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## DESIGN OF WEB ORDERING APPLICATIONS AT PT. LABANI COMPANY USING THE WATERFALL METHOD

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**Abstract:** *In the present advanced time, requesting applications have turned into a significant apparatus for organizations to increment effectiveness and further develop client experience. The purpose of this study is to develop a product or service ordering application for businesses with the intention of enhancing the ordering process. Software development has long relied heavily on the Waterfall method. In this context, the goal of this research is to create and implement a Waterfall Method ordering application for businesses. The purpose of this ordering application is to make the process of ordering company goods or services more user-friendly and efficient. The in-depth requirements analysis phase of this study identifies the application's functional and non-functional requirements. The system architecture, user interface, and database structure are all created during the design phase. Coding the application in accordance with the approved design is part of the implementation phase. The application is then thoroughly tested to make sure it meets the specifications. The application is given to the business for use and deployment after testing is finished. It is hoped that the findings of this study will help businesses adopt the Waterfall Method for application development in practical ways. What's more, the subsequent requesting application is supposed to work on functional proficiency and client experience at the organization.*

**Keywords:** *Data, Waterfall Methods, Software Development, User Interface (UI)*

**Abstrak:** Di zaman sekarang ini, permintaan aplikasi telah menjadi alat penting bagi organisasi untuk meningkatkan efektivitas dan lebih mengembangkan pengalaman klien. Tujuan dari penelitian ini adalah untuk mengembangkan aplikasi pemesanan produk atau layanan untuk bisnis dengan tujuan untuk meningkatkan proses pemesanan. Pengembangan perangkat lunak telah lama bergantung pada metode Waterfall. Dalam konteks ini, tujuan dari penelitian ini adalah untuk membuat dan mengimplementasikan aplikasi pemesanan Metode Waterfall untuk bisnis. Tujuan dari aplikasi pemesanan ini adalah agar proses pemesanan barang atau jasa perusahaan menjadi lebih mudah digunakan dan efisien. Tahap analisis kebutuhan mendalam pada penelitian ini mengidentifikasi kebutuhan fungsional dan non-fungsional aplikasi. Arsitektur sistem, antarmuka pengguna, dan struktur database semuanya dibuat selama tahap desain. Pengkodean aplikasi sesuai dengan desain yang disetujui merupakan bagian dari tahap implementasi. Aplikasi tersebut kemudian diuji secara menyeluruh untuk memastikan memenuhi spesifikasi. Aplikasi diberikan kepada bisnis untuk digunakan dan diterapkan setelah pengujian selesai. Temuan penelitian ini diharapkan dapat membantu bisnis mengadopsi Metode Waterfall untuk pengembangan aplikasi secara praktis. Terlebih lagi, aplikasi permintaan berikutnya seharusnya bekerja pada kemahiran fungsional dan pengalaman klien di organisasi.

**Kata Kunci:** Data, Metode Waterfall, Pengembangan Perangkat Lunak, User Interface (UI)

### INTRODUCTION

The development of software applications is one of the important

aspects in maintaining the competitiveness of companies in this digital era. In this effort, companies

continue to take a more effective approach in designing and developing applications that meet their business needs. One method that has long been recognized and widely used is the waterfall method. (Hendrawan, Perwitasari, & Ritonga, 2023)(Izhari & Dhany, 2023)

In a company, schedule and budget are very decisive factors, the waterfall method is still often chosen because it provides a more accurate estimate of the time and cost required.(Hendrawan, Perwitasari, & Arifin, 2023)(Tasril, 2018)

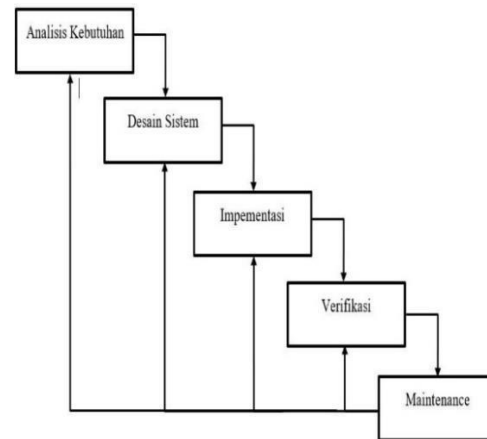
This study aims to investigate the implementation of the waterfall method in the design and development of applications at the company. By focusing on the stages of the waterfall method, namely analysis, design, implementation, testing, and maintenance. By choosing the waterfall method, the company hopes to get assurance about the quality, reliability, and availability of the application to be built.(Fachri, 2018; Rizal et al., 2022)

The results of this study are also expected to provide a better understanding of the effectiveness of the waterfall method in the context of enterprise application development, and can provide practical guidance for other companies considering the same approach. (Septian Hardinata et al., 2022; Sholeh et al., 2021; Supiyandi et al., 2022)

## RESEARCH METHODOLOGY

This research uses a development method called waterfall, which is a development method from the approach required in descriptive-qualitative research. This method is a sequential software development process method, where progress is seen as water that continues to flow down (like a waterfall) through the phases of planning, modeling, implementation (construction) and testing.

