Development Model of Warteg Online Applications based on Web and Mobile

Jason Wiranata Ivanovich
Computer Science Department
BINUS Online Learning
Bina Nusantara University
Jakarta, Indonesia 11480
jason.ivanovich@binus.ac.id

Muhammad Adiguna Said
Computer Science Department
BINUS Online Learning
Bina Nusantara University
Jakarta, Indonesia 11480
muhammad.said@binus.ac.id

Sigit Apriyanur Rohim
Computer Science Department
BINUS Online Learning
Bina Nusantara University
Jakarta, Indonesia 11480
sigit.rohim@binus.ac.id

Muhammad Rizal Wicaksono
Computer Science Department
BINUS Online Learning
Bina Nusantara University
Jakarta, Indonesia 11480
muhammad.wicaksono009@binus.ac.id

Emny Harna Yossy*
Computer Science Department
BINUS Online Learning
Bina Nusantara University
Jakarta, Indonesia 11480
emny.yossy@binus.ac.id

***Abstract*—The development of software engineering as well as mobile and web-apps has enabled the modernization of businesses such as warung tegal (warteg). The purpose of this research is to design an online warteg application. Application development uses the method of developing system development life cycle with the waterfall model. This application was built using the Native React Framework and with the PostgreSQL Database. The expected result is the design of online warteg applications that can be accessed on websites and mobile phones that can help warteg entrepreneurs to facilitate the promotion and sale of merchandise they sell, as well as to facilitate the public to buy food without having to come to the warteg.**

Keywords—warung tegal, sdlc, waterfall, website, mobile application

I. INTRODUCTION

Warung Tegal or called Warteg is a type of gastronomic business that provides food and drinks at affordable prices [1]. The term Warteg has become synonymous with middle to lower class food stalls both in the city of Tegal and elsewhere. Warteg is a favorite place to buy home-cooked food that is ripe and has a fairly pocket-friendly price. Warteg is favored by various groups of people, especially in the area around the warteg. This is certainly a limitation of consumers who can be accessed as customers of warteg. In addition, Warteg has limited consumers due to increased human activity and time-consuming. Therefore, demanding many restaurants or eating places to provide food ordering and delivery services to the place of ordering by using online applications, both web and mobile applications. Currently, researchers see that the service of Warteg is inadequate, one of which is regarding ordering services [2]. The ordering service is still manual which means consumers come directly to order food to be a major factor in supporting the limitations of the warteg.

One solution that can be a way out of the problems above is the availability of online applications for warteg. Warteg online application is useful to reach more outside consumers and makes it easier for warteg entrepreneurs to find potential funding. This is certainly supported by the high rapid development of Android, iOS or Web technology, which has led to the development of mobile and web technologies. The development of online warteg applications is also very possible to support the business to be more developed and advanced, as well as an opportunity to deal with problems that occur in warteg [3].

Based on the description above, the researchers conducted research on the design of online warteg applications. Applications can be accessed via the web and mobile applications. Therefore, the application is expected to help warteg entrepreneurs to facilitate the promotion and sale of the merchandise they sell. And to make it easier for people to buy food without having to come to the warteg.

II. LITERATURE REVIEW

A. Warung Tegal (Warteg)

The word 'warteg' in the minds of Indonesians at this time may have been very prevalent. 'Warteg' is an abbreviation of two words that are combined namely 'warung' and 'Tegal'. According to KBBI, 'stalls' usually refer to a place that is not too big, a place where people are selling something, it can be food, drink, grocery, and so on. Meanwhile, 'Tegal', with a large "T" clearly refers to the name of a city [4]. The phenomenon of Tegal stalls as a form of micro-scale gastronomic business in urban or urban areas [5]. Gastronomy is a term to describe various things related to the supply or serving of food.

B. E-application

An application is a unit of software created to serve the needs of several activities. Applications can be run on various platforms such as websites, desktops, and mobile [6]. Depending on the needs of the development of the application itself. Mobile applications or mobile apps are ready-made programs that are designed to carry out a function for other users or applications and can be used by the intended target while mobile can be interpreted as moving from one place to another. So it can be interpreted as an application that runs on a mobile device or better known as a smartphone [7].

