



## Development of a Web-Based Information System in Kebondowo Village

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### Abstract

This research aims to develop a web-based information system at the Kebondowo village office. This research was conducted by analyzing the extent to which the Kebondowo Village Office uses an effective information system. This system development uses PHP, HTML and MySQL programming languages with the waterfall model method with several stages, namely requirements analysis, design, development, testing, and maintenance. The results of the study can be concluded that the Kebondowo Village Information System that can support activities in Kebondowo Village to the community. The Kebondowo Village website has been designed and implemented to improve the quality of public services by presenting information about profiles, announcements, and village activity agendas. This initiative makes it easier for Kebondowo Village Officials to deliver information directly without intermediaries, as well as providing convenience for residents to access and receive accurate information, including about social assistance programs and other activity agendas in the village.

**Keywords:** Information System, MySQL, PHP, Village, Waterfall

## 1. INTRODUCTION

Kebondowo Village, located in Banyubiru Sub-district, Semarang Regency, is a community rich in cultural heritage and natural attractions. In an era where information technology plays an important role in governance, access to timely and relevant information is essential for community participation in local government processes. The development of effective village information systems is critical to improving public services and strengthening village governance. These systems facilitate access to information, encourage citizen engagement, and improve administrative efficiency (Maipita et al., 2023) (Sulistiyowati & Dibyorin, 2013). Websites can provide profiles, activity programs, and budget reports, which contribute to good governance (Suryani, 2019). The implementation of village information systems empowers citizens to take an active role in local governance, thus promoting a more informed and engaged society (Maipita et al., 2023).

Kebondowo Village, located in Banyubiru District, Semarang Regency, is one example of a village that needs a good information system to improve the quality of life of its people. Kebondowo village's current information system has limitations. The existing website only presents information about the tourism area and its results, without presenting other important information such as new announcements, village profile, and public services. This limitation causes the community to come directly to the village office to get the information they need, which wastes time and money. In addition, the absence of login and data management features makes the village information system vulnerable to errors and data loss.

Web-based village information systems can improve the quality of public services and access to information for villagers (Mardinata et al., 2023). Features commonly available include village profiles, correspondence services, announcements, and up-to-date information on village activities (Mardinata et al., 2023). The implementation of this system can optimize village services, increase community participation, and promote village potential (Mardinata et al., 2023). For effective management, the village government needs to coordinate with other parties such as youth organizations or technology communities (Fadli & Wolo, 2023). With good management, the village information system can present accurate and up-to-date information, and can be accessed by the wider community.

This research aims to develop a more effective and efficient web-based village information system in Kebondowo Village. The system is expected to present accurate and up-to-date information about the village profile, public services, new announcements, and others. Thus, the community can easily access the information they need and improve their quality of life. The findings of this research are expected to provide valuable insights into the design and implementation of information systems for local governance in Indonesia.

## **2. LITERATURE REVIEW**

### **Information System**

An information system is a method for collecting, storing, transferring, and analyzing data and storing, transferring, analyzing, and analyzing data in a way that enables an organization to achieve its goals (Imam et al., 2023). Information systems consist of physical and non-physical components that work together to convert data into useful information (Fadli & Wolo, 2023). This system involves the utilization of people, documents, technology, and procedures to solve business problems and support decision making (Heryana et al., 2019).

### **Website Profile**

Profile websites are online representations of individuals, companies or entities on the internet, providing information about their identity, activities and interests (Muttaqin et al., 2023). Profile websites serve as a means to establish an online presence, expand networks, and communicate with a wider audience. Company profile websites usually include sections such as “about us”, “clients”, “services”, “portfolio”, and “contact us” (Muttaqin et al., 2023).

### **MySQL**

MySQL is a popular open-source relational database management system (DBMS) used for handling large amounts of data efficiently (Uzayr, 2022) (Wahyudi et al., 2022). It is

designed to work with various platforms and supports multiple storage engines, making it versatile for web-based applications (Uzayr, 2022). MySQL's popularity stems from its speed, scalability, and ease of use compared to other database systems (Uzayr, 2022). MySQL's open-source nature allows for free usage, making it an attractive option for various applications (Wahyudi et al., 2022).