Dalam penulisan rumus dan persamaan menggunakan *equation* sebagai berikut:



**Figure 1: Research Stages**

The stages in making the application are carried out according to the waterfall method. The following is an explanation of the making of the application, namely:

### a. Needs Analysis

at this stage the author carries out a systematic process to determine the system, product, and service and ensure that the solution can be used for the desired results. these requirements are then defined in detail and serve as system specifications.(Amin et al., 2022)(Wulan Dari & Oktarini Sari, n.d.)

### b. System Design

At this stage, the system design process is needed to make the above needs in order to focus on how the system is built to meet the needs identified in the needs analysis process above. The design stage involves designing a system where we will provide solutions to problems that arise at the analysis stage.(Fauzi & Wulandari, 2020)(Wijianti & Mohammad Arif, 2023)

### c. Implementation

The implementation stage is the process of creating a design that uses real action strategies to achieve the set goals. Implementation is often used to run systems, applications, and features that are carefully designed and require careful design. implementation of a web-based ordering system can improve the operational efficiency of service companies. This system simplifies the ordering process, reduces errors, and speeds up response time to

customers.(Dewi et al., 2022)(Hasan Putra & Syahputra Novelan, n.d.; Syahputra Novelan & Putra, 2020)

d. Verification

This verification stage focuses on ensuring that the developed system is definitely in accordance with the requirements that have been set. The system must also pay attention to the desired functional and non-functional. As well as testing the software carefully and in accordance with the previous stages. The purpose of this stage is to ensure that the application meets the needs of users, reducing risks or problems when the application is used. This research includes verification techniques such as functionality tests, integration tests, and user interface tests to ensure that the application works as it should.(Sriwidya Lafu, 2021)

e. Maintenance

The maintenance stage is the stage to ensure that the software functions properly and safely. This stage can also support the long-term success of the application or system.

The maintenance stage is the final stage in the waterfall method. The finished software is run and maintenance is carried out. Maintenance is included in correcting errors that were not found in the previous step.(Fatkhurohman, n.d.)(Salem & Samad, 2021)(Bangun Sistem et al., 2019)

1. System Design

Use case diagrams help identify the main functions of a booking application and how users interact with the system. This diagram is also useful as a guide for developers to ensure that all user needs are met in the application development process. shown in figure 2 below.



Figure 2. Research Use Case Diagram

2. Activity Diagram

Activity Diagram is a diagram that describes the workflow of activities in a system. This diagram serves to model the logic in the operation process of a software system. In designing the activity diagram application also helps illustrate the stages of steps needed to achieve the desired results and goals systematically and thoroughly. Figure 3 is the Activity Diagram of the designed system.

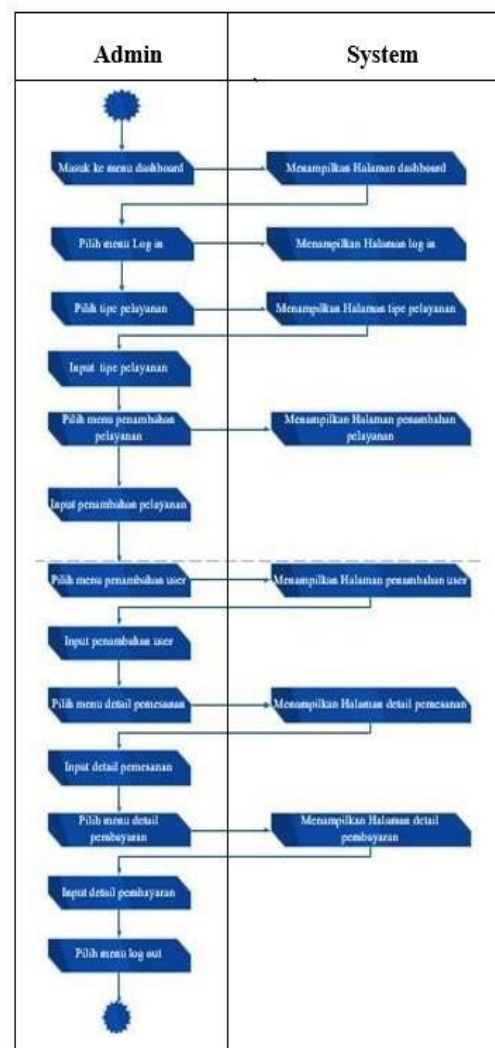
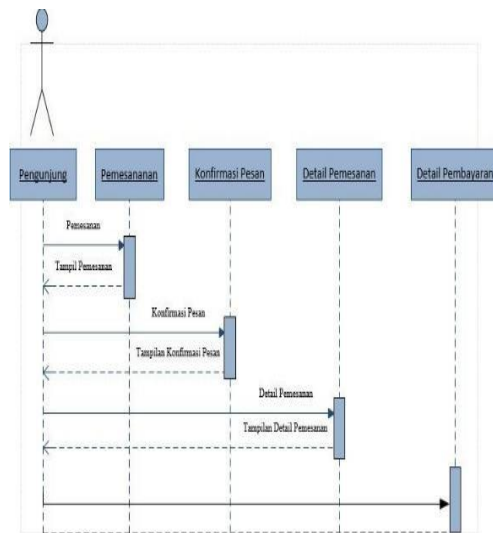