*Corresponding Author

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The design of the application design uses unified modeling language (UML). UML could be a common reason demonstrating dialect. The most point of UML is to characterize a standard way to imagine the way a framework has been outlined. It is very comparative to outlines utilized in other areas of building [8]. UML has various types of diagrams, in this study using use case diagrams, class diagrams, activity diagrams and sequence diagrams.

The application was developed using the React Native framework and with the PostgreSQL Database. React Native is one of the javascript frameworks that we use to develop mobile applications. React Native works by embedding bundled Javascript files in the application, and running them locally from the application that we created [9]. PostgreSQL is a relational database product that is included in the open source software category, but also has many features including: managing databases, schemas, and tables to how to query using the psql command-line [10].

The design of the application user interface is based on the eight golden rules principle. According to Ben Shneiderman, there are 8 "Golden Rules" that can be applied to interactive systems in general [11], namely strive for consistency, look for universal uses, offer informative feedback, design dialogue to produce solutions, prevent errors, allow reversal of actions which is easy, keep the user in control, reduce short-term memory load. Humans have limited capacity to process information in the short term. So designers need to reduce situations where users need to remember too many things from one display to another.

After developing e-application must be tested. Testing applications use testing methods, one of which is black box testing. Black box testing is performed in a situation when the testing program master is unconscious of the inner structure of the program. By and large, it is utilized to test the usefulness and execution of the computer program or application from the client's viewpoint. The company testing program carries out this test to see in the event that all modules and applications of the framework are returning the anticipated esteem or not [12].

C. System Development Life Cycle

Software Development Life Cycle is a process of software development which is a plan for how to develop, maintain, replace or change or improve software. Life cycle defines a methodology for improving the quality of software and the development process in general. A life cycle generally has the following stages: designing and analyzing needs, defining needs, designing product architecture, product development, product testing, and market deployment and maintenance. There are many models of SDLC such as Waterfall Model which are quite linear, V models, Spiral, Incremental, Prototyping, Concurrent, and so on [13].

In this study, researchers used the waterfall method because it has advantages such as the development of the waterfall method software that reflects the practicality of engineering, which can keep software quality maintained. Type of model that is complete so that the maintenance process is easier [14].

III. RESEARCH METHODS

The method used in designing web and mobile application Warteg Online is the waterfall method. However, this research only lasted until the design phase which was described as follows.

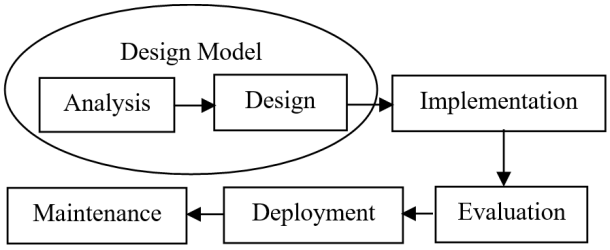

Fig. 1. Research Stages

The stages of the study consisted of:

1. Requirement Gathering and analysis - Gathering complete requirements then analyzed and defined needs that must be met by the program to be built.
2. Design, in this stage the developer will produce a whole system and determine the flow of the software to a detailed algorithm.
3. Implementation is the stage where the whole design is changed to program code. The program code generated is still in the form of modules which will be integrated into a complete system.
4. Testing, at this stage merging modules that have been made and carried out testing is done to find out whether the software that is made is in accordance with the design and function of the software there is an error or not.
5. Evaluation is the client or user tests whether the system is in accordance with what was agreed upon.
6. Deployment, this stage performs system installation.
7. Maintenance, namely the installation and repair process of the system as agreed.

VI. RESULT AND DISCUSSION

A. Software Description

This Warteg Online application is software that is used to facilitate Warteg to sell its wares and make it easier for people to order food to the warteg without having to come to the warteg. This application also concerns other entities, such as an online motorcycle taxi as a courier to deliver food to customers and warteg owners. This online Warteg application uses SSL to maintain transaction security on the API. Users will also be facilitated by the application display which is very easy to use. Users will also be facilitated in payment, many choices of payment methods.

