THE DEVELOPMENT OF A WEB-BASED INTEGRATED FINANCIAL INFORMATION SYSTEM AT PT. PURA BARUTAMA KUDUS

Andrean Richardo 1; Nina Setiyawati 2*

Teknik Informatika 1,2
Universitas Kristen Satya Wacana
www.uksw.edu
andreanrichardoar@gmail.com 1; nina.setiyawati@uksw.edu 2

(*) Corresponding Author

Abstract—Pura Barutama Inc. is a printing and packaging company based in the city of Kudus, where its financial information such as pre-order reports, accounts receivable balance reports, invoice information, and income tax article 23, must be inquired manually to the finance department. So there are issues with access to the financial information that is directly linked to consumers and vendors, namely a lack of flexibility and productivity in marketing, tax, and purchasing departments. Therefore, this study aims to provide solutions to the problems by designing and building a web-based financial information system. This information system was designed using object-oriented modeling methods, namely the Unified Modeling Language (UML) method, and was built with the PHP programming language using the CodeIgniter framework and Oracle database which was directly connected to Pura Barutama Inc. This information system is expected to increase flexibility and efficiency in the marketing, taxation, and purchasing departments of the company's financial data management process and can obtain financial details without requesting the finance department.

Keywords: Financial Information System, Integrated, CodeIgniter, PHP, Oracle.

Kata Kunci: Sistem Informasi Keuangan, Terintegrasi, CodeIgniter, PHP, Oracle.

INTRODUCTION

Pura Barutama Inc. is a subsidiary of the Pura Group based in Kudus, Central Java, Indonesia which is engaged in printing and packaging. Pura Group currently has 30 production divisions and 13,000 workers and has partnered with various government and private agencies and industries in more than 90 countries. Pura Barutama Inc. always develops its information technology to support current business processes, such as the financial information system. The current financial information system is still desktop-based and centralized only in the finance department. As a result, the Marketing, Taxation, and Purchasing Departments must manually request the Finance Department for financial details such as pre-order reports, accounts receivable balance reports, invoice information, and income tax withholding evidence article 23 (PPH 23). This resulted in obstruction of the transaction process (Loveri, 2018) between the Marketing, Taxation, and Purchasing Departments with customers and suppliers, thereby disrupting business processes (Margaretha & Nababan, 2020) of Pura Barutama Inc. This is regarded as not optimizing one of the functions of the financial information system, namely increasing the accessibility of existing financial data to users in an effective and efficient manner (Anggraeni & Irviani, 2017), to simplify the
process of processing financial data and accessing corporate financial information.

In this study, an integrated web-based financial information system was developed so that the Marketing, Taxation, and Purchasing Departments could more conveniently and effectively access the necessary financial details. Some of the features of this financial information system are: 1) to manage data on outstanding pre-orders; 2) accounts receivable balance; 3) invoice; 4) data of tax withholding evidence PPH 23. These features support the Marketing and Purchasing Section to view pre-order information, accounts receivable balances, and invoices when making transactions with customers and suppliers without manually asking the Finance Department to speed up the transaction process and reduce errors. In the Taxation Section, this feature helps to manage and display the PPH 23 withholding evidence and sends emails containing evidence of PPH 23 withholding to both customers and suppliers. This information system is designed using object-oriented modeling methods, namely Unified Modeling Language (UML), and is built using the CodeIgniter framework and Oracle database which is directly connected to Pura Barutama Inc. The CodeIgniter Framework has several advantages compared to other frameworks including 1) it is open source or free (Destiningrum & Adrian, 2017); 2) small in size so that it does not require large resources for storage and faster program execution time (Destiningrum & Adrian, 2017); 3) using the MVC (Model View Controller) concept which allows separation between application-logic and presentation layers so that it is easier for future repairs or maintenance (Destiningrum & Adrian, 2017) and minimizes repetitive code writing (Heru, 2018); 4) has many libraries (Heru, 2018).

Results of the research literature in Table 1 show that the problem that many companies, agencies, and organizations often have is that financial data is difficult to handle, especially in the process of recording and financial reports, thereby reducing work efficiency and effectiveness. This issue arises as a result of a human error that occurs during the process of processing financial data, which still employs manual methods such as recording on paper or using a basic data processor such as Microsoft Office Excel. Based on previous research, to overcome this problem is to create a computerized system that can process financial data using a variety of system design methods. In this research, the authors built a web-based financial information system using object-oriented modeling methods, namely Unified Modeling Language (UML). The difference between this study and previous studies is that the financial information system built in this study is not only accessed by the Finance Section but also by the Marketing, Taxation, and Purchasing Department in each division at Pura Barutama Inc. Kudus with different roles for each user. This is a job maximization of the financial system to provide financial data and information integration for each user.