### **PHP (Hypertext Preprocessor)**

PHP (Hypertext Preprocessor) is a server-side scripting language widely used for web development. This language allows developers to create dynamic web pages efficiently (Mubarak, 2019). The use of PHP frameworks can significantly speed up web application development and improve stability compared to traditional PHP coding methods (Saroni & Mulyanti, 2020). When selecting a framework for a project, it is important to consider factors such as performance requirements and project scope to ensure optimal results (Saroni & Mulyanti, 2020).

### **XAMPP**

XAMPP is an open-source software package that combines several programs to create a web server environment, this package includes the Apache web server, MySQL/MariaDB database, and PHP scripting language (Wahyudi et al., 2022). XAMPP supports various operating systems and is widely used because of its ease of management (Wahyudi et al., 2022). XAMPP is used in the creation of web-based information systems, such as library management systems, to improve data processing efficiency and reduce manual errors (Wahyudi et al., 2022).

## **3. METHODS**

The development of a system through the Software development life cycle (SDLC) is a step-by-step process for building information systems and methods for developing information systems. The SDLC that is most often utilized in system development is waterfall SDLC. The stages of the waterfall model consist of data preparation, requirements, design, development, testing, implementation and maintenance. The type of data collected by conducting techniques including interviews, observations and from the Kebondowo Village Profile book. This technique is carried out directly at the Kebondowo Village Office including questions and answers by the Village Head and Kebondowo Village Office officials in presenting information, profiles and administrative systems that are already available and running, then can be analyzed and can be carried out system development to answer the formulation of problems that have been categorized. Respondents involved in data collection

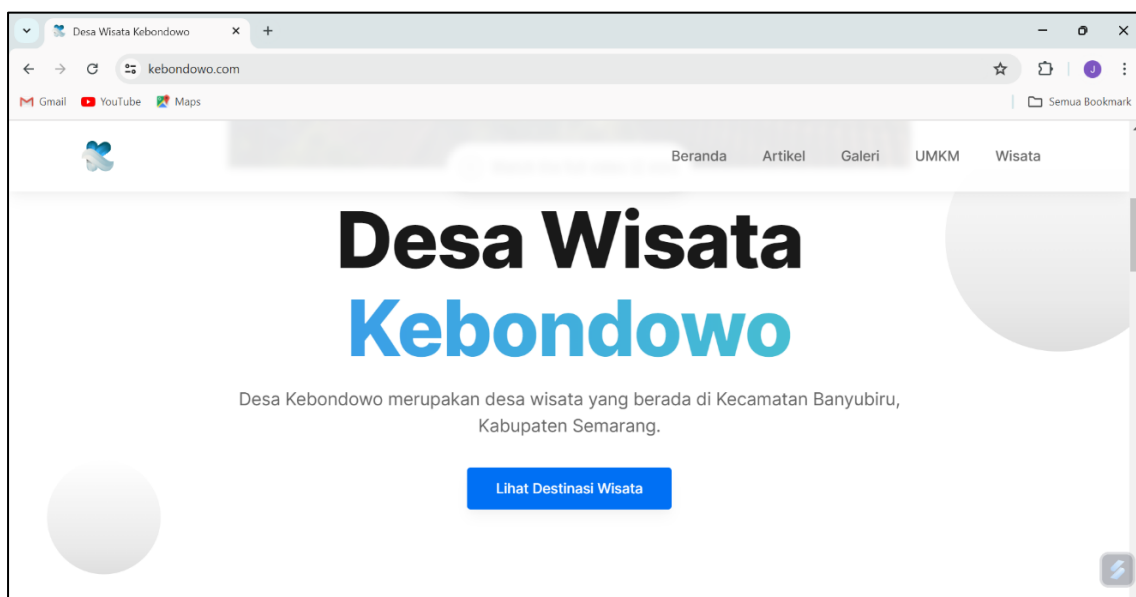
are 2 media experts 2 partners of the Kebondowo Village Office and 3 devices. The results of the research were then analyzed and described. During this technique, documentation related to the research process is carried out well.

#### 4. RESULTS

In the system that has been running in the Kebondowo Village Office only presents related to existing tourist areas and the results of these tourist areas. So that the community does not get any information related to the government system of the Kebondowo Village Office. People who do not know the latest information from the office are required to go to the village office and ask for the information.

