Analysis and Design of Accounting Information System on CV Indo Sangkar Emas

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Abstract—Using an Accounting Information System in a company can help the company in enhancing its performance. CV Indo Sangkar Emas is facing some problems at their business, such as frequently finding duplicate data, giving code to its data, recording purchase and sales transactions, and making financial statement all done manually. All the problems caused by the company still not using an Accounting Information System. Therefore, the company decided that they need Accounting Information System. The research aims to analyze and design Accounting Information System that can improve data accuracy, Quality Control, and financial statement quality on CV Indo Sangkar Emas, and improve communication between warehouse employees and office employees. The System will be developed using the Object-Oriented Analysis and Design method with the help of observation, interview, documentation, and Unified Modeling Language, such as use case diagram and class diagram.

Keywords— accounting information system, inventory, object-oriented analysis and design, purchase, sales

I. INTRODUCTION

One of the methods to enhance a company's performance is implementing Accounting Information System. The effectiveness of an Accounting Information System can affect the employees' performance in a company[1]. Implementing Accounting Information System that is suitable for the company's needs can enhance internal and external information exchange to become more effective and efficient which can affect the company's decision-making.

CV Indo Sangkar Emas is a company that buys and sell bird cage and their accessories. The company buys the products from overseas supplier in large quantities. The company also has many customers nationwide. Until now, the company still has not implemented Accounting Information System.

Some problem arises because CV Indo Sangkar Emas has not implemented Accounting Information System, such as undetected duplicate data, manually coded product and customer, manually recorded purchase and sales transactions, and manually made the financial statement. Not only that, the communication between the warehouse division and the office division is still being done manually because of the separate location between both divisions. The company also does not have a special code given to defect product that is not available for sale.

Based on the interview conducted with the director and the employees of CV Indo Sangkar Emas, the company frequently finds duplicate data more than two times a week. Duplicate data found affected the company, such as the difference in physical stock and the recorded stock, as well as total cost and revenue from purchase and sales transactions that are related to the stock. Duplicate data can also happen because the recording of the transaction had been done

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manually. This can also affect the production of financial statements which had still been made manually which is considered not effective in the company's decision-making because CV Indo Sangkar Emas cannot know the current company performance at a certain time.

Communication between the warehouse division and the office division has only been done by telephone which is vulnerable to the misuse of data because there is no written proof. The update of data from the warehouse to the office or reverse not being done in real-time can affect the company's decision in purchasing or selling products.

The company is not giving codes to defect products which affects the storing and recording of company inventory data. Every product that arrives will be checked by the company and will be grouped by its quality, ready to sell or defect, without giving any code. The company stores the products by their code and groups them by the customer order. If the company not giving a special code for defect products, there will be a possibility for defect products to be sent to the customer, which has happened, making the company need to sell product loss.

CV Indo Sangkar Emas doing purchases and sales in large quantities, so making mistakes both in purchasing and selling can make the company to have a great loss. The company also has a plan to sell more variety of products. That is why CV Indo Sangkar Emas decided that they need Accounting Information System that can minimalize the problem already displayed above.

The research aims to analyze and design Accounting Information System that can improve data accuracy, Quality Control, and financial statement quality on CV Indo Sangkar Emas, and improve communication between warehouse employees and office employees.

II. LITERATURE REVIEW

The focus of the research is to analyze and design an Accounting Information System. An Accounting Information System is defined as a data processing system that is transferred as primary information a collection of components related to the processing of financial data that is converted into financial information[2]. The component of the Account Information System based on [3] consists of performer, procedure, and software.

A company's Internal Control System can be affected by the use of an Accounting Information System. Internal Control System is defined as a process that gives assurance of achievement of the improvement of business activity, the reliability of financial statements, and the obedience to rules and law[4]. Internal Control System has the function of preventive controls, detective controls, and corrective controls[5].

The Object-Oriented Analysis and Design (OOAD) is used to implement the Accounting Information System developed in this research. Object Oriented Analysis and Design (OOAD) is defined as an analysis and design method that is object-oriented[6].

Unified Modeling Language (UML) is used to help the process of analyzing and designing the Accounting Information System. According to [7] Unified Modeling Language (UML) is a programming language that is object-oriented that describes the needs, produces analysis and design, and illustrates architecture.

PHP or PHP: Hypertext Preprocessor is the programming language used for developing the system. PHP is defined as a dynamic website programming language that can interact with the user[8].