This Warteg Online application has a variety of main functions, including: the user can choose the nearest and farthest warteg, the user can order food from anywhere and anytime, the user can schedule an order. For example you want to order for dinner but during the daytime. Food will be sent 10 minutes when

the time specified by the user, the user can see the reputation of the warteg, to determine whether the warteg is good or not, or the service is good or not, the user can log in using several options, ranging from email, telephone number or login using Google, users can also see the purchase history within 1 year, 1 month, 1 week or per day, users can also refill Balance, as a currency for purchases in this online Warteg application, in payment, users can use the balance applications, debit cards, credit cards, or using e-wallets that already work together, there is a basket feature to make it easier for users if users want to buy a lot of products, users can apply promos provided by Warteg Owner or Us on the basket page.

The characteristics in the Warteg Online application are as follows: 1) user: as a user to place an order, provide an assessment of the warteg, do a topup; 2) warteg owner: can see sales data in this application, and accept orders from users. In developing this application there are many constraints - limitations, this application can only be accessed for Mobile only, this application was built using the React Native Framework and with the PostgreSQL Database. Assumptions in this Warteg Online Application are that each Entity has access rights, in the Warteg Owner section it has the authority to accept orders and send orders, the user has the authority to order food.

B. *Software Design*

1) *Use Case Diagram*

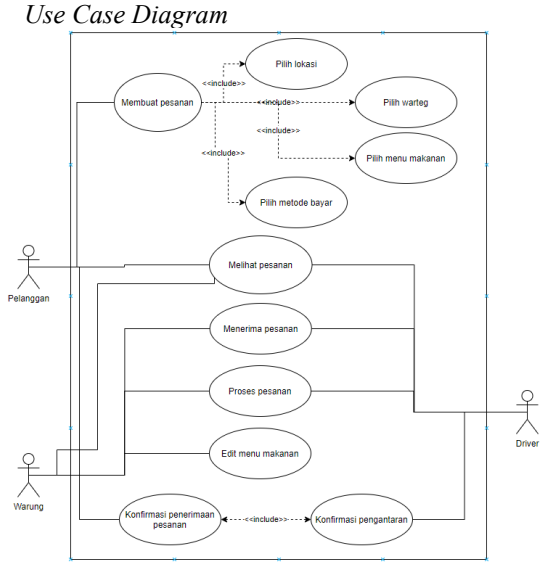

Fig. 2. Usecase Diagram

2) *Class Diagram*

Fig. 3. Class Diagram

3) *Activity Diagram*

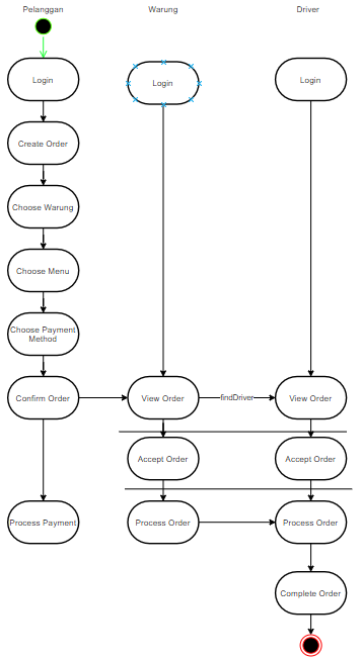

Fig. 4. Activity Diagram

4) *Sequence Diagram*

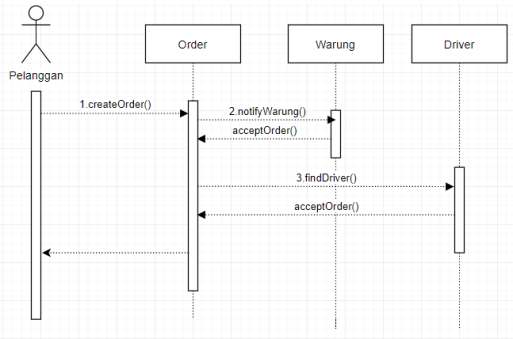

Fig. 5. Sequence Diagram

C. *Interface Design*

The online warteg application is applied to the mobile (the left) and the web (the right), as follows:

- Display login page on: the home page display of the online warteg application on the Mobile and Web views.