The features on the Kebondowo Village website that are already running are as follows:

- Home : A web page that displays and presents the profile of Kebondowo Village which consists of a village map, village tourism, village products, village location, and a photo of the Head of Kebondowo Village.
- Article : A web page that displays and presents tourism articles and news as well as activities of Kebondowo Village.
- Gallery : A web page that displays and presents photos of tourism locations and activities of Kebondowo Village.
- MSMEs : A web page that displays and presents umkm in Kebondowo Village.
- Tourism : A web page that displays and presents tourism destinations in Kebondowo Village.

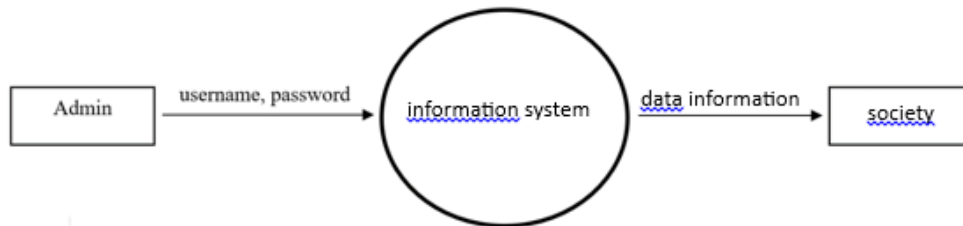


**Figure 1:** Current System

The disadvantages of analyzing the current system are that there is no login feature or feature for users to add new data and edit and delete data and the website does not present and display important information, such as new announcement information.

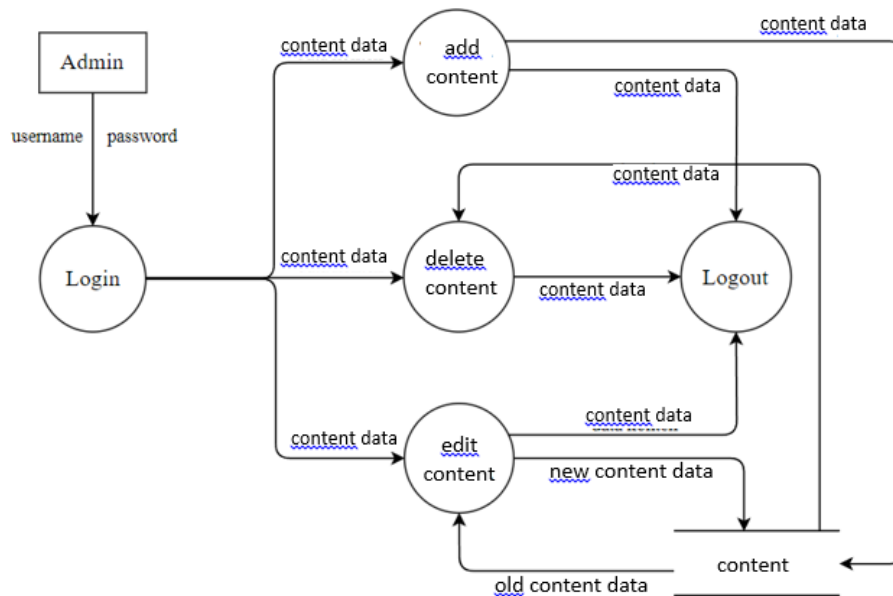
From the analysis of the system that is already running, then the researcher makes a proposed system for designing website development at the Kebondowo Village Office using DFD as follows:

### 1. DFD Design of Kebondowo Village Website Design



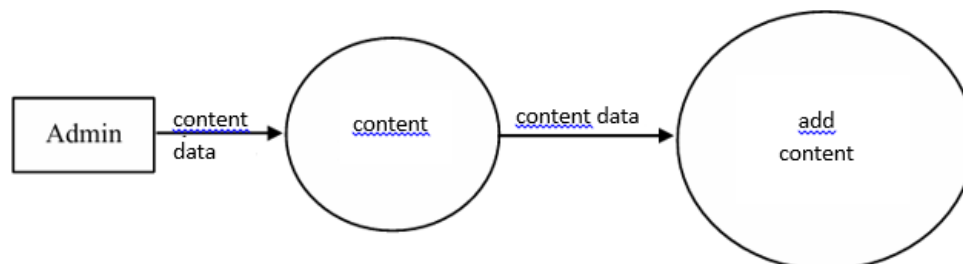
**Figure 2:** DFD Level 0

### 2. Kebondowo Village Website Design DFD level 1



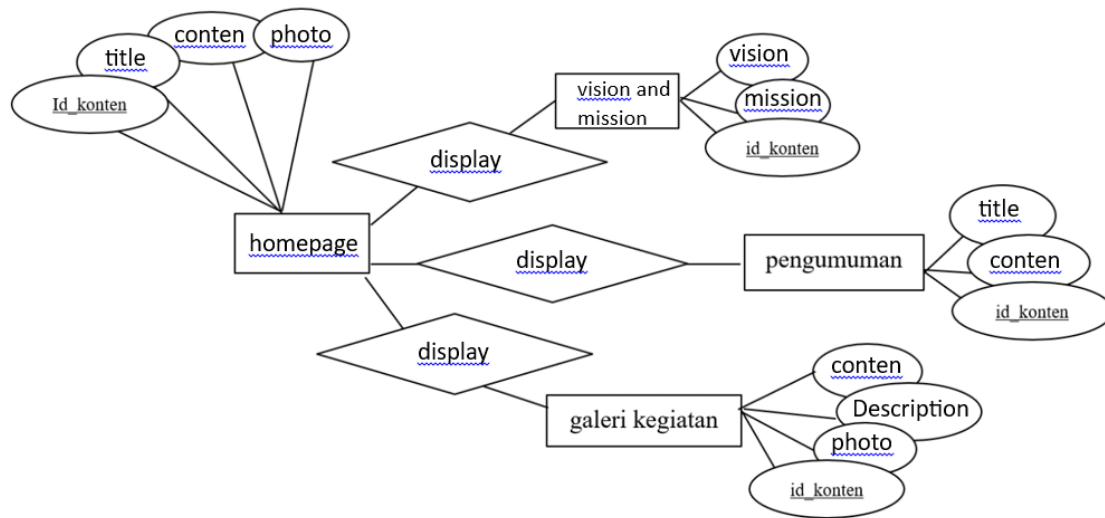
**Figure 3:** DFD Level 1

### 3. Kebondowo Village Website Design DFD level 2



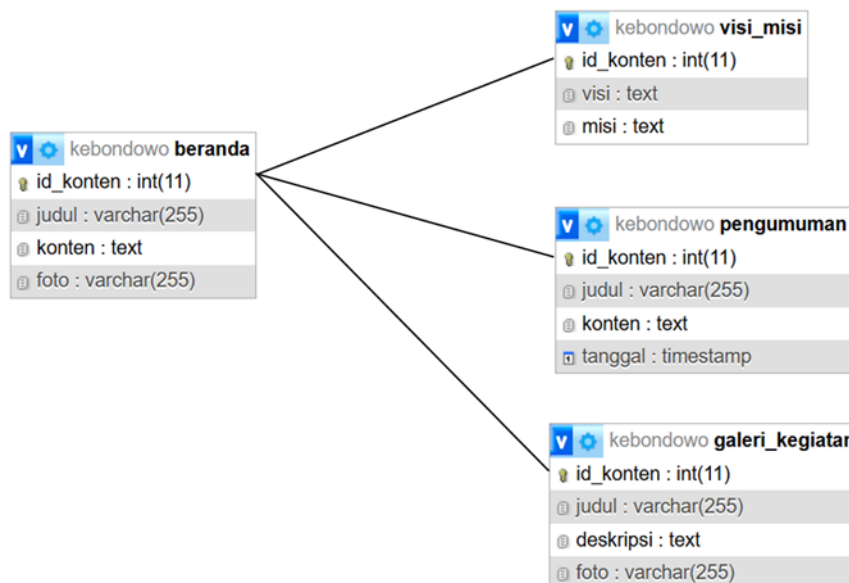
**Figure 4:** DFD Level 2

#### 4. Proposed ERD Design



**Figure 5:** ERD of Proposed System

Desain database merupakan langkah krusial dalam pengembangan Sistem Informasi Desa Kebondowo berbasis web. Dalam tahap ini, struktur data akan dikembangkan untuk memastikan bahwa semua informasi yang diperlukan dapat tersimpan dengan baik dan diakses secara efisien.



**Figure 6:** Database Design

The implementation design of the web-based Kebondowo Village Information System includes a home page, admin panel, announcement page and activity gallery page.