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Laravel is the framework used to develop the Accounting Information System. Laravel is defined as one of the PHP frameworks that is open source and uses the Model View Controller (MVC) concept[9].

For the database, MySQL is used for this Accounting Information System. According to [10] MySQL is defined as RDBMS that can process databases quickly, can accommodate many data, and can be accessed by many users.

III. METHOD

The research object is CV Indo Sangkar Emas which is located in Semarang, Indonesia using primary data that is collected from the process of observation and interviewing the owner and the representation of each division in CV Indo Sangkar Emas. Observation is done by observing the cycle of purchase, sales, and inventory and the interview is done with the owner and the representation of each division that is involved in the purchase, sales, and inventory cycle.

Secondary data is also used with the source of the image taken from the record of the company transactions such as packing list, Purchase Order (PO), Import Declaration (PIB), and purchase note.

Data will be analyzed using Object Oriented Analysis and Design (OOAD) method that will be separated by Object Oriented Analysis (OOA) and Object-Oriented Design (OOD). The steps in OOA are analyzing problems, explaining the process in the system, identifying the object, determining attribute, and defining operations. The steps in OOD are designing subsystem, designing object and class, and designing the interface.

IV. RESULTS AND DISCUSSION

The core surrounding the problems found in the company is the purchase, inventory, and sales cycle, which is why the Accounting Information System will be analyzed and designed based on the purchase, inventory, and sales cycle. The system will start with recording the transaction and end with producing the financial statement based on the transaction stored in the system.

A. OBJECT-ORIENTED ANALYSIS (OOA)

The steps in Object Oriented Analysis (OOA) are analyzing the problem, explaining the process in the system, identifying object and attributes, and defining operations.

The problem was analyzed after doing observations and interviews that involved the process of purchasing and selling. Based on the result of the observation and the interview, the problems and the solutions that are going to be implemented in the Accounting Information System are shown in Table 1.

Table 1 Problem Analysis

Problem	Solution
Duplicate data	Doing validation checking when the form submitted
Transactions recorded manually	Input purchases and sales transaction feature in the system
Financial statements manually made	Financial statements are automatically made in the system
Information exchange has been done manually	The System can be accessed by all the members of the company and the notification feature
No special codes for defect products	Recording the amount of defect products and adding code 'R' for defect products

Based on the problem analyzed in the first step, the next step was to determine the process in the system that is explained using Use Case Diagram shown in Figure 1.
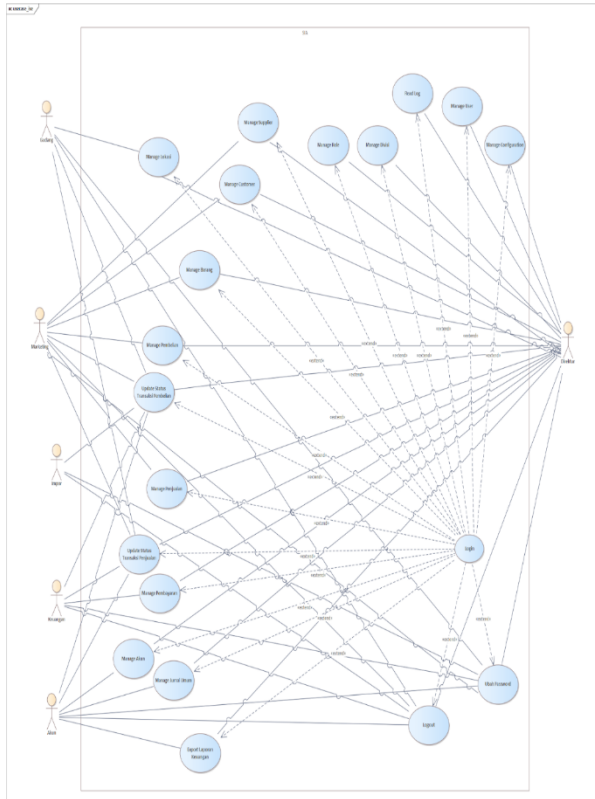
Figure 1 Use Case Diagram

The third step of analyzing the Accounting Information System is to identify the objects and their attributes. Objects that are identified are user, division, account, location, customer, supplier, product, purchase transaction, sales transaction, and general ledger and its attributes shown in Table 2.