Figure 3. Activity Diagram Admin

3. Sequence Diagram

Sequence Diagram is an activity that provides a clear view of the objects in the system through the sequence of messages sent. This diagram is also helpful when it comes to designing booking applications as it allows the development team to understand the workflow and interactions between

components better. By using sequence diagrams, the development team can ensure that all business processes are well-defined and identify potential problems or inefficiencies in the workflow. Figure 5 is the sequence diagram used in this research.



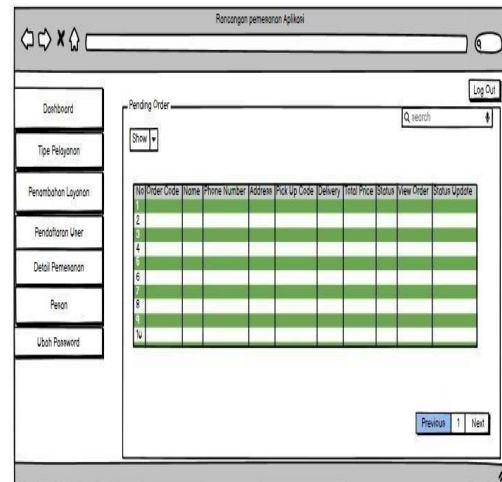
**Figure 5. Sequence Diagram**

## RESULTS AND DISCUSSION

The results and discussion are the results of the implementation of the Application Ordering Design system at PT Labani Company Using the Waterfall Method. The author conducted a trial using data provided by the company. However, before testing there are some device requirements from the information system.

### a. Admin Dashboard Design

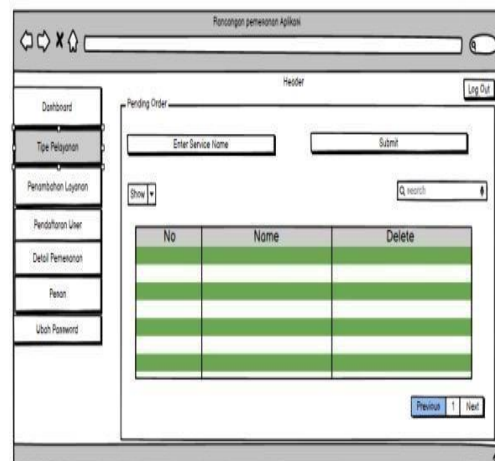
The admin dashboard menu is the main page that will be used to manage admin data, namely the service type menu, service additions, user registration, order details, messages and payment details. On this menu, the admin can change the data if there is a desired change. The dashboard design can be seen in Figure.



**Figure 6. Admin Dashboard Design**

### b. Service Type Design

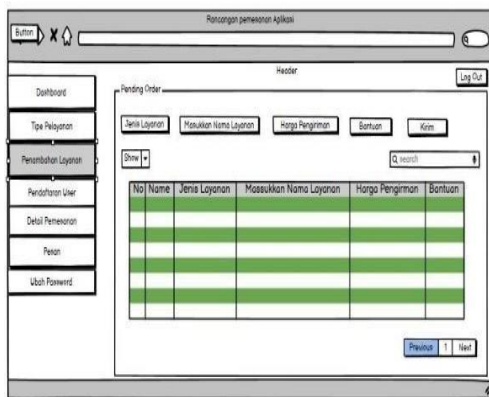
In the service type design, the admin manages what service needs are needed by customers. In this design the admin can also add any type of service that is made. For service type design can be seen in Figure 7.



