoing maintenance costs, and to improve the experience of working with your application by providing clear expressive syntax and a core set of functionality that will save your hours of implementation time [5].

Model, View and Controller in PHP are the most widely used patterns in web application development. The model is responsible to manage the data; it stores and retrieves entities used by an application, usually from a database and contains the logic implemented by the application. The view (presentation) is responsible to display the data provided by the model in a specific format. The controller handles the model and view layers to work together. The controller receives a request from the client, invokes the model to perform the requested operations and sends the data to the View. The view formats the data to be presented to the user, in a web application as an html output. [5]. The representation of this MVC is shown in Fig. 1.

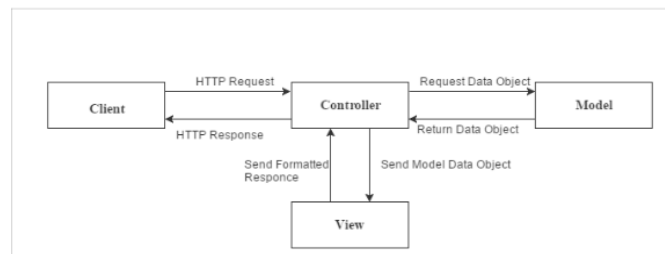


Figure 1. Representation From MVC [5]

3. Proposed Methodology

In this project prototype model was merged with system development life cycle methodology. System development life cycle which also best known as SDLC is a conceptual model used in project management that describes the stages that involved in an information system development project. Unlike waterfall model, the steps from SDLC can be turning back to its previous stage. For example when the project is in implementation phase, when there is any problem from previous stage during implementation stage, the developer can turn back to its previous stage in order to modified/ fix the previous stage. The model are shown in Figure 2.

The stage taken in designing an information system was analyzing the ongoing system. System analysis aimed to see, know and understand what problems of Toko Tani Indonesia Center (TTIC) faced in the business that is being carried out. This can be a reference in designing the information system to be worked on. The research method used was a research method based on the Software Development Life Cycle (SDLC). The SDLC method used was the waterfall method. The waterfall model is a classic model in software development and is also known as the linear sequential life cycle model [6]. The basic tasks in this model are requirements analysis, architectural design, implementation and validation [7]. The selection of this method is due to this web-based research will use stages is as follows:

1. Literature review, it is undertaken by looking for references and data needed for making information systems. Field studies are carried out at TTIC, and studied the concept of purchasing products to farmers, the system and product distribution flow, till to the process of purchasing products at the TTIC.
2. Needs analysis aims to assess and identify problems that occur, and performs grouping of existing data. At this stage, the manual system prototyping method is then carried out using only paper and pencil to start describing the system in general and the output of this stage is an input at the design stage.
3. Designing, starting from the information system architecture interface design and procedural design of application, designing the output and input of the application to be built. Furthermore, data is sorted into functional and non-functional requirements. The results of this data sorting are then made using UML design, database creation and system flowchart creation

a. UML (Unified Modelling Language)

The method used in designing this system model used UML (Unified Modeling Language) which consists of Use Case Diagrams, Class Diagrams, Activity Diagrams, Sequence Diagrams. Use Case Diagram, shows the processes that actors can carry out in the designed system. The actors involved are admin and employees as managers and users as system users. Class Diagram, shown in Fig 2

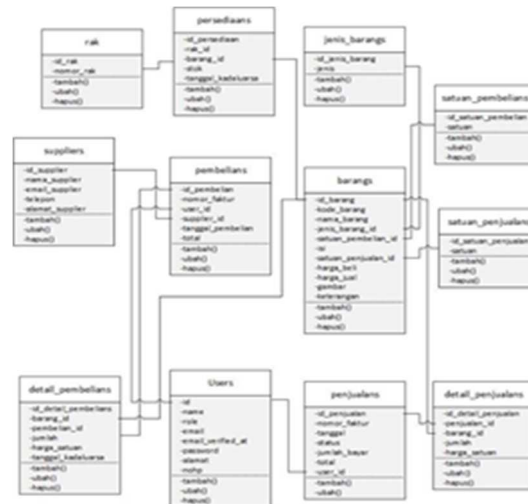


Figure 2. Class Diagram

Figure 2 shows the class diagram of the system structure in terms of defining the classes that will be made to build the system. The class diagram in the TTIC system in Padang City indicates that each table is related to each other.