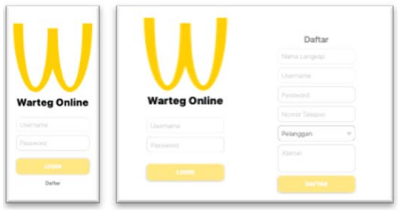

Fig. 6. Dislay Login Page

- Display dashboard page: Dashboard display page displays a menu of food, this page is accessed by the user of the Buyer in Mobile and Web views.

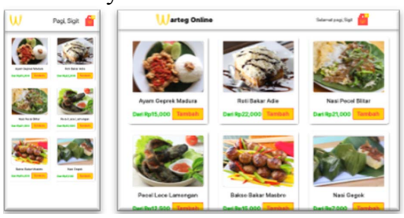

Fig. 7. Display Dashboard Page

- Display selected order page: Display Orders that have been selected, this page is accessed by the Buyer's user in Mobile and Web views.

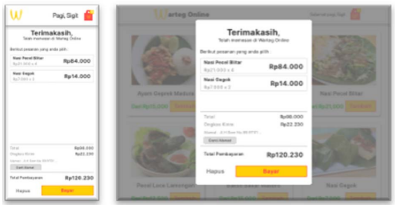

Fig. 8. Display Order Page

- Display change address page: display Change shipping address, this page is accessed by the Buyer's user in Mobile and Web views.

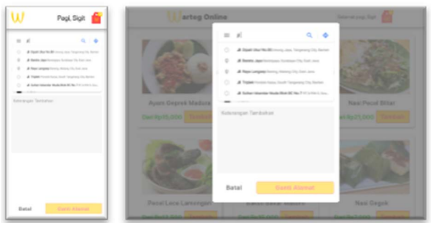

Fig. 9. Display Change Address Page

- Display payment method page: display selection of transaction payment methods, this page is accessed by the Buyer's user in Mobile and Web views.

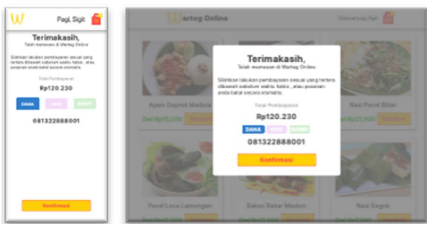

Fig. 10. Display Payment Method Page

- Display order process information page: the notification display of the order process is being made by the warteg, this page is accessed by the Buyer's user in Mobile and Web views.

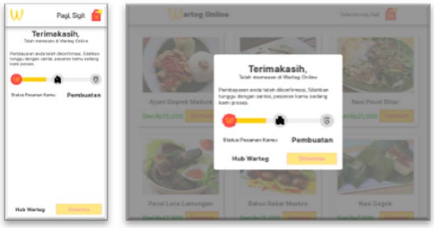

Fig. 11. Display Order Process Information Page

- Display delivery process information page: the notification display of the order process is being sent by the Driver, this page is accessed by the Buyer's user in the Mobile and Web views.

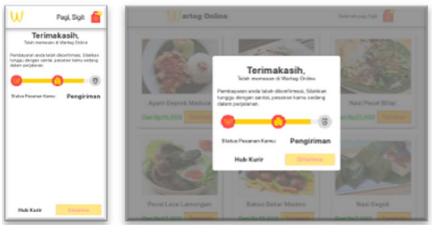

Fig. 12. Display Delivery Process Information Page

- Display order finish information page: the notification display of the order process is complete, this page is accessed by the Buyer's user in Mobile and Web views.