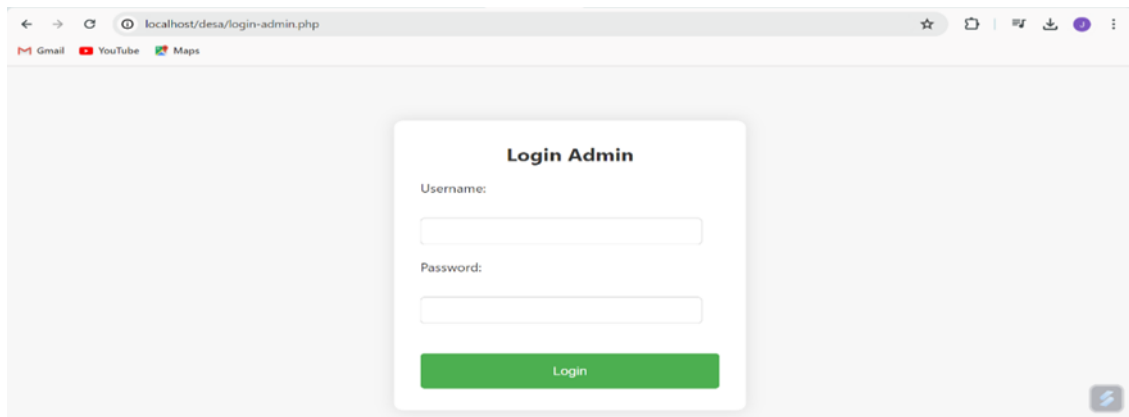


Figure 7: Database Design and Database Design

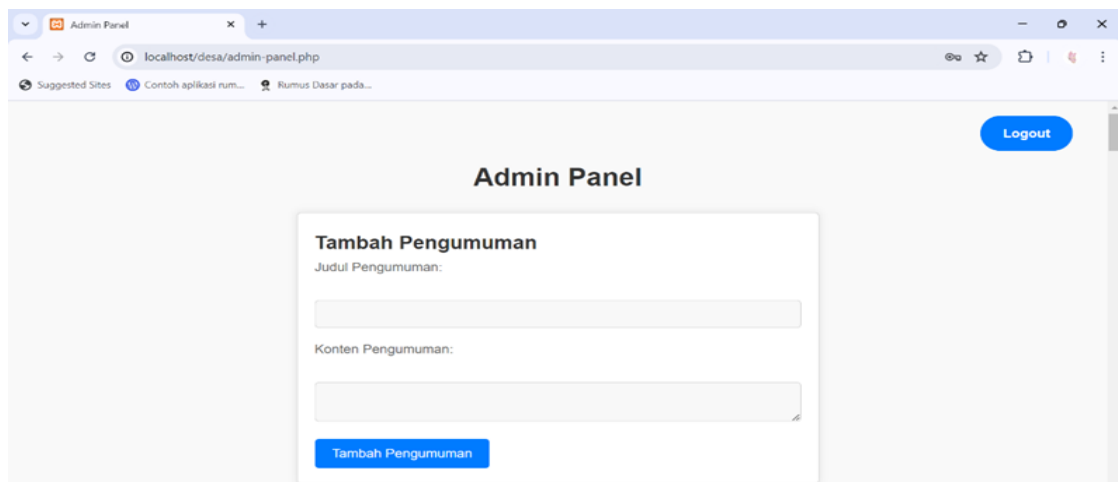


Figure 8: Admin Panel Page

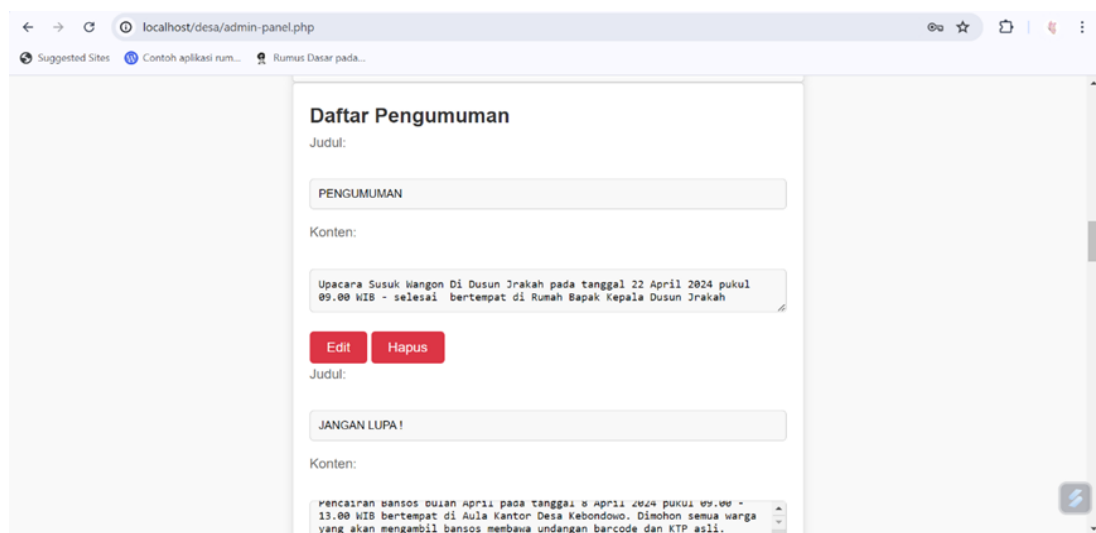


