# Web-Based Video Conference Equipment Borrowing Application

*(Case Study: Department of Communication, Informatics, and Statistics of Bengkalis Regency)*

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**Abstract**

*This web-based video conference equipment borrowing application is designed to streamline the borrowing process at the Department of Communication, Informatics, and Statistics of Bengkalis Regency, which was previously done manually. The system was developed using the Waterfall method, which includes problem identification, design, implementation, and testing stages. The application is built using the Laravel 12 framework and MySQL database. The main features of this system include equipment data management, borrowing and returning processes, scheduling, and borrower data archiving, all of which are integrated and accessible online. Testing showed that the application runs well on various devices and browsers and is responsive. With this application, the borrowing administration process becomes faster, more efficient, accurate, and helps improve the admin's performance in presenting data and reports.*

*Keywords: Borrowing*, Video *Conference, Website, Laravel,* DISKOMINFOTIK.

## 1. INTRODUCTION

The Department of Communication, Informatics, and Statistics of Bengkalis Regency is a regional government agency responsible for managing communication, information technology, and statistical data to support public services and governance. The strategic role of DISKOMINFOTIK includes developing e-government systems, managing regional statistical data, and maintaining integrated information technology infrastructure. In the digital era, the existence of DISKOMINFOTIK is essential to ensure transparency, efficiency, and innovation in technology-based public services that effectively meet the needs of society.

As information and communication technology continues to advance, institutions capable of managing their assets or equipment properly can ensure the continuity, accuracy, and organization of their inventory records. Equipment inventory plays a crucial role in an institution because it allows for effective management of available tools and resources. Therefore, an institution must manage its equipment inventory efficiently and effectively to align with the objectives of asset and equipment management.

The process of borrowing video conference equipment at DISKOMINFOTIK Bengkalis is still carried out manually, where users must submit requests directly through physical forms or verbal communication. Video conferencing is a technology that enables communication of data, voice, and images, allowing users to hold real-time conversations without being physically present in the same location. A web-based video conference refers to video communication available through a website. Web video conferencing is often considered one-way communication, where only the speaker can send videos and files, typically used in seminars or presentations. Video conferencing has become an effective telecommunication tool that can be used anywhere, even across the globe.

A web-based application is highly important because it can be accessed anytime and anywhere through internet-connected devices without requiring special installation. A website is a collection of pages that display various types of digital information such as text, images, animations, audio, video, or a combination of these formats.

Borrowing equipment or items is a common activity, both in everyday life and within organizations or institutions. In most cases, borrowing equipment in an institution is necessary to support internal and external activities, ensuring smooth and well-planned operations. The inventory and recording process of video conference equipment borrowing at the Department of Communication, Informatics, and Statistics of Bengkalis Regency is still manual, making it prone to errors, data loss, and inefficiency. Therefore, system digitalization is necessary to accelerate and simplify management. Inventory management involves recording data related to institutional assets or items, including procurement, placement, transfer, and maintenance activities.

In this study, the software development method used is the Waterfall method. The Waterfall model, also known as the classical life cycle model, is a systematic approach to software development that proceeds sequentially through each stage. This model is used because each development phase must be completed before moving to the next, minimizing repetition and ensuring optimal results.

Based on several previous case studies, the application of web-based information technology has proven effective in addressing challenges in asset management and equipment borrowing across various institutions. Manual systems often cause data irregularities, recording errors, and low operational efficiency. Web-based solutions, such as those developed using the Waterfall method and modern frameworks, can automate processes, accelerate data management, enhance accessibility, and provide accurate real-time reports.

Considering the similar problems faced by the Department of Communication, Informatics, and Statistics of Bengkalis Regency in managing and borrowing video conference equipment, the development of a "Web-Based Video Conference Equipment Borrowing Application" is a relevant solution. This system is designed to replace the manual process with a more structured, faster, and efficient approach to support the department's operations while improving transparency and accuracy in equipment management.

## 2. LITERATURE REVIEW

Previous research serves as a comparative activity between the current study and prior studies. This aims to identify similarities and differences, as well as to understand the strengths and weaknesses of existing research to enhance the current work.

A study conducted by Darmansah and Yeyi Gusla Nengsih (2022) entitled *"Development of a Web-Based Video Conference Information System Using the Rapid Application Development Method"* resulted in the development of a web-based system to support video conferencing needs at the Department of Communication and Informatics of Yogyakarta. The method used was Rapid Application Development (RAD), which focuses on rapid prototype development through iterative user feedback. The difference between this research and the present study lies in its focus—Darmansah and Nengsih concentrated on developing an internal video conference system for official meetings, while the present study proposes a web-based video conference equipment borrowing information system for inventory and equipment management. The similarity between both studies is the use of web-based development methods, UML tools, and black-box testing techniques.

