The web-based Accounting Information System at KUD Giri Tani Bogor uses the Prototype Method

Gema Parastri Mindara¹, Eka Merdeka Wati²*, Aditya Wicaksono³, Lesia Fatma Ginoga², and Mela Nurdialy²

¹Computer Engineering Technology, College of Vocational Studies, Institut Pertanian Bogor 16151, Indonesia
²Accountancy, College of Vocational Studies, Institut Pertanian Bogor 16151, Indonesia
³Software Engineering Technology, College of Vocational Studies, Institut Pertanian Bogor 16151, Indonesia

Abstract. KUD Giri Tani Bogor is the largest dairy cooperative in Bogor. In carrying out financial records, it is done using Ms. Excel. The weakness of the financial recording process like this is when there are scattered paper invoices and late entries to Ms. Excel. If this happens, making financial statements are delayed and takes time in decision-making. Based on these problems, KUD Giri Tani needs system information to assist them in accelerating the financial recording process that is easily accessible and monitored by KUD management. SIGITA (Giri Tani Accounting Information System) - is a business solution to overcome financial determination problems, such as generating profit and losses. SIGITA is a web-based information system that has several features, such as recording income from the sale of milk, dairy products, and animal feed, routine expenses, viewing and downloading income and expenditure data, see profit or loss, validating in each period, enter milk prices according to milk quality, enter feedstock, view income, and expenditure journals. SIGITA was developed using the Prototype method. The design and writing of program code uses an OOP approach and uses CodeIgniter with a database using MySQL.

1 Introduction

KUD Giri Tani is the largest dairy cooperative in Bogor which was established on March 26, 1973, and began to develop its business in the livestock sector in 1985 which is located on Jalan Taman Safari Cibeureum Village, Cisarua District, Bogor Regency, West Java. The central business unit managed by KUD Giritani is the dairy cow business unit. KUD Giri Tani accommodates cow's milk from dairy farmers in the Cisarua area. Then it supplies it to one of the IPS (Milk Processing Industries) in the Cisarua area, PT. Cisarua Mountain Diary (PT.Cimory), KUD Giri Tani also sells milk to residents who need it.

*Corresponding Author: eka.merdeka@apps.ipb.ac.id

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Every business, both small and large companies, must make financial reports to record every transaction that occurs during a specific period. A financial report is a report that describes the financial impact of transactions and other events that occur within one entity. [1]. Financial statements consist of 5 types, statements of financial position, income statements, changes in equity reports, cash flow statements, and notes to financial statements. For cooperative businesses, at least make three reports, namely a statement of financial position, income statement, and cash flow statement.

Financial recording at KUD Giri Tani has been carried out in an orderly manner using Ms.Excel. Every time there is cash in and cash out, a paper invoice always made, which is then inputted into Ms.Excel by the KUD Giri Tani officer to input the transaction and financial report are made. This financial recording system has been implemented but is still manual because each existing invoice must be input for each transaction. This manual process allows for scattered or late invoices to be included to affect to preparation time of the financial statements.

Based on the problems, KUD Giri Tani expects a financial recording system, especially the existence of an accounting application that can be accessed and monitored by KUD Giri Tani management officer. With this application, financial transparency will be created, and the amount of cash in, cash out, operating income, costs incurred, and profits generated can be seen anytime and anywhere (real-time).

[2] explains that the availability of applications affects the ease of making financial reports, while the availability of applications does not affect the level of cheapness and efficiency in preparing financial reports. However, [3] explained that the Zahir Accounting application could reduce errors in processing data to prepare financial reports. [4] shows that having a financial recording information system can make work effective and efficient.

[5] explains that AIS (Accounting Information System) produces financial reports that exist at PT. Kaisa Rossie, who is engaged in a travel agency running her business, needs help managing manual financial reports and analyzing financial reports that still use Ms. Excel, which gives ineffective results. In their research, they created an Accounting Information System to create financial report analysis as a data processing tool to make it more effective and valid.

In research of [7] made an application of financial reports for cooperative business activities with accounting standards. Board members and supervisors of cooperatives used this application to find cooperative financial reports quickly and accurately.

Research on [8] Using the Prototype Method to design a web-based employee payroll information system at PT Bina Angkasa. This information system can make employees take attendance automatically, so the admin can calculate attendance as a reference for employee salaries. In another study, namely the research of [9] using the prototype method in designing the website-based SIPINJAM application at Credit Union Canaga Antun. This application provides access levels: the admin, the place of service, and the treasurer.