Activity Diagram, modeling the work flow of users and systems by describing the various activity flows in the system being designed. Activity Diagram has function to explain about each flow begins, decisions to be taken and the flow ends. The following is a scenario of the activity diagram on the information system that will be built, shown in Fig. 3.

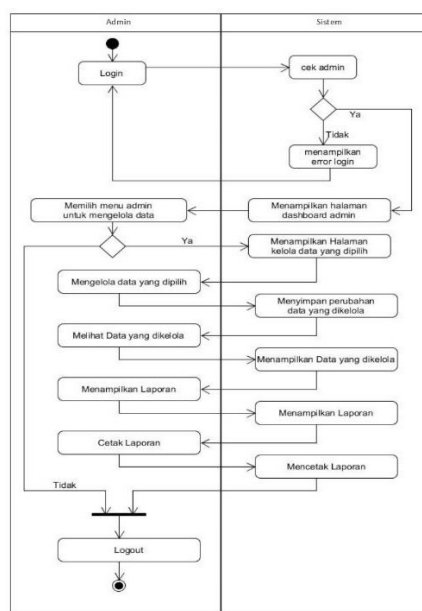


Figure 3. Admin Activity Diagram

Sequence Diagram, is used to describe the behavior of a scenario in detail over time. The sequence diagram can be seen in Fig. 4

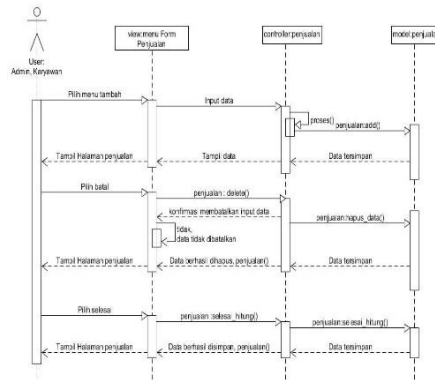


Figure 4. Sale Sequence Diagram

4. Implementation, the design that has been completed, it will then be implemented with the specifications of the hardware and software requirements that have been previously specified. All system functionalists which have been determined previously, then, those are tested using dummy data beforehand whether it has been running according to what has been determined at the beginning and it was agreed when the needs analysis was made. All menus that are made, those are tested. After all system functionalists have run according to what has been determined then the actual data system is inputted into the system and carried out from the real system to the predetermined ecosystem, namely TTIC Padang.



Figure 5. Login Page

Other pages on this web are pages for adding data and pages for purchases, which are shown in Fig 6 and Fig 7.

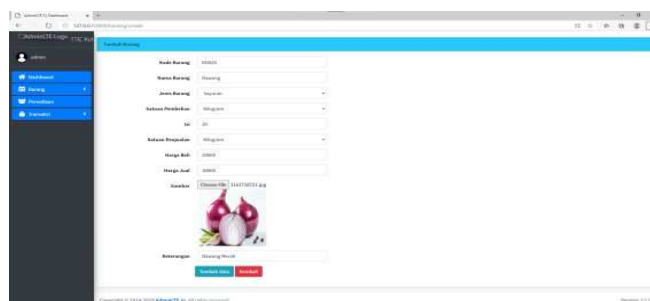


Figure 6. Data Addition Page

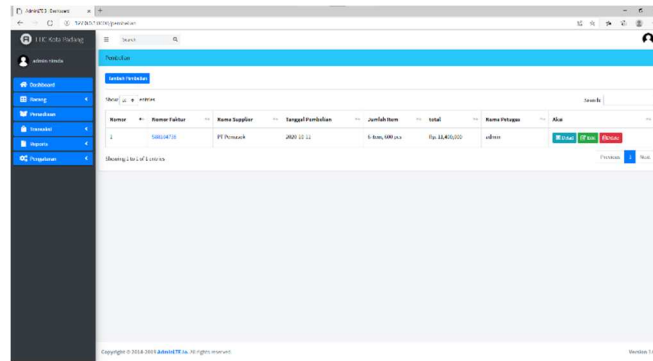


Figure 7. Purchase Page

5. Testing, at the stage of testing of this information system is then tested toward each user who has been set. Testing is also carried out on all functionality of the application and all application menus, whether each function and menu has been running according to what has been previously set and whether it is in accordance with the prototype that was built earlier.