**Figure 7. Admin Service Type Design**

### c. Admin Service Addition Design

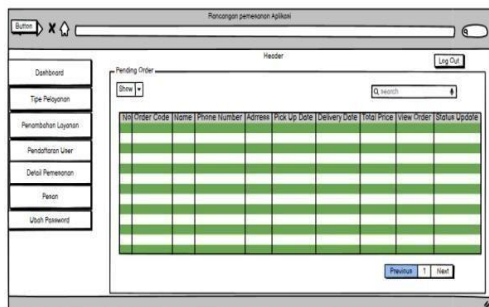
Adding services to a booking application is something that requires proper planning, development, and rigorous testing. By understanding customer needs, the app can continue to evolve and provide better services that meet user expectations. The service addition design can be seen in Figure 8.



**Figure 8. Admin Service Addition Design**

**d. Order Detail Design**

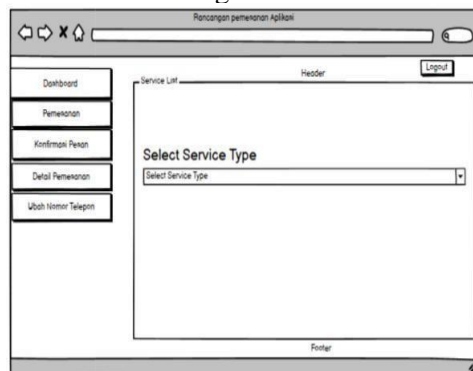
In the order details design, the admin can see the orderer's name, orderer's cellphone number, orderer's address, payment details status. For the design of additional services can be seen in Figure 9.



**Figure 9. Admin Order Detail Design**

**e. User Order Design**

In the order design, the user displays the type of order, namely regular or express delivery. This confirmation helps increase user trust and satisfaction. For the booking design can be seen in Figure 12.



**Figure 12. Order Design**

**f. User Message Confirmation Design**

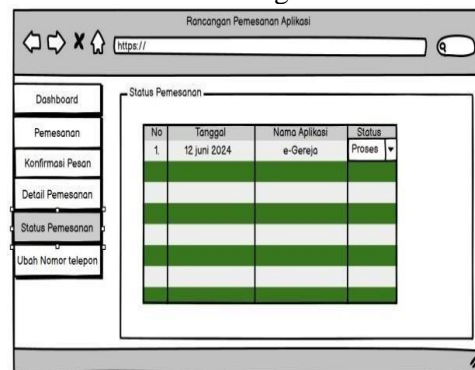
The user message confirmation design is a continuation of the user placing an order. The design of the user message confirmation in the ordering application is very important to provide certainty to the user that the order or transaction has been successfully processed. For the message confirmation design can be seen in Figure 13.



**Figure 13. User Message Confirmation Design**

**g. Order status design**

In the design of the order status is a continuation of the order confirmation from the user, namely the admin and the user knowing the status of the application order being worked on. Order status helps users know which stages have been done, starting from the initial order to completion. For the design of the order status can be seen in Figure 14.



**Figure 14. Order status design**

**h. Order Detail Design**

The order details design displays the customer's order status which will be seen directly by the admin and updates the order status. This design is useful for providing users with complete and

transparent information about their orders. For the order details design can be seen in Figure 15.

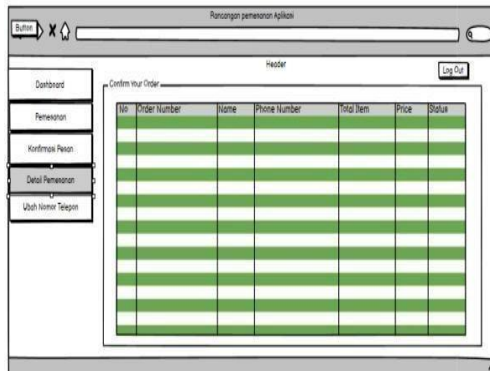


Figure 15. User Order Detail Design

## CONCLUSIONS

The design of the intra-city messaging application by applying the User Interface (UI) using the Waterfall method has successfully produced a design that prioritizes user needs and provides a positive experience. Some conclusions that can be drawn from this process are:

1. This application is able to display order information needed by users or admins through web applications and customers through mobile applications.
2. The use of the Abstract Waterfall method in user interface design has resulted in unique and interesting features.
3. The resulting system design provides a design, system architecture, and database that supports efficient ordering operations. Implementation is done by building system components in accordance with the design desired by the user. Thorough testing is carried out to ensure that the application runs as desired by the user and is error-free.
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10. The resulting system design provides a design, system architecture, and database that supports efficient ordering operations. Implementation is done by building system components in accordance with the design desired by the user. Thorough testing is carried out to ensure that the application runs as desired by the user and is error-free.
11. The use of the Waterfall method in designing web orders for PT Labani produces applications that meet user needs. The stages and well-defined structure helps ensure that each stage of the system is developed with quality and systematic details.

## LITERATURE

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