Figure 9: Admin Panel Features

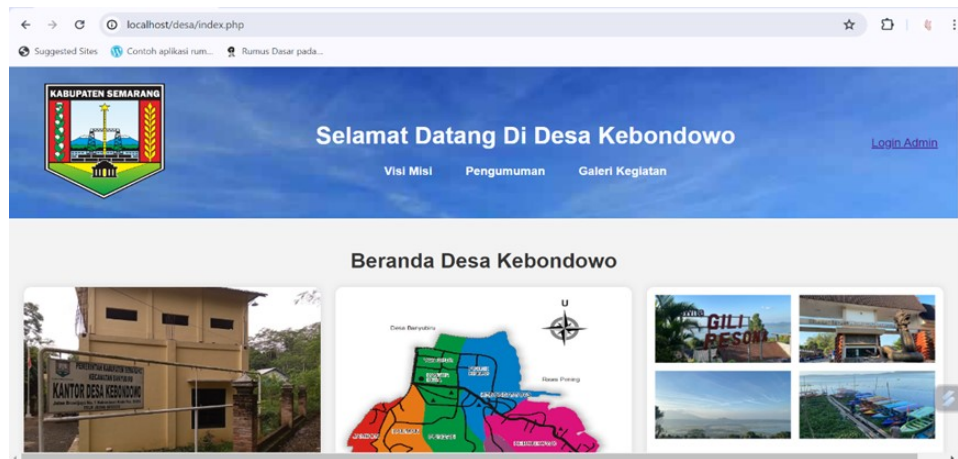


Figure 10: Home Page

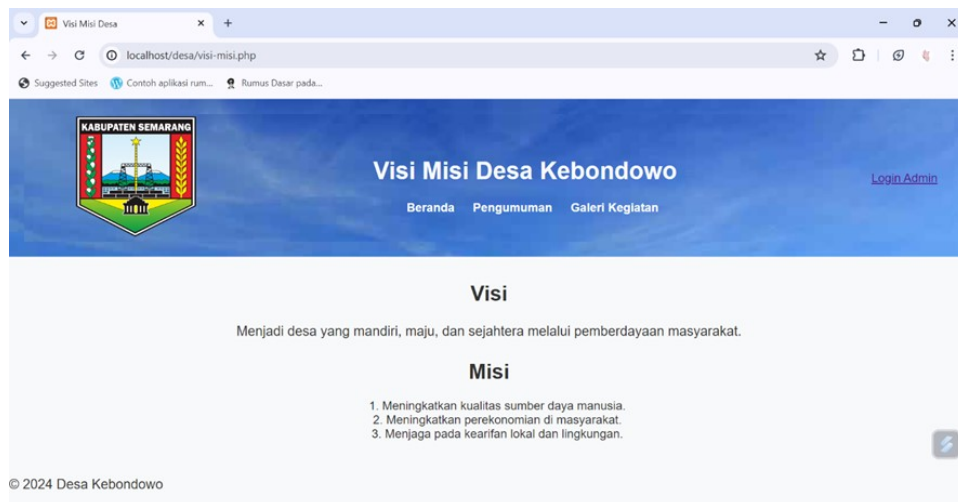
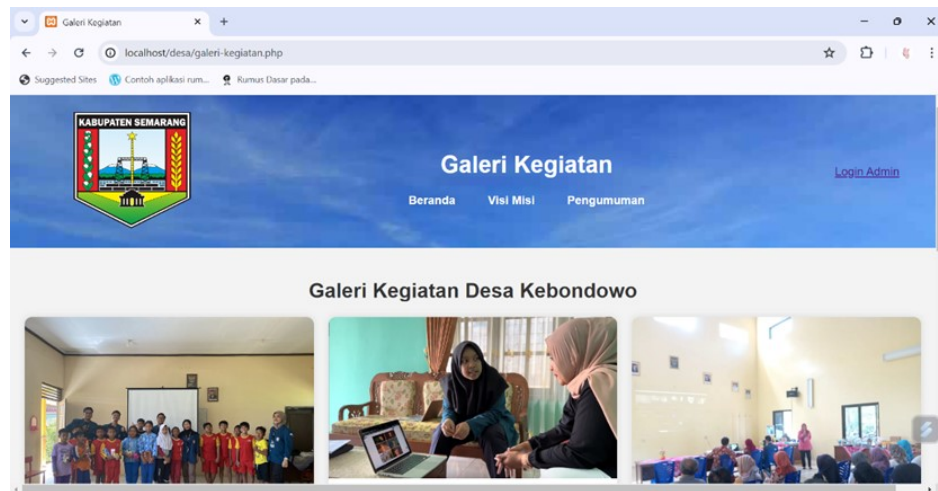