A study conducted by Asra Mulya, Syarli, and Muhammad Assidiq (2020) titled *"Web-Based Official Vehicle Borrowing Information System"* developed a website system to manage official vehicle borrowing data in Polewali Mandar Regency. The Waterfall method was used, with data collection through observation and interviews. The system includes multi-level login features, vehicle data management, and reporting functions. The difference

between this research and the present study lies in the focus—Mulya et al. focused on vehicle borrowing, whereas the current research focuses on video conference equipment borrowing. However, both studies share similarities in applying a web-based approach and using black-box testing to ensure system functionality.

Another study conducted by Yuli Apriyanti and Tata Sutabri (2023) titled *"Design and Development of an Android-Based Video Conference Inventory Application in the E-Government Division of the Department of Communication and Informatics, Muara Enim Regency"* resulted in the development of an Android-based application to manage video conference equipment inventory. The system was designed to replace manual recording processes prone to data loss and information inaccuracies. The method used was SDLC Waterfall, supported by UML tools and a MySQL database. The difference between their research and the present study lies in the platform—Apriyanti and Sutabri developed an Android-based system, while the present study focuses on a web-based application. The similarity is that both aim to improve the efficiency of video conference equipment management and reduce human errors in recording and monitoring processes.

Lastly, Darmansah (2021) conducted a study titled *"Design and Development of a Web-Based Video Conference Application."* The result was a web-based application designed to support video conference activities efficiently and without location limitations. The system was developed to replace third-party applications with a more secure and integrated solution tailored for organizational needs. The difference between this previous study and the present one is that the former focused on the development of the video conference tool itself, whereas the current study focuses on a video conference equipment borrowing system. Both studies share the similarity of utilizing web-based technology to improve work efficiency and support organizational operations.

## 3. RESEARCH METHOD

This study is an applied research with a descriptive approach aimed at developing a web-based video conference equipment borrowing application to manage the processes of borrowing, returning, equipment availability, and centralized reporting efficiently.

The research was conducted at the Department of Communication, Informatics, and Statistics (DISKOMINFOTIK) of Bengkalis Regency, selected because the previous equipment borrowing and recording system was still performed manually. This manual process often caused difficulties in data retrieval, validation of equipment availability, and report preparation.

Data for this study were collected through direct interviews with field officers, department heads, and division heads. The interviews covered information related to the types and quantities of equipment, borrowing procedures, and management requirements.

The research tools used consisted of both hardware and software components. The hardware used was a Lenovo ThinkPad laptop equipped with an Intel® Core™ i5 processor and 8 GB of RAM. The software used included Windows 10 Pro as the operating system, Laravel 11 as the development framework, Laragon as the local server, MySQL as the database management system, Visual Studio Code as the text editor, and Google Chrome as the browser for application testing.

## 4. RESULTS AND DISCUSSION

This research resulted in a Web-Based Video Conference Equipment Borrowing Application,which can be accessed via https://econferencediskominfo.teknikinformatika6a.online/register. The application is designed to simplify and improve the efficiency of the borrowing process by providing features that allow the admin to input equipment data along with its specifications, approve or reject requests based on availability and schedule, manage borrowing schedules

systematically, archive borrowing history, and add and manage detailed data of regional devices. The following are the main pages of the Web-Based Video Conference Equipment Borrowing Application.

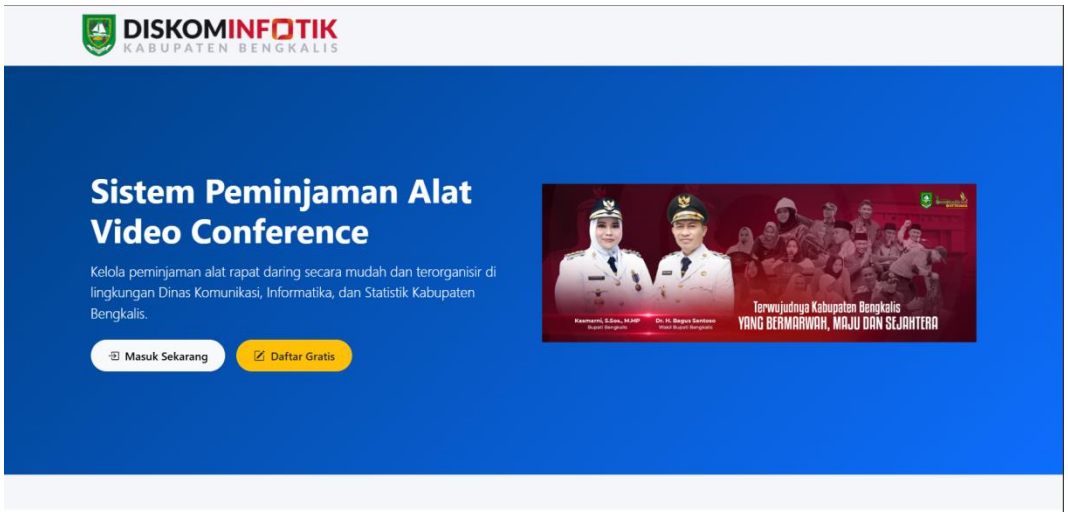


Figure 1. Main Page (Home)