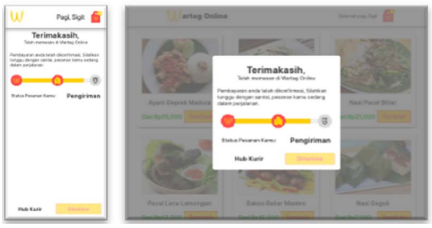

Fig. 13. Display Order Finish Process Information Page

- Display dashboard driver delivery order page: The Dashboard driver display displays delivery requests, this page is accessed by the Driver user in the Mobile and Web views.

Fig. 14. Display Dashboard Driver Delivery Order Page

- Display process order status has taken page: display status of the order process taken is still being made on warteg, this page is accessed by user Driver in Mobile and Web display.

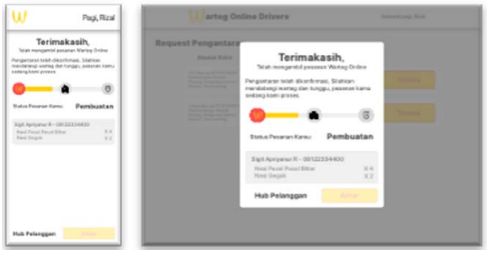

Fig. 15. Display Process Order Status Has Taken Page

- Display order ready page: the order status display is ready and ready to be delivered, this page is accessed by the Driver user in the Mobile and Web views.

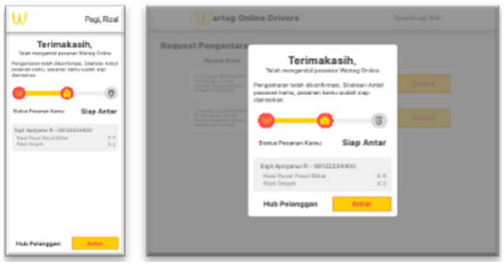

Fig. 16. Display Order Ready Page

- Display order status is being sent page: the order status display is in the delivery, this page is accessed by the Driver user in the Mobile and Web views.

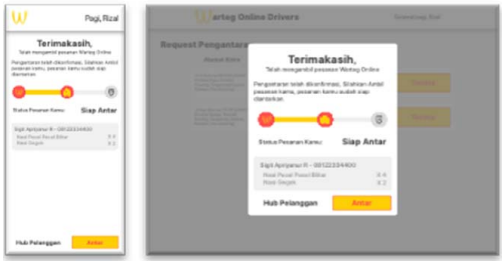

Fig. 17. Display Order Status is Being Sent Page

- Display dashboard driver without delivery request page: tampilan Dashboard Driver tanpa ada request antar, halaman ini diakses oleh user Driver dalam tampilan Mobile dan Web.

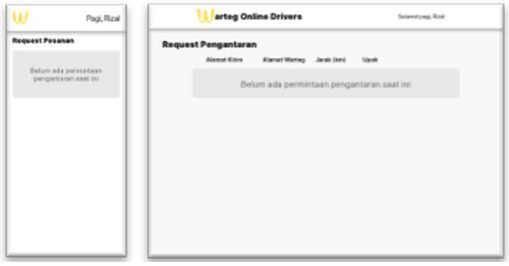

Fig. 18. Display Dashboard Driver Without Delivery Request Page

- Display dashboard food request page: dashboard display page displays a food menu, this page is accessed by the user of the Buyer in the Mobile and Web display.

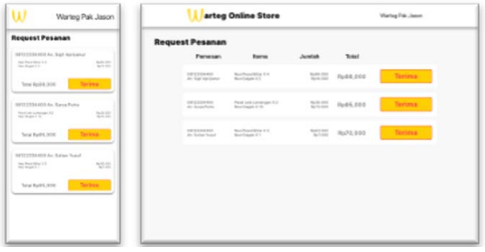

Fig. 19. Display Dashboard Food Request Page

- Display awaiting receipt page status: Display Order Status awaiting receipt, this page is accessed by Warteg users in Mobile and Web views.