Based on the description above, research was carried out that applied digital technology with the theme of accounting information systems at KUD Giri Tani Bogor. The formulation of the research problem is that it is necessary to make a financial system, starting with creating an accounting application, namely the SIGITA application: Giri Tani Accounting Information System as a medium for preparing financial reports at KUD Giri Tani Bogor.

2 Research Method

In this AIS research, in building an information system, a method is needed that is suitable for the conditions in KUD Giri Tani Bogor. Before determining the suitable method, we tried to do initial initialization by visiting KUD Giri Tani Bogor. After conducting
discussions with the leadership of KUD Giri Tani Bogor, a method was determined that best suited the situation there, namely the Prototype Method. This method can handle situations where the client is a layman in making information systems, they need help understanding how to create technology-based information systems, and they can get an idea of the application by providing an example of how it looks.

In his research, [6] stated that the prototype model places more user involvement in providing feedback on the program starting from the initial planning and ending with the interaction between the two. Pressman (2015) explains the prototype model into several stages as follows.

![Diagram of Prototype Method](image)

**Fig. 1. Prototype Method**

Communication is the initial stage with the user regarding the program to be made. This stage includes analyzing the current prison administration system and evidence and identifying problems in the manual process.

This is the stage where researchers carry out strategic planning quickly by providing solutions to initial identification. In this study, the researchers provided a proposed system in the form of a flowchart of a more efficient prisoner administration information system and evidence.

This is the stage of system design. In this study, iterations were carried out in building the information system.

This stage is the stage where all the plans and designs that have been carried out are implemented into the programming language. At this stage, database design is also carried out based on the class diagram that has been made.

At this stage, the program that has been made is tested to test the functionality of the system that is made. In this study, researchers used black box testing that focused on system functionality.

Black Box Testing tests in this study use black box testing. Black box testing aims to test an information system that focuses on functionality only. Black box testing is carried out by using several test cases in the form of correct data and incorrect data, along with the expected results.

3 **Result and Discussion**
3.1 Communication

3.1.1 Analysis of existing system.

In carrying out financial records at KUD Giri Tani Bogor, many people are involved in recording the sale of milk and cow feed. For milk sales, milk is usually collected at the KUD twice a day, in the morning and the afternoon, because every time the farmers milk their cows, it is collected in the cooler at the KUD. Milk that has been collected in the KUD will usually be sent directly to the recipient of the milk.

If there is a sale of milk in the morning, it will be recorded by the cooling guard. Furthermore, the records will be submitted to other officers to make invoices, and then the invoices will be submitted to the secretary to be entered into Excel to prepare financial reports.

With such financial recording activities, it is feared that human error will occur, such as the cooling officer forgetting to record a sale and purchase transaction or the invoice being scattered when it is given from the officer to the secretary. So that with conditions like this, it can result in delays in preparing financial reports or when a decision is made based on these financial reports.

3.1.2 Identification of problems

This study has formulated the problem identification based on the analysis, which is as follows:

1. Invoices are currently recorded manually by various individuals, which has led to a large number of invoices needing to be more organized.
2. It is widely regarded as too risky to rely solely on a stand-alone computer for data security and not have a backup process in place.
3. Creating financial reports is a lengthy process that can be time-consuming. This can make it less efficient and effective if you need to generate reports quickly.
4. Recording financial reports manually is ineffective in presenting accurate and relevant information, as it often results in redundant or missing data.

3.2 Quick Plan

The research flowchart illustrates the various activities in the built system and how each part of the KUD Giri Tani carries out its duties from starting to completing its functional tasks. The following shows the activity diagram of the SIGITA application system that will be build:

3.2.1 Cash Flow Chart

A Cash Flow chart is a flowchart that describes the login activities carried out by the cashier and treasurer when inputting cash-related transactions on the main menu. The cash flow diagram can be seen in Figure 2 below
3.2.2 Purchase Flowchart

It is a diagram that describes the cashier's login activities when inputting purchase transactions on the main menu. The purchase flow chart can be seen in Figure 3 below:

Fig. 3. Purchase Flow Chart

3.2.3 Sales Flowchart

It is a diagram that describes the cashier's login activities when inputting sales transactions on the main menu. The sales flow chart can be seen in Figure 4 below:
3.2.4 Cost Flow chart

It is a flowchart that describes the cashier’s login activities and treasurer when inputting transactions related to costs on the main menu. The cost flow chart can be seen in Figure 5 below.

