# Developing Order and Queue Web Systems Using User Centered Design in Diskominfo Mojokerto

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## ABSTRACT

The management of application development services at the Department of Communication and Informatics (Diskominfo) of Mojokerto Regency is still conducted manually, resulting in queue uncertainty and service delays. This study aims to design and implement an online order and queue management website application using the User-Centered Design (UCD) method. This method involves users at every stage of development, including planning, design, implementation, and evaluation. The application was developed using React JS (front-end), Express JS (back-end), and MySQL (database). Evaluation was conducted through usability testing involving 21 respondents from Regional Government Organizations (OPD) of Mojokerto Regency. The results show an average System Usability Scale (SUS) score of 79.41, exceeding the minimum standard score of 68. This indicates that the application is easy to use, efficient, and aligned with user needs.

## 1. INTRODUCTION

The development of information technology requires government institutions to provide services that are faster, more transparent, and more efficient. The Department of Communication and Informatics (Diskominfo) of Mojokerto Regency plays a crucial role in fulfilling application development requests submitted by various Regional Government Organizations (OPD). However, the application submission process has been conducted manually through formal letters or face-to-face meetings. As a result, OPDs often experience uncertainty regarding queue positions and estimated completion times, which has even led some OPDs to use external (outsourcing) services.

To address these issues, an online order and queue management website application is required to provide clear information and improve service efficiency. This study applies the User-Centered Design (UCD) method, as it emphasizes user needs and comfort throughout the development process.

The research problem addressed in this study is how to design and implement an online order and queue management website application that meets user requirements at the Department of Communication and Informatics of Mojokerto Regency using the UCD method. The objective of this research is to develop an application that is efficient, user-friendly, and capable of enhancing user satisfaction.

The User-Centered Design (UCD) method was selected because it focuses on user involvement from the initial design phase through evaluation, thereby producing an application that better aligns with user needs and is easy to use. This study employs the System Usability Scale (SUS) as a quantitative evaluation method to measure the usability level of the application, with a minimum SUS score of $\geq 68$ considered acceptable.

## 2. METHODS

This study was conducted using the User-Centered Design (UCD) approach, which actively involves users at every stage of the development process. tahap.

### 2.1 Planning

The planning stage began with user identification, namely Regional Government Organizations (OPD) as application request and Diskominfo administrators as queue managers. Requirement data were collected through interviews, observation of the existing manual processes, and analysis of related documents. The outcome of this stage was a list of functional and non-functional requirements.

### 2.2 Design

Based on the collected requirements, the system was designed using various modeling tools, including use case diagrams, activity diagrams, sequence diagrams, and class diagrams. In addition, a user interface (UI) design was created using Figma to produce a prototype. This design served as a reference for implementation and as an initial evaluation tool for users.

### 2.3 Implementation

The implementation stage involved developing the application using React JS for the front-end, Express JS for the back-end, and MySQL as the database. System integration was carried out through a REST API. The application was tested locally before proceeding to the evaluation stage.

### 2.4 Evaluation

Evaluation was conducted using usability testing. The instrument used was a Likert-scale questionnaire (1–5), which was converted into a System Usability Scale (SUS) score ranging from 0 to 100. The acceptance standard applied was SUS $\geq 68$, indicating that the application has a good level of usability.

## 3. RESEARCH RESULTS

This chapter presents the results of the application development and the discussion based on the UCD stages. The explanation is divided into several subsections for clarity and systematic presentation.

### 3.1 Application Feature Design Results

The developed application involves three main actors: OPD users, administrators, and the Diskominfo Person in Charge.
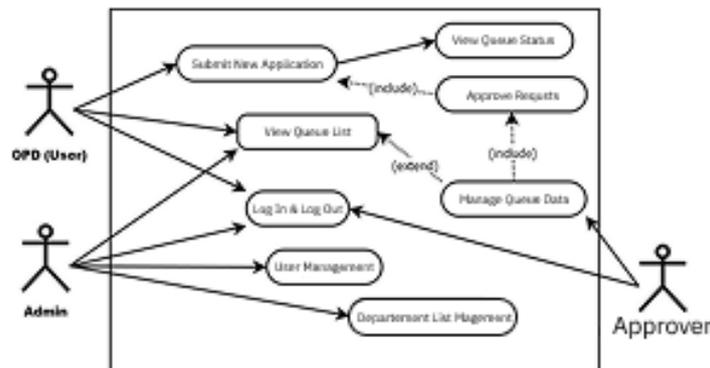


Figure 1. Use Case Diagram

1. OPD users can log in, submit application requests, and monitor queue status.
2. Diskominfo administrators can manage user data.
3. Approver can approve application requests submitted by users.

The main features available include login/logout, application submission, queue monitoring, request management, and an information dashboard. With these features, the request process becomes more transparent and efficient compared to the previous manual system.

### 3.2 System Implementation

The implementation stage involved developing three main pages: the homepage, login page, and dashboard. The interface was designed to be simple with easy-to-understand navigation. Integration between the front-end and back-end was carried out using a REST API, enabling real-time data processing.

### 3.3 Evaluation Results

The application was evaluated through black-box testing and usability testing.

1. **Black-box testing** showed that all features functioned according to the design specifications.

2. **Usability testing** involving 21 respondents resulted in an average System Usability Scale (SUS) score of 79.41. The highest score was obtained for the navigation ease indicator (81.25), while the lowest score was for feature clarity (77).

As shown in Table 1, the average SUS score above 68 indicates that the application has a good level of usability. Respondents expressed satisfaction with the application and willingness to use it if officially implemented.

Table 1. Tabel SUS

| No | Statement Indicator | Mean (Likert Scale 1–5) | SUS Score | Category |
|----|---------------------|-------------------------|-----------|----------|
| 1 | The application interface is attractive and easy to understand | 4,17 | 79,25 | Good |
| 2 | Menu navigation and features are easy to use | 4,25 | 81,25 | Very Good |
| 3 | I had no difficulty understanding the function of each feature | 4,08 | 77,00 | Good |
| 4 | The ordering or queue-taking process can be completed smoothly | 4,25 | 81,25 | Very Good |
| 5 | The application response time is sufficiently fast | 4,17 | 79,25 | Good |
| 6 | The information displayed (order status, queue number, etc.) is accurate and clear | 4,17 | 79,25 | Good |
| 7 | I am satisfied using this application | 4,17 | 79,25 | Good |
| 8 | I am willing to use this application if officially implemented | 4,25 | 81,25 | Very Good |
| 9 | I would recommend this application to others | 4,08 | 77,00 | Good |
| **Overall Average** | | **4,17** | **79,41** | **Good Usability** |

## 3.4 Discussion

The results indicate that the User-Centered Design (UCD) method successfully produced an application aligned with user needs. User involvement from the early stages contributed to a more relevant design. Furthermore, the high SUS score demonstrates that the application is easy to understand and use.

However, several suggestions were provided by users, including:

1. Adding an estimated completion time feature for application requests.
2. Adding a business process description field in the request submission form.

These suggestions serve as a basis for further development to enhance the application's usefulness and functionality.

## CONCLUSION

Based on the research findings, it can be concluded that the online order and queue management website application was successfully designed and implemented using the User-Centered Design (UCD) method at the Department of Communication and Informatics

(Diskominfo) of Mojokerto Regency. The application improves service efficiency and transparency and achieved a System Usability Scale (SUS) score of 79.41, indicating a high level of user satisfaction.

Therefore, the application is considered feasible for implementation within the Diskominfo of Mojokerto Regency. Future development may focus on adding an estimated completion time feature and a business process description field to further enhance the system's functionality.

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