Figure 11: Vision and Mission Page



Figure 12: Announcement Page





**Figure 13:** Activity Gallery Page

## 5. DISCUSSION

When making changes or adding content to the Admin must first log into the system. This login process is important to ensure that only authorized parties can access and manage existing content. After successfully logging in, the Admin will be directed to the Admin Panel page. This page has the main purpose of facilitating changes to the content that will be presented on the Kebondowo Village website. Admins will find several main features in this panel, including the “Add Content” feature, which allows Admins to add new content data needed and the “Delete Content” feature, which is designed to delete irrelevant content data or if there are errors in existing content, as well as “Edit Content” which allows Admins to change or edit content data that has been published, so as to correct errors or mistakes that may occur.

The Home page is the display that appears first when an Admin or user accesses the website link. On this page, there are various important information about Kebondowo Village, including a village profile that explains the location of Kebondowo Village in Banyubiru Sub-district, Semarang Regency. Users can also view the village map that shows the division of the village into seven hamlets: Kebondowo, Kebonsari, Kebonbawang, Pundan, Jrasah, Jambon, and Kauman. In addition, this page introduces various interesting tourist sites such as Bukit Cinta, Rawa Pening, and Gili Pesona. Last but not least, users will get information on typical products from Kebondowo Village, including fish from Rawa Pening, coffee, palm sugar, cloves, and other products.

The Vision - Mission page includes a menu that displays information about the vision and mission of Kebondowo Village, as well as introducing the existing village officials. This

page is important to provide an overview of Kebondowo Village's goals and commitments to the community.

The Announcement page serves as an information medium that displays news or activities that will be carried out before their implementation. The information presented here is very useful for the community to stay aware of the agenda in Kebondowo Village.

The Activity Gallery page, directs website visitors to a page that displays information related to the agenda of activities that take place in Kebondowo Village. This page provides documentation and reminders of the various activities that have been implemented, as well as highlighting important moments in the community.

With such a structured system in place, it is hoped that the information presented can better reach the community and increase their involvement in village activities.

## 6. CONCLUSION

From the implementation of the system that has been done, the researcher concluded that the Kebondowo Village Website was successfully designed and implemented to improve the quality of public services in presenting profile information, announcements and village activity agendas. Kebondowo Village Website makes it easy for the village officials to provide information widely without having to go through intermediaries. The Kebondowo Village website provides convenience to residents in accessing and receiving information, announcements that exist or are currently running in Kebondowo Village such as the existence of Village Social Assistance and other activity agendas with accuracy.

In order to make the website-based information system at the Kebondowo Village Office more perfect, researchers suggest that future research include an android or smartphone version for the information system to increase accessibility and wider users. For the Kebondowo Village Office, it is necessary to conduct continuous maintenance and improvement for the Kebondowo Village website system including performance monitoring, content updating, and feature enhancement based on user feedback, to ensure the performance and security of the Kebondowo Village Office system and services.

## 7. LIMITATION

This research is only focused on overcoming obstacles and providing solutions in delivering or presenting new information that suits the needs of village officials and the people of Kebondowo Village.

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