Table 2 Object and Attributes Analysis

Object	Attributes
user	username, name, email, division, password
division	division name
account	account code, account name
location	location code, location name
customer	customer code, customer name, customer phone number, customer email
supplier	supplier code, supplier name, supplier phone number, supplier email
product	product code, product name, description, unit, location

Object	Attributes
purchase transaction	transaction code, transaction date, supplier code, product code, quantity, unit, exchange rate, purchase price, total expense
sales transaction	transaction code, transaction date, customer code, product code, quantity, unit, COGS, selling price
general ledger	journal code, date, description, account, debit nominal, credit nominal

The last step in OOA is to define the operations that will be and be not covered in the Accounting Information System. Table 3 shows operations that will and will not be covered in the system.

Table 3 Defining Operations

Operations Covered	Operations not Covered
A Dashboard that shows the company's performance	Forecast for purchase and sales transactions data
Create, Read, Update, Delete (CRUD) data in the system	Edit and delete the general ledger
Payment menu separated from the purchase and sales transactions menu	Delete account and division master data
Configuration menu	Log every activity done in the system except the login and logout process
Reset password that can only be done by superadmin	
Read Log for security reasons	
Automatically made codes	
Automatically shows the current currency rate	
Automatically made Defect Product Report	
Automatically calculate the Cost of Goods Sold using the First in First Out method	
Automatically made sales invoice	

Operations Covered	Operations not Covered
Automatically made ledger from purchase and sales transactions	
Automatically made financial report	
Validation is given to every form provided in the system	

B. OBJECT ORIENTED DESIGN (OOD)

The steps in Object Oriented Design (OOD) are designing the subsystem, designing the object and class, and designing the message.

The first step is to design the subsystem or the tables that are going to be used in the Accounting Information System database. Tables designed are mst_users, mst_divisi, mst_akun, mst_lokasi, mst_customers, mst_suppliers, mst_barang, mst_config, trans_header, trans_detail, trans_hpp, trans_payment, and trans_jurnal.

The next step is to design the objects and the classes. This step also designs the relation between the tables that have already been made in the previous step. The relations can be seen in Figure 2.

Figure 2 Class Diagram

The last step in the OOD process is designing the message or the interface. The interface design is grouped by login page, dashboard, page, master data menu page, master data create and edit form page, master data detail page, delete master data form, transaction menu page, transaction create form page, transaction detail page, delete transaction form, financial report menu page.

C. IMPLEMENTATION OF ACCOUNTING INFORMATION SYSTEM

Figure 3 shows the dashboard which is the main page that the user will be redirected to after successful login to the system. The sidebar show menu that will be available in the system. The menu will be categorized into master data, transaction, and report. This chapter will focus more on the transaction menu. The Transaction Menu consists of 3 sub-menus that are purchase transaction, sales transaction, and payment transaction.

Figure 3 Dashboard Page

Before creating a new purchase transaction, the User needs to ensure that the supplier and the product concerned are already listed in the system. If not, the User can add it manually by the master data menu, else User can add new purchase transaction data by accessing the New Purchase button in the Purchase Transaction Menu shown in Figure 4.

Figure 4 Purchase Transaction Menu Page

The New Purchase button will redirect the User to the Create Purchase Form is shown in Figure 5 which can be used by the User to add new purchase transaction data.
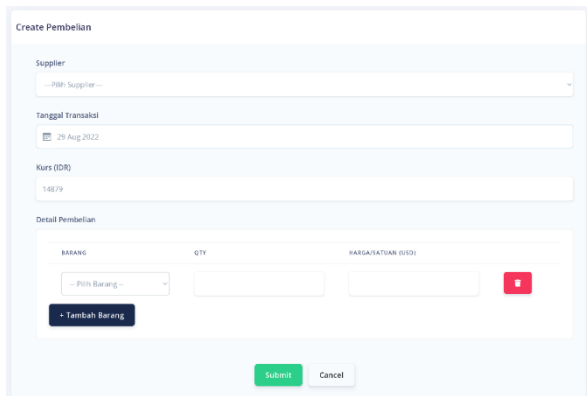

Figure 5 Create Purchase Form

Purchase transaction status will be set automatically by the system based on the company purchasing cycle. New purchase transaction status will be set automatically into Waiting for Approval. Next, if the User wants to update the transaction status, then the User can access the detailed transaction page of the transaction. Table 4 shows the purchase transaction status and each condition.