Testing is the most significant part of the software development cycle. Testing was undertaken to find out software weaknesses and ensure the quality of the software. From the results of this information system test, it stated that data access can be done properly. The system can access the database, input data into the database, and call data into the display. Table 1 is the result of system testing.

Table 1. The Testing Result

User interface tested	Test scenario	Test Result
Register	The process for registration into the system.	Suitable
Login	Each user conducts login by entering the username and password that has been registered in the system.	Suitable
Manage user data	The process of admin can manage user data such as displaying user data, adding user data, editing user data, and deleting user data. Meanwhile, employees will only display user data.	Suitable
Manage user access rights data	The process of admin and employee can manage user permissions	Suitable
Manage data goods data	The process of admin and employees manage the system from adding, editing and deleting	Suitable
Manage Item Type Data	The process of admin and employees can manage data on types of goods in information systems.	Suitable
Manage Unit Purchase Data	The process of admins and employees can manage purchase unit data in information systems	Suitable
Manage Sales Unit Data	The process of admins and employees can manage sales unit data in the information system.	Suitable
Manage inventory data	The process of admins and employees can manage inventory data in information systems	Suitable
Manage inventory shelf data	The process of admins and employees can manage inventory shelf data in information systems	Suitable
Manage goods purchase data	The process of admins and employees can manage purchasing data in information systems	Suitable
Manage sales data	The process of admins and employees can manage sales data in information systems	Suitable

4. Conclusion

Based on the description and discussion in the previous chapters, it can be concluded that: Designing and making e-commerce at TTIC Padang City used the PHP programming language with the Laravel framework in making program code and using MySQL to store data in the database. Designing and making e-commerce of TIC Padang City can assist TTIC Padang City in managing goods, purchasing goods transactions and selling goods transactions. In the system, there were 3 access rights, namely admin, employees, and users. Admin access rights was to access to all data management, employee access rights had limitations in data management. Meanwhile, users had access to view products, manage profiles, manage favorite items and order products. The TTIC System of Padang City displays inventory stock, goods purchase data, goods sales data, goods payment data, and goods delivery data.

References

- [1] S. Sanyala and M. W. Hisamb, "Factors Affecting Customer Satisfaction with Ecommerce Websites – An Omani Perspective," in 2019 International Conference on Digitization (ICD), Sharjah, United Arab Emirates, 2019.
- [2] I. P. A. E. Pratama, *E-Commerce dan Implementasinya*, Bandung: Informatika.
- [3] A. Molla and R. Heeks, "Exploring E-Commerce for Bussiness in a Developing Country," *The Information Society*, 2007.
- [4] C. Franco and B. R. S, "Advantages and Challeges of E-Commerce Customer and Bussiness : In Indian Perspective," *International Journal of Research - Granthaalayah*, vol. 4, no. 3, pp. 7-13, 2016.
- [5] V. V.Parkar, P. P. Shinde, S. C. Gadade and P. M. Shinde, "Utilization of Laravel Framework for Development of Web Based Recruitment Tool," *IOSR Journal of Computer Engineering*, pp. 36-41, 2016.
- [6] S. K. Dora and P. Dubey, "Software Development Life Cycle Analytycal Comparison and Survey On Traditional and Agile Methodology," *Journal of Research in Science & Technology*, vol. 2, no. 8, pp. 22-30, 2013.
- [7] K. Gourav and S. Gupta, "Study & Comparison of Software Development Life Cycle Models," *IJREAS*, vol. 2, no. 2, pp. 1514-1515, 2012.