Analysis and Design of the Integrated Management Information System of the Company (SIMANTAP)

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Abstract. Production and distribution activities are carried out by combining various factors of production, namely humans, nature, and capital. From this management, of course, humans cannot manage existing data in the company manually continuously because it could be that data that has been recapitalized can be lost resulting in the company's strategy to achieve success is a little hampered. This study proposes a design of an integrated management information system company that can manage human and financial resources in one application. The proposed application is called SIMANTAP, where the purpose and function of this application are to create, view, and manage all company data starting from employee data, inventory items, seeing company expenses and income in one media to make it easier for employees, admins, and managers to see information company. This application was developed by the waterfall method, with a case study of a company in Surabaya. This application is expected to support the company's business, especially related to human resources and financial management.

Keywords. Software engineering, software design, information system, waterfall, UI/UX design.

1. Introduction

A company is an organization established by a person or group of people or other bodies whose activities carry out production and distribution to meet the economic needs of humans. Production and distribution activities are carried out by combining various factors of production, namely humans, nature, and capital[1]. From this management, of course, humans cannot manage existing data in the company manually continuously because it could be that data that has been recapitalized can be lost resulting in the company's strategy to achieve success is a little hampered. Therefore, a company management information system is needed that is capable of managing human resources, finance, and that can monitor the company's related business[2].

Along with the rapid growing technological advances in many areas of life, allowing the public to enjoy the convenience that is generated by technology. One example of technology developed at this time is in the field of information technology. Today, information systems provide the communication and analytic power that firms need for conducting trade and managing the business on a global scale. Controlling the far-flung global corporation-communicating with distributors and suppliers, operating
24/7 in different national environments, servicing local and international reporting needs — is a major business challenge that requires powerful information system responses[3].

Existing applications, such as Sleekr which is a company management information system that focuses on aspects of Human Resources, such as employee databases including absenteeism, shifts, and employee leave, to payroll and facilities obtained by employees[4][5]. Sleekr application has been widely used by well-known companies such as Miniso, Gojek, Amartha, Female Daily, by Lizzie Parra, and many others.

Whereas the application called Zahir is one of the best accounting applications in Indonesia[6]. Zahir has partnered with many well-known companies in Indonesia, such as Traveloka, LinkAja, Transvision, Bukalapak, Kitabisa, and others. Zahir manages invoices, inventory, and finance in one application, which can monitor the company’s business anytime and anywhere[7][8].

This study proposes a design of an integrated management information system company that can manage human and financial resources in one application. The proposed application is called SIMANTAP, where the purpose and function of this application are to create, view, and manage all company data starting from employee data, inventory items, seeing company expenses and income in one media to make it easier for employees, admins, and managers to see information company.

Users of this program include corporate actors such as employees, managers, admins, and so on. This research aims to make it easier to understand the concept from the beginning of its formation as well as the function and purpose of the application as detailed information of this program so that it can be useful for others.

This application is made based on the results of observations of the same type of application that has advantages and disadvantages of each. This application was made to make it easier to operate by ordinary people.

2. Method

In terms of designing an information system, the Waterfall method is one of the most commonly used SDLC (System Development Life Cycle) methods[9][10]. The stages in the Waterfall method can be seen in Figure 1 as follows:

![Software Development Life Cycle](image)

**Figure 1** Software Development Life Cycle.

The communication phase is data collection includes supporting information and resources through analysis of the conditions in the field and user needs. Planning phase including a general description of the system and mechanism for system development. The modeling phase is system design based on the analysis of user needs and field conditions. And then the construction phase is the development of system testing. Last but not least is the deployment phase, the system implementation[11].
Based on this, the purpose of this research is to analyze and design a management information system to be able to support the operational process (human resources and accounting) for business in Indonesia.

The research began by exploring needs by using interview methods to several business people in the city of Surabaya, East Java. The results of the interview are then taken to cross-check with observations that have been made related to pre-existing applications, namely Sleekr and Zahir. The requirement analysis phase results in mapping requirements into functional and non-functional requirements[12][13].

The next stage is the modeling stage which models the data from the excavation needs into diagrams using UML (Unified Model Language)[14]. We construct a use case diagram, activity diagram, sequence diagram (interaction and collaboration), and class diagram. We model this system with OO (object oriented) models. This research is limited to the modeling phase. The next stage, construction, and development will be discussed in the future.