Table 4 Purchase Transaction Status

Status	Condition
Waiting for Approval	The purchase transaction has been inputted and waiting for the director's approval
Waiting for Payment	Waiting down payment confirmation from the finance division
Processed	Products are being processed by the supplier
Delivered	Products have arrived at the port and are on the way to the warehouse

Arrived	Products arrived at the warehouse and checking has been done.
Completed	The rest of the payment has been paid and the purchase transaction completed

To validate the Down Payment (DP), the User can access Payment Transaction Menu and go to the detail of the transaction. The User will be redirected to Down Payment (DP) Payment Form and after submitting the system will automatically update the transaction status and the payment status from Unpaid (Belum Lunas) to DP Paid (DP Lunas).

After the product arrived, the warehouse division will be doing quality and quantity checking and they can update the total products arrived by filling the Input Quantity Arrived Form shown in Figure 6.
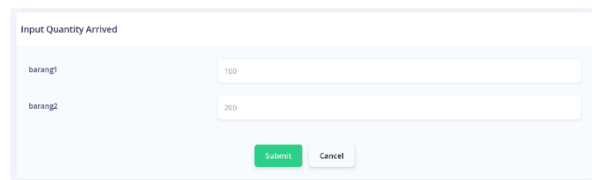

Figure 6 Input Quantity Arrived Form

To complete the purchase transaction, the User will be asked to fill out the Complete Purchase Transaction Form is shown in Figure 7 which can be accessed on the payment detail purchase transaction page. The system will then update the payment status to Paid (Lunas) and the transaction status to Completed.

Figure 7 Complete Purchase Transaction Form

For sales transactions, the User can add new data through the Create Sales Form. To access the form, the User can access the Sales Transaction Menu shown in Figure 8 and click on the New Sales button.

Figure 8 Sales Transaction Menu Page

This button will lead the User into the Create Sales Form that can be used by the User to add new Sales Transaction data.

Figure 9 Create Sales Form

The sales transaction status detail is shown in Table 5. Same as the purchase transaction status, to update the sales transaction status User need to access the Sales Transaction Detail page.

Table 5 Sales Transaction Status

Status	Condition
Waiting for Approval	Sales transactions had been inputted by the marketing division and waiting for the director's approval
Processed	Products are being processed based on the sales order
Waiting for Payment	Products process completed and waiting for payment from the customer
Paid	Payment has been validated and waiting for the products to be picked by the customer
Picked	The product has been picked by the customer from the warehouse
Completed	Sales transaction complete

To validate the payment, the User can go to the Payment Transaction Detail Page which can be accessed from the Payment Transaction Menu. After validating, the system will update the payment status from Unpaid (Belum Lunas) to Paid (Lunas).

To complete the sales transaction, the User will need to access the Sales Transaction Detail Page and click the button available and the User will be redirected to the Complete Sales Transaction Form.

D. TESTING

The Testing process is done in two phases that are a technical phase and an interview phase. Technical phase testing is done by testing all the feature that is provided in the system and the interview phase is done by doing interviews with the company's director and representative of each division.

The first phase of testing shows that every feature provided by the system has worked nicely. The result of the interview phase shows that the system made met the company's needs and can minimalize the problems found before. The system is easy

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to understand and easy to be operated, even though time is still needed for the company to transform from doing records manually to systemically. The Accounting Information System design made already meet the company's requirement so the company's need for Accounting Information System will be developed based on the system designed

V. CONCLUSION

Based on the result of the analysis and design process can be concluded that to enhance data accuracy, quality control, and financial statements quality in the company, the Accounting Information System was provided with some features, such as validation checking in every form available, automatically made financial statements which can be accessed daily, monthly, or yearly, automatically made codes for data that is customized with the company's need, and Input Quantity Arrived Form to help warehouse division on updating the quantities of products available to sell.

To implement the Object-Oriented Analysis and Design (OOAD) method the process of Object-Oriented Analysis (OOA) and Object-Oriented Design (OOD) is done by doing steps, such as analyzing the problem, explaining the process in the system, identifying object and attributes, defining operations, designing the subsystem, designing the object and class, and designing the message.

To enhance the communication between the warehouse employees and the other employees, the System was equipped with a notification feature that shows purchase and sales transaction that is ongoing and need action immediately. Notification can be seen by all the employees that are already listed on the system so that they can do internal control for each other.

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