The purpose of this research is the development of a web-based financial information system at Pura Barutama Inc. Kudus. The web-based financial system that was built provides several benefits such as 1) make financial reports easier to create (Yanuardi & Permana, 2019); 2) provide time efficiency in the processing of financial data in the Finance Section and other divisions that need it (Yanuardi & Permana, 2019) to increase the efficiency of company performance (Margaretha & Nababan, 2020).
Nababan, 2020); 3) facilitate access to financial files and information (Hakim, 2020). The financial information system developed can also make it possible for businesses to manage financial data to quickly integrate the activities in each division, particularly during the process of registration and financial reporting, based on user rights. (Purnomo & Makmunah, 2018).

MATERIALS AND METHODS

A. Research Method

Research generally begins with careful planning, followed by a set of guidelines that are structured logically and systemically for the findings to be present and justifiable. In the development of information systems, a research stage consisting of four phases of research is used, as presented in Picture 1.

![Picture 1. Research Stage]

1. Identification of Problems

The first stage in this research is problem identification. At this stage, the authors identified the issues that occurred in Pura Barutama Inc. by observing and analyzing the company’s business processes and Standard Operating Procedure (SOP), as well as conducting interviews with finance division employees. The issues found were the marketing, taxation, and purchasing departments’ lack of efficiency and flexibility in obtaining financial data since the departments had to ask for financial details manually from the finance department. The departments of marketing, taxation, and purchasing are sections that deal directly with customers and suppliers. As a result, the process of obtaining financial information, which is still manual, takes a long time and impedes a company’s business processes. The financial information seen is the pre-order report, accounts receivable balance report, invoice information, and evidence of withholding PPH 23.

2. System Design

After the initial stage, the system design was carried out and the problem was identified. At this stage, a new system was designed to address the problems at Pura Barutama Inc. The design was carried out using object-oriented modeling methods, namely UML, which includes use case diagrams, class diagrams, activity diagrams, and sequence diagrams.

UML is a standard language that is widely used to define, analyze and design, and describe object-oriented programming architectures in the industrial world. UML is a computer modeling and visual communication language that uses diagrams and text support and the use of UML is not only limited to one method but is mostly used in object-oriented methodologies (Rambe et al., 2020).

3. System Development

At this stage, the development or manufacture of a system constructed in the previous stage was completed. This web-based financial information system was built with the PHP programming language version 7.2.3 using the CodeIgniter framework version 3.1.11 and an Oracle database which is directly connected to Pura Barutama Inc. and supported by several PHP libraries and javascript libraries.

4. System Implementation and Testing

System testing was performed after the system has been completed to see whether the system has run according to the design being performed. The system testing used the black box testing method which is one of the software testing techniques. Black box testing was used to determine the functionality of an application. The main focus of black-box testing is the input available for an application and the expected output for each input value (Verma et al., 2017).

B. Data Collection Technique

The data collection technique used in this study was interviews conducted with several sources from the Marketing, Taxation, and Purchasing Department at Pura Barutama Inc. The questions address the limitations, difficulties, or problems encountered when carrying out business processes, particularly those involving the reporting of company financial data.

RESULTS AND DISCUSSION

A. Use Case Diagram

A use case is a diagram that describes or depicts a scenario between the user and the system. Use case also explains what functions are in a system and who are the actors who have the right to access these functions (Hendini, 2016). This use case diagram was created as an initial analysis of system development and describes system functions clearly from the user’s perspective. In this financial information system, a user will be given menu access rights by a user who has access rights.
to access the user management menu and access. So each user will have different rights to access the menu. Users who will later use this system are from the marketing, taxation, and purchasing departments managed by the finance department. Picture 2 shows it in greater detail.

**Picture 2. Use Case Diagram**

### B. Class Diagram

This class diagram defines the structure of a system in terms of describing the classes that will be used to construct the system, with the class consisting of three major areas, namely names, attributes, and operations (Suendri, 2019). This web-based financial information system was built with the CodeIgniter framework that uses the MVC concept. However, since classes only exist in the model and controller, the MVC concept cannot be explained in the class diagram section. Picture 3 describes it in greater detail.

**Picture 3. Class Diagram**

### C. Activity Diagram

Activity diagrams are diagrams that describe the workflow or activity in a system (Ayu & Permatasari, 2018) that will be carried out. This activity diagram is a derivative or created based on a use case diagram. One of the activity diagrams that explains the workflow from the menu, view outstanding pre-orders, is described in Picture 4.
D. Sequence Diagram

Sequence diagrams are diagrams that describe how a function or operation is carried out from collaboration or interaction between objects (Rinaldi, 2019). The MVC concept in CodeIgniter is described in Picture 5 regarding the execution of the feature to find accounts receivable balances.