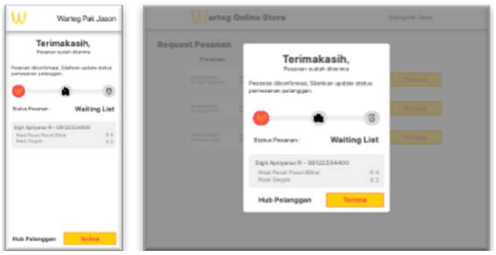

Fig. 20. Display Order Status Awaiting Receipt Page

- Display order status ready to complete page: Display Order Status ready to be completed, this page is accessed by Warteg users in Mobile and Web views.

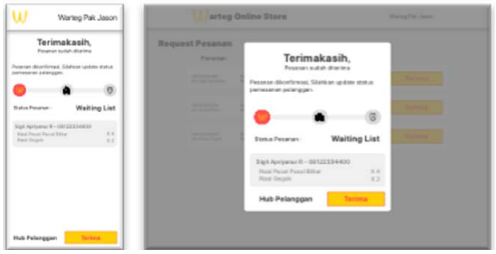

Fig. 21. Display Order Status Ready to Complete Page

- Order status display ready to complete page: Order Status display has finished and is ready to be delivered by the driver, this page is accessed by Warteg users in Mobile and Web views.

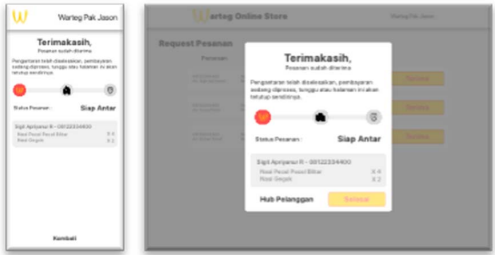

Fig. 22. Display Order Status Ready to Complete Page

- Warteg profile menu page display: Warteg Profile Menu display, this page is accessed by Warteg users in Mobile and Web views.

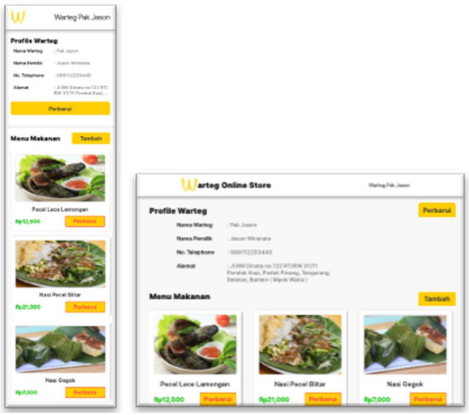

Fig. 23. Display Profile Warteg Menu Page

- Display the addition of a new food menu page: display the addition of a new food menu, this page is accessed by the Buyer's user in Mobile and Web views.

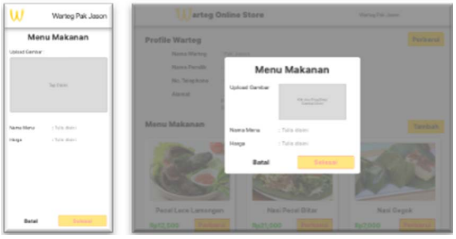

Fig. 24. Display the Addition of a New Food Menu Page

- Display change food menu page: display changes in food menu, this page is accessed by the Buyer's user in Mobile and Web views.

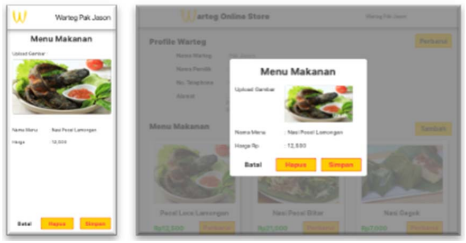

Fig. 25. Display Change Food Menu Page

IV. CONCLUSION

The conclusion that can be drawn from the concept of "Warteg Online" is to produce an application system that is capable of performing its function as an intermediary for delivering food from warteg to customers which makes it easier and empowers the entrepreneur of the stall with a client on the side of the stall. This research is limited in the process of designing an online warteg application. In the next development, the application is already running and is used by the wider community.

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