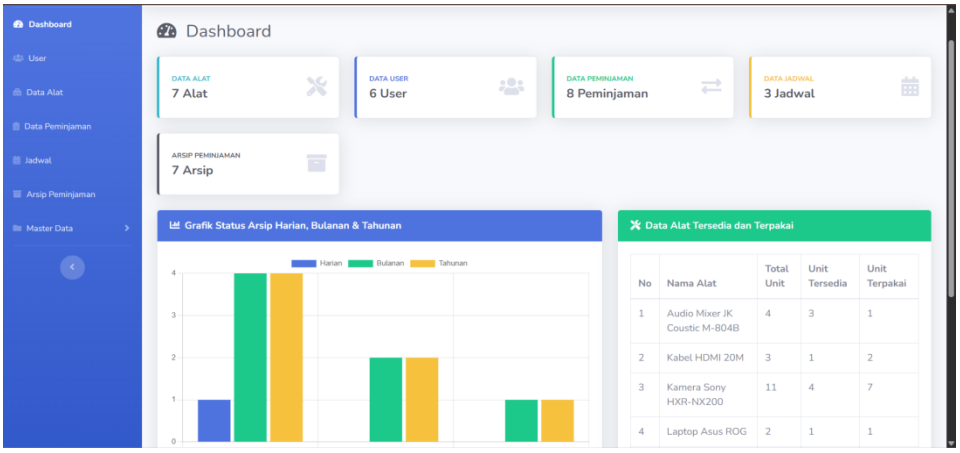


Figure 2. Admin Page

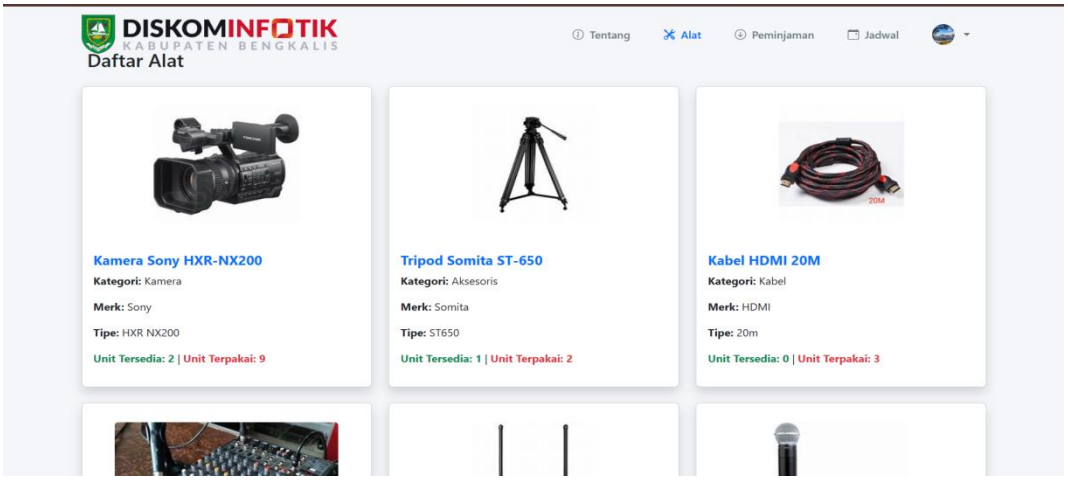


Figure 3. User Page

## 5. CONCLUSION AND SUGGESTIONS

Based on the results and testing of the Web-Based Video Conference Equipment Borrowing Application at the Department of Communication, Informatics, and Statistics of Bengkalis Regency, it can be concluded that this application successfully assists the administrative process, especially in managing borrowing, returning, and reporting data that were previously handled manually.

The implementation of a web-based system provides easy access for users from various devices and locations as long as they are connected to the internet. The application is also responsive and compatible with various popular browsers, supporting the smooth operation of key functions such as borrowing records, equipment data management, scheduling, and data archiving. From the user's (government department's) perspective, this application simplifies the process of submitting requests and checking borrowing status without having to visit the office, while also improving administrative efficiency through faster, more accurate, and well-documented processes.

As a follow-up to the application's development, several improvement suggestions can be considered for future versions. First, it is recommended to add a master data feature that includes equipment categories, brands, and technical specifications to simplify data input and maintain data consistency. Second, an admin profile feature should be added so that each admin's identity—such as full name, position, and profile picture—can be clearly displayed both on the dashboard and in the activity log. Third, the development of an activity log or usage history feature is highly recommended for both admins and users as a tool for monitoring and tracking system activities in case of errors or misuse.

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