Organization Cooperative Mapping Information System-based GIS

April Lia Hananto1*, Baenil Huda2, Fitria Nurapriani3, Tarmuji4

1 Department of Information System, Faculty of Computer Science, Universitas Buana Perjuangan Karawang
2 Department of Information System, Faculty of Computer Science, Universitas Buana Perjuangan Karawang
3 Department of Information System, Faculty of Computer Science, Universitas Buana Perjuangan Karawang
4 Department of Information System, Faculty of Computer Science, Universitas Buana Perjuangan Karawang

This article contributes to:

Highlights:
• The design of a website-based cooperative mapping information system in Bekasi District aims to facilitate online business registration and increase micro-enterprises visibility.
• With the application of micro-business management, the system can help stakeholders in policymaking based on well-managed data, positively impacting the local economy.

Abstract
Technological developments can be utilized to help facilitate communication or exchange information in a short time. In the current digital era, it is expected to use websites as a medium for exchanging information and GIS-based data collection (Geographical Information System), which is very appropriate as a medium for displaying data on the development achievements of the Bekasi Regency local government in the form of GIS, in the form of data and maps of its distribution. With the mapping of cooperatives in Bekasi Regency that can be used, it is hoped that it can facilitate policy determination for stakeholders.

Keywords: Information System, Cooperative, GIS

1. Introduction

Technological developments can be utilized to help facilitate communication or exchange information in a short time. In the current digital era, it has been commonly used, such as the use of websites as a medium for exchanging information and GIS (Geographical Information System) based data collection, which is very appropriate as a medium for displaying data on the development achievements of the Bekasi Regency local government in the form of GIS, in the form of data and maps of its distribution. With the mapping of cooperatives in Bekasi Regency that can be used, it is hoped that it can facilitate policy determination for stakeholders.

The final report discusses the implementation process, reviewing the initial design submitted in the initial report and the advanced design in the intermediate report. The report has a methodology chapter, an activity plan as a guideline for making applications, and an implementation chapter discussing the results.
2. Literature Review

A. Information System

The information system combines processes, information, people, and technology to achieve a goal. Therefore, an information system is a system that cannot be separated from one element to another in achieving its goals so that in its achievement, it becomes information that forms the basis of a measurable action plan [4][5].

B. Geographic Information System

GIS provides near-real-time information, predicts outcomes, and supports strategic planning. GIS has five main components: data, software, hardware, users, and applications. The integration of these components enables GIS to present geographic information and aid in decision-making effectively.

C. Website

A website is a group of pages related to each other with accompanying images or files. It is typically hosted on one or more web servers that can be accessed through a network, such as the Internet or a local area network (LAN), at Internet addresses that are known as URLs. The combination of all publicly accessible pages on the Internet is also known as the World Wide Web, commonly referred to as the WWW.

D. PHP

PHP is a language integrated with HTML and works on the server side, meaning that all syntax is executed entirely on the Server. Only the results are sent to the browser when a web user accesses a website using server-side PHP scripting functions. The Server first processes all the PHP commands on the Server and then sends the results to the web user. Until the original code written in PHP disappears from the user's browser. PHP takes information from web-based forms for various functions, such as the language that determines the number of visitors using the PHP language and layout settings in different browsers, such as Firefox [7].

E. Database

A database is a collection of interrelated data stored on computer hardware and manipulated using software. Storing data in a database is necessary to provide more information. The data in the database must be organized so that the resulting information is high quality [7].

F. SQL

SQL (Structured Query Language) is a language for accessing relational databases. In addition to querying (retrieving data), SQL can create and delete tables and add, delete, and replace data. For example, the statement "SELECT nim, name, gender FROM Student;" displays data from the student table. SQL is a command to communicate with the database, allowing data access and manipulation.

G. MYSQL

MySQL is a well-known database server widely used in web applications for storing and managing data. Management of data. Its advantages include using SQL as the primary access language, its open-source nature, and its free nature, except in Windows, which is shareware.

3. Methods

The research methodology involved a literature study and an interview with the Head of the Bekasi Cooperative and SME Office for data collection. System development followed the Scrum life cycle model with planning, analysis, and system design stages. Implementation was done using PHP and PostgreSQL, followed by live user testing in the field. The final stage involves documentation and reporting for a research report and system documentation as a basis for future development. With this approach, the research can make a meaningful contribution to improving the effectiveness and reliability of sales information systems.

Figure 1. Research Stages
A. Data Collection Techniques
   In collecting data, researchers used several methods, including:

1. Observation Method.
   The observation method systematically observes and records the symptoms of the research subject. This method is used to obtain information by carefully observing and recording the obstacles faced by the Office of Cooperatives and Small and Micro Enterprises in guiding business actors and the expectations of business actors for their businesses. Coaching business actors and the expectations of business actors to the Companies they run.

2. Interview Method
   The interview method collects data while observing by asking and answering questions verbally to the Karawang Regency Office of Cooperatives and Micro and Small Enterprises.

3. Literature Study
   Data collection using the library method is done by collecting literature to produce secondary data such as journals, books, papers, and online media sites as a source of literature relevant to the writing topic [12].

B. Development Method
   If designing with the waterfall method, this method is implemented in the following stages:

1. Requirements analysis
   Needs analysis is the process of defining needs and priorities that can be used to identify urgent needs related to finance, safety, or something that affects work.

2. System design
   System design draws or organizes separate elements into a coherent and functional unit.

3. Program code
   Program code is the commands the programmer writes that instruct the application to perform tasks, such as performing calculations, opening or executing certain functions or manipulating data, generating output, responding to user input, etc.

4. Program testing
   A study whose purpose is to obtain information about the service or quality of the product being tested. Testing software also provides an objective and independent view of the software, which is helpful for businesses in understanding implementation-level risks.

5. Maintenance
   Software maintenance is modifying or improving software after it has been delivered to consumers. Maintenance to fix coding bugs, design bugs, or significant improvements to fix specification bugs/adjust to new requirements [3].

C. Data Analysis and Testing Methods
   Data analysis in this study uses descriptive quantitative techniques to describe the surveillance system [13]. Data generated by the device is evaluated using quantitative descriptive statistics. This analysis is used to describe the characteristics of the data for each variable. This method facilitates understanding of the information in the overall process. Different methods tested the results of the development system:

1. White Box Testing
   This test produces the expected results of the monitoring system logic.

2. Black Box Testing
   This test is used to determine the truth of the system descriptively and can be seen transparently. The data obtained through the questionnaire is then analyzed using the alpha test method.

4. Results and Discussion
   Based on the results of this research, the first step is to analyze the problems in the cooperative mapping information system in the Bekasi Regency and find solutions to designing the management of the unified empowerment information system in the Bekasi Regency.

A. Current System
   Cooperatives in the Bekasi Regency still use a manual information system, such as data collection using Microsoft Excel. Cooperative profile data needs to be updated; it is difficult to report and manage Cooperative data from year to year.
B. System Design

1. ERD Diagram
   The diagram of the micro business empowerment part of the cooperative mapping information system describes what activities can be carried out by suitable actors and admins, including registration for relevant actors, management of relevant data and master data, and management of reports for admins.

![ERD Diagram](image)

Figure 2. Database Design Depicted with ERD Diagram

C. Implementation

Developing a web-based micro business cooperative mapping information system produces a display below.

1. Home Page
   The main page first appearing on the home page is a map display section. Accessed by visitors:

![Home Page](image)

Figure 3. Home Page

2. News and Videos Page
   Presents current news in video format directly on the main menu page, providing an informative and accessible experience for citizens.

![News and Video Page](image)

Figure 4. News and Video Page
3. **Map Page**
   On the home page, there is a map display section.

![Map View On The Home Menu](image)

**Figure 5. Map View On The Home Menu**

4. **Dashboard Design**
   This page displays an overview of the number of cooperatives registered in the application.

![Dashboard Page View](image)

**Figure 6. Dashboard Page View**

5. **Cooperative Data**
   A page that manages cooperative data, such as adding, changing, or deleting data.

![Cooperative Data Menu Page](image)

**Figure 7. Cooperative Data Menu Page**
6. **User Data**

A page that functions to manage user data that can access the application. Such as adding, changing, and deleting user data.

![User Menu Page Display](image)

7. **Website Data**

The menu that functions to manage data is displayed on the website. The following are the sub-menus of website data.

- **Slide Picture**

A page containing the slide image’s contents will be displayed.

![Slide Show Menu Display](image)

5. **Conclusion**

Based on the description above, designing a website-based cooperative mapping information system in Bekasi Regency can facilitate and assist suitable actors in registering their businesses online. With this system, it is hoped that it can publish micro business profile information along with the products or services sold by business actors so that it can help inform through online media to the broader community, with the hope of increasing turnover and income and also The creation of a micro business management information system application will facilitate the management of data on micro business actors in Bekasi Regency which can be used for policy determination for stakeholders.

6. **References**