E. System Implementation

At this stage, the design that has been made into a system was carried out. Some of the interfaces for the Pura Inc. financial information system that have been built are as follows:

1. Form Login Page

Picture 6 is a login form page display that appears when the user wants to enter the main menu. To access the main menu, the user must first fill out the username and password that the administrator has set up.

2. My Profile Menu Page

Picture 7 is a display of my profile menu page, which is the first menu displayed when entering the financial information system. My profile menu page displays information about the user consisting of name, username, section, and unit. Users can change the password on the change password button and change the profile on the edit profile button.

3. Kelola User dan Akses Menu Page

Picture 8 is a "kelola user" and akses menu page that displays users who have registered in the financial information system. In the "kelola user" and "akes user" menu, there is a "tambah user baru" button to add new users, "hapus user" button to delete users, "edit users" button to change user data, "hak akses menu" button to change user-accessible menu lists, and "hak akses unit" to change the unit list user accessible on the "bukti pemotongan" menu.

4. Laporan Saldo Piutang Menu Page

Picture 9 is the "laporan saldo piutang" menu page that displays the accounts receivable balance report according to the customer code and date entered by the user in the search form. Accounts receivable balance reports displayed can be imported in excel, pdf, CSV and can be printed immediately.
6. Lihat Bukti Potong Menu Page
Picture 11 is a “lihat bukti potong” menu page that displays proof of withholding PPH 23 according to the unit, customer code, and time period entered by the user in the search form. The user can then view the pdf file of the PPH 23 withholding evidence and send an email containing the selected pdf file to the customer by pressing the send button.

5. Upload Bukti Potong Menu Page
Picture 10 is an “upload bukti potong” menu page that is useful for uploading proof of withholding PPH 23 in excel and pdf file formats. The user can check again whether or not the data that is to be uploaded is valid on the preview page before data is uploaded into the database. Data cannot be uploaded if the data entered is invalid or not by the predetermined format.

F. System Testing
The system testing was carried out using the black box testing method which is one of the software testing techniques. Black box testing is used to determine the functional specifications of an application (Bangkalang, 2019). The main focus of black-box testing is the input available for an application and the expected output for each input value (Rambe et al., 2020). The results of testing the financial information system built with black box testing can be seen in Table 2.

| Function Tested       | Condition                        | Expected Output                              | Output Generated by The System                                      | Status |
|-----------------------|----------------------------------|----------------------------------------------|---------------------------------------------------------------------|--------|
| Login                 | Correct username and password    | The system accepts login access then adds a session and goes to my profile page | The system accepts login access then adds a session and goes to my profile page | Valid  |
|                       | Incorrect username               | The system denies login access and displays a message "Username tidak terdaftar" | The system denies login access and displays a message "Username tidak terdaftar" | Valid  |
|                       | Correct username and incorrect password | The system denies login access and displays a message "Password Anda salah" | The system denies login access and displays a message "Password Anda salah" | Valid  |
| Display Dashboard     |                                  | The system displays data                      | The system displays data                                            | Valid  |
| Display Unit Data     |                                  | The system displays data                      | The system displays data                                            | Valid  |
| Display User Data     |                                  | The system displays data                      | The system displays data                                            | Valid  |
| Add User Data         | Form filled correctly            | The system adds data and displays messages "User berhasil ditambahkan" | The system adds data and displays messages "User berhasil ditambahkan" | Valid  |
|                       | Input the username that has been registered in the database | The system failed to add data and displays messages "Username sudah dipakai" | The system failed to add data and displays messages "Username sudah dipakai" | Valid  |
| Change User Data      | Form filled correctly            | The system changes data and displays messages "Data user berhasil diubah" | The system changes data and displays messages "Data user berhasil diubah" | Valid  |
|                       | Input the username that has been registered in the database | The system failed to change data and displays messages "Username sudah dipakai" | The system failed to change data and displays messages "Username sudah dipakai" | Valid  |
| Delete User Data      |                                  | The system deletes data and displays a message "User berhasil dihapus" | The system deletes data and displays a message "User berhasil dihapus" | Valid  |
| Change Menu Access Data | Choose a menu list that can be accessed by the user | The system changes data and displays messages | The system changes data and displays messages | Valid  |
| Function Tested                      | Condition                                      | Expected Output                                                                 | Output Generated by The System                                                                 | Status   |
|-------------------------------------|------------------------------------------------|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|----------|
| Change Unit Access Data             | Choose a unit list that can be accessed by the user | The system changes data and displays messages                                    | "Data akses menu berhasil diubah"                                                              | Valid    |
| Display Menu Data                   |                                                 | The system displays data                                                         | The system displays data                                                                         | Valid    |
| Add Menu Data                       | Form filled correctly                           | The system adds data and displays messages                                       | "Menu berhasil ditambahkan"                                                                     | Valid    |
| Change Menu Data                    | Form filled correctly                           | The system changes data and displays messages                                    | "Data menu berhasil diubah"                                                                    | Valid    |
| Delete Menu Data                    | The data to be deleted is selected              | The system deletes data and displays a message                                  | "Menu berhasil dihapus"                                                                       | Valid    |
| Display My Profile                  |                                                 | The system displays data                                                         | The system displays data                                                                         | Valid    |
| Change Password Data                | Form filled correctly                           | The system changes data and displays messages                                    | "Password berhasil diubah"                                                                     | Valid    |
| Change Profile Data                 | Form filled correctly                           | The system changes data and displays messages                                    | "Data berhasil diubah"                                                                       | Valid    |
| Search Outstanding Pre-Order Reports Data | Data found                                      | The system displays data                                                         | The system displays data                                                                         | Valid    |
| Search Accounts                    | Data found                                      | The system failed to display data and displays messages                          | "Data akses unit berhasil diubah"                                                               | Valid    |
| Receiveable Balance Reports Data    | Data not found                                  | The system failed to display data and displays messages                          | "Data outstanding-pre-order tidak ditemukan"                                                   | Valid    |
| Search Invoice Reports Data         | Data found                                      | The system displays data                                                         | The system displays data                                                                         | Valid    |
| Search Invoice Information Data     | Data not found                                  | The system failed to display data and displays messages                          | "Data faktur tidak ditemukan"                                                                  | Valid    |
| Upload Income Tax Article 23 Data   | Form filled correctly                           | The system displays data preview page before importing it to the database        | The system displays data preview page before importing it to the database                       | Valid    |
|                                    | Data does not match the requirements on the preview page | The import button cannot be clicked                                           | The import button cannot be clicked                                                             | Valid    |
|                                    | Data does not match the requirements on the preview page | The import button can be clicked                                                | The import button can be clicked                                                               | Valid    |
|                                    | Click the button "Import"                       | The system adds data                                                             | The system adds data                                                                            | Valid    |
|                                    | Data found                                      | The system displays data                                                         | The system displays data                                                                         | Valid    |
|                                    | Data not found                                  | The system failed to display data and displays messages                          | "Data faktur tidak ditemukan"                                                                  | Valid    |
| Send Email Containing Proof of Income Tax Article 23 in PDF File | Click the button "Send"                        | The system sends an email containing proof of income tax article 23 in a PDF file | The system sends an email containing proof of income tax article 23 in a PDF file              | Valid    |
| Display Email Data                  |                                                 | The system displays data                                                         | The system displays data                                                                         | Valid    |
| Add Email Data                      | Form filled correctly                           | The system adds data and displays messages                                       | "Email berhasil ditambahkan"                                                                  | Valid    |
| Change Email Data                   | Form filled correctly                           | The system changes data and displays messages                                    | "Data email berhasil diubah"                                                                  | Valid    |
| Delete Email Data                   | The data to be deleted is selected              | The system deletes data and displays a message                                  | "Email berhasil dihapus"                                                                      | Valid    |

**Conclusion**

The result of this research is the web-based Financial Information System at Pura Barutama Inc. which was built using the CodeIgniter framework and Oracle database. Based on the discussion, with the financial information system that has been built, the Marketing Section, the
Taxation Section, and the Purchasing Section can view information of outstanding pre-orders, accounts receivable balances, invoices, and PPH 23 withholding tax data. Also, the Marketing Department, the Taxation Department, and the Purchasing Department can access financial information that relates directly to customers without having to manually request information from the finance department.

REFERENCE

Anam, K. (2018). Analisa Dan Perancangan Sistem Informasi Akademik Berbasis Web Pada Mi Al-Mursyidiyah Al-‘Aisyrotussyyafi’yyah. *Jurnal Teknik Informatika, 11*(2). https://doi.org/10.15408/jti.v11i2.8867

Anggraeni, E. Y., & Irviani, R. (2017). *Pengantar Sistem Informasi* (E. Risanto (ed.); 1st ed.), CV. Andi Offset.

Ayu, F., & Permatasari, N. (2018). Perancangan Sistem Informasi Pengolahan Data Praktek Kerja Lapangan (PKL) Pada Devisi Humas Pt. Pegadaian. *Intra-Tech, 2*(2).

Bangkalang, D. H. (2019). Pembangunan Aplikasi Monitoring Kinerja Surveyor Produk Kredit Bank XYZ Berdasarkan Tahapan Engineering Development. *CESS (Journal of Computer Engineering System and Science), 4*(2), 258–265.

Destiningrum, M., & Adrian, Q. J. (2017). Sistem Informasi Penjadwalan Dokter Berbasis Web Dengan Menggunakan Framework Codeigniter (Studi Kasus: Rumah Sakit Yukum Medical Centre). *Jurnal Teknoinfо, 11*(2), 30. https://doi.org/10.33365/jti.v11i2.24

Hakim, L. (2020). Perancangan Sistem Informasi Pengolahan Data Keuangan Berbasis Web Responsive Pada Butik Nisa Syar'i Lubuklinggau. *Jurnal Digital Teknologi Informati, 3*(1), 14. https://doi.org/10.32502/digital.v3i1.2498

Hendini, A. (2016). Pemodelan UML Sistem Informasi Monitoring Penjualan dan Stok Barang (Studi Kasus: Distro Zhezha Pontianak). *Jurnal Khatulistiwa Informatika, IV*(2), 107–116.

Heru, S. (2018). Coding Mudah dengan Codeigniter, JQuery, Bootstrap, dan Datable. In *Coding Mudah dengan Codeigniter, JQuery, Bootstrap, dan Datable*. Elex Media Komputindo.

Loveri, T. T. (2018). Sistem Informasi Aplikasi Pengelolaan Transaksi Keuangan Dan Pendataan Konsumen Pada Cv. Puplas. *Jurnal Sains Dan Informatika, 4*(2). https://doi.org/10.22216/jsi.v4i2.3584

Margaretha, H. A., & Nababan, M. N. (2020). Perancangan Sistem Informasi Keuangan Berbasis Web Studi Kasus PT. Karya Swadaya Abadi. *Jurnal Madani: Ilmu Pengetahuan, Teknologi, Dan Humaniora, 1*(2), 24–31.

Purnomo, H., & Maknunah, J. (2018). Sistem Informasi Pengolahan Data Keuangan Berbasis Web. *J I M P - Jurnal Informatika Medeka Pasuruan, 3*(3), 44–49. https://doi.org/10.37438/jimp.v3i3.187

Rambé, B. H., Pane, R., Irmaryani, D., Nasution, M., & Munthe, I. R. (2020). UML Modeling and Black Box Testing Methods in the School Payment Information System. *Jurnal Mantik, 4*(3), 1634–1640. https://doi.org/10.35335/MANTIK.V04.20.969.PP1634-1640

Rinaldi, R. (2019). Penerapan Unified Modelling Language (UML) Dalam Analisis Dan Perancangan Aplikasi E-Learning. *Jurnal SIMTIKA, 2*(1).

Ritonga, R. A., & Hendriyati, P. (2020). Sistem Informasi Administrasi Keuangan Berbasis Web Menggunakan Framework Laravel Pada Smk Yp FATAHILLAH 2. *Universitas Banten Jaya, 4*(1), 35–47.

Suendri, S. (2019). Implementasi Diagram UML (Unified Modelling Language) Pada Perancangan Sistem Informasi Remunerasi Dosen Dengan Database Oracle (Studi Kasus: UKI Sumatera Utara Medan). *Algoritma: Jurnal Ilmu Komputer Dan Informatika, 2*(2), 1–9. http://jurnal.unisins.ac.id/index.php/algoritma/article/view/3148

Verma, A., Khatana, A., & Chaudhary, S. (2017). A Comparative Study of Black Box Testing and White Box Testing. *International Journal of Computer Sciences and Engineering, 5*(12), 301–304. https://doi.org/10.26438/ijcse/v5i12.3013

Yanuardi, Y., & Permana, A. A. (2019). RANCANG Bangun Sistem Informasi Keuangan Pada Pt. Secret Discoveries Travel And Leisure Berbasis Web. *JIKA (Jurnal Informatika)*. https://doi.org/10.31000/.v2i2.1513

Zaen, M. T. A., Julkarnaen, J., & Saleh, M. (2019). Sistem Informasi Keuangan Pada Dinas Perhubungan Kabupaten Lombok Tengah Berbasis Web. *Jurnal Manajemen Informatika Dan Sistem Informasi, 2*(1). 50. https://doi.org/10.36595/misi.v2i1.79