3 Results and Discussion
Accounting tasks for all organizational units, employee management, and company inventory in an integrated and coordinated manner. Integrated employee management and company inventory and coordination. Company rules that must be met in the library management information system that will be modeled are as follows:
1. Employees get different features according to access rights
2. Attendance is done via a login
3. Login will affect employee performance and salary
4. All employees can see employee data, but only the admin has the right to manage
5. Shifts are made by the admin, but the manager who manages those who work on the shift is the manager
6. All transaction processes are carried out by marketing parties and report to managers.
These are the results of defining use cases in the Library Management Information System as follows as Table 1:

| Use Case                  | Description                                                                                                                                 |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Login                     | Is a process of employee login                                                                                                               |
| Managing Transactions     | is a process of managing company transaction data which includes delivery orders, purchase orders, offers, and invoices                     |
| Creating a Delivery order | Is the process of entering delivery order data into a database                                                                               |
| Creating invoices         | This is the process of entering invoice data in a database                                                                                     |
| Making an Offer           | Is the process of entering, changing, and deleting bid data in a database                                                                    |
| Financial statements      | Is the process of making and displaying financial statements-company                                                                              |
| Managing Inventory        | Is the process of entering, changing and deleting inventory data in a database                                                                 |
| Managing employee data    | Managing Members is a process of managing employee data which includes entering employees, viewing employees, changing employees, and deleting employees. |
Managing pay slips
This is the process of creating and displaying employee pay slips based on performance

Managing Shift
Is a shift management process that includes creating, managing and changing employee shifts

The advantage of SIMANTAP application is
1. The system can be controlled remotely
2. Can be run on several different platforms (web & mobile)
3. The system can only be accessed by employees who have registered and have certain access rights and have guaranteed security to protect company data

Meanwhile, the lack of SIMANTAP application is the support of several platforms that are still lacking because it is under development

The specification for running this program is a server computer as a database that is connected to the internet. The development of this software uses the C# programming language, uses the PostgreSQL database, and runs on the personal computer and mobile desktops.

3.1. User Interface Design

The user interface (UI) is a way for a program with users to communicate with each other or can be said to be anything that is designed to be an information device, where users can interact with a program more easily. Media that can be used by users to interact with programs (applications or websites) can be in the form of a screen (layout), keyboard, and mouse[15]. The following are the designs made for this SIMANTAP web based application.

![Login Interface](image)

**Figure 2 Login Interface**

The display above is the initial display when the user wants to access the application that is required to log in first, in order to operate the application. This application is intended specifically for registered company employees, if you can not log in then certainly not a company employee.
After going through the login process, the user is directed to the main view where the function is to manage and display all the results of the company data recap in accordance with the user account that is accessed. Here users have 4 types of differences including user manager (intended for managers), admin user (intended for admins), user marketing (intended for marketing), and employee users (intended for employees).

This employee section tab contains all the relevant matters, from attendance, employee performance diagrams, and employee data details.

The inventory tab contains the remaining trading stock data which can later be used as a reference to monitor products that are under-produced and over-produced along with sales prices and sold stock.
Furthermore, the transaction tab contains all the transaction features including starting from the offer, invoice and delivery order data.

The report tab contains a summary of all available data in the company (including employee data) to review the progress of the company's activities starting from the income and profits received from sales.

4. Conclusion
This study aims to analyze and design an integrated company management information system that can manage both human resources and financial matters in one application. The application called SIMANTAP, which is an integrated information management system, which case study is a company in Surabaya. This application will be developed using the waterfall model. This research is only focused on the design stage and is still in the development stage due to the changing needs of users. The construction and development phase will be discussed in the future.

References

[1] J. F. Andry, H. Agung, and Y. Erlyana, “Management Information System for Order Fulfillment: a Case Study,” Proceeding 9th Int. Semin. Ind. Eng. Manag., no. May 2017, pp. 1–8, 2017.
[2] S. E. Tutupary, “the Benefits of Management Information System on the,” J. Bus. Manag., vol. 3, no. 8, pp. 835–849, 2014.
[3] A. Philip, B. Afolabi, O. Adeniran, O. Oluwatolani, and G. Ishaya, “Towards an Efficient Information Systems Development Process and Management: A Review of Challenges and Proposed Strategies,” J. Softw. Eng. Appl., vol. 03, no. 10, pp. 983–989, 2010, doi: 10.4236/jsea.2010.310115.
[4] Sancoko, T. A. Purwanto, and N. Aprilia, “SLEEK Information System: Perceived Ease of Use and Usefulness,” vol. 426, no. Ivch 2018, pp. 233–237, 2020, doi: 10.2991/