3.3 Modeling Quick Design

At this stage, there are several steps carried out, namely:

1. Make use case diagrams for the actors involved, including the cashier, secretary, and Chief of KUD. In the use case cashier, this actor enters customer data and processes payments made by the customer, shown in Figure 6. The use case secretary performs data manipulation processes for master data from starting to manipulating product data, accounting data, and unit data financial account category, shown in Figure 7. In the
chief's use case, chief can see cash flow, profit and loss, and other reports periodically shown in Figure 8. For all actors involved, when entering the SIGITA application, they must log in first.

![Use case Cashier](image1)

**Fig. 6. Use case Cashier**

![Use case Secretary](image2)

**Fig. 7. Use case Secretary**
2. Designing a system menu structure consisting of login menus, dashboards, master data consisting of categories of financial accounts, user accounts, dairy and sapornak's data, purchasing page data, sales pages, expense pages

3. We create a user interface as an overview of the system interface. This user interface design is made based on the menu structure design that has been made before.

3.4 Construction of prototype

Based on the stages of designing an accounting information system that has been carried out, the next stage is the stage of developing an accounting information system application by following the diversity of KUD Giri Tani Bogor. We named this application SIGITA. The SIGITA application is built as simply as possible so that cooperative administrators and employees can easily use the application.

3.4.1 Login Menu

The display of the login menu page is the initial appearance when the user accesses the SIGITA application login menu page. The display of the login menu page can be seen in Figure 9 below:
Fig. 9. Login Menu

### 3.4.2 Dashboard

The display of the main menu page (dashboard) in the SIGITA application is the display that appears after the user has logged in. The main menu page on the SIGITA application consists of several menus, including cash menus, purchases, sales, costs, reports, and master data. The main menu page display can be seen in Figure 10:

![Dashboard Menu](image)

**Fig. 10. Dashboard Menu**

### 3.4.3 Purchase Menu

The purchase page display functions to input transactions related to purchases such as purchasing milk, purchasing sapronak, and purchasing equipment etc. The display of the purchase page can be seen in Figure 11 below:

![Purchase Menu](image)

**Figure 11. Purchase Menu**

### 3.4.4 Report Menu

The Report page display consists of journal pages, income statement pages, and balance sheets pages. The journal page displays the journals that have been inputted on the purchase, sales, and cost pages. The display of the journal page can be seen in Figure 12. The income statement page serves to present accounts that have previously been recorded in the journal. The income statement contains income and expense accounts that occurred in one period. The balance page serves to present accounts that have previously been recorded in the journal. The balance sheet contains the position of asset, liability, and equity accounts in a particular year.
4 Conclusions, Limitations and Suggestions

4.1 Conclusions

Financial recording at KUD Giri Tani has been carried out in an orderly manner using Ms.Excel. Every time there is cash in and cash out, an invoice is constantly made, which is then inputted into Ms.Excel by the KUD Giri Tani management; from the input of the transaction, a financial report is made. This financial recording system has been implemented but is still manual because each existing invoice must be inputted for each transaction. This manual process allows for invoices that are scattered or late to be included to have an effect on the time of preparation of the financial statements. To overcome this problem, researchers provide a solution by creating the SIGITA application: Giri Tani Accounting Information System. This application is a web-based application that is intended to keep financial records for KUD Giri Tani. This application can simplify the process of recording every transaction in KUD Giri Tani, and financial reports will automatically be generated. This application can be easily accessed and monitored easily via a web browser so that financial transparency is achieved; the amount of cash in, cash out, operating income, costs incurred, and profits generated can be seen anytime and anywhere in real-time.

4.2 Limitations of Research

The limitation of this research is that a ledger has not been made yet. financial account categories have not yet been added to calculations for taxes.

4.3 Suggestions

Based on the discussion above, the advice given by the author in this study is that KUD Giri Tani is expected to be able to implement the SIGITA application, which has been built in stages so that the resulting financial reports can be fast and accurate. Financial recording data at SIGITA has not been given data security, so this application must have a mechanism for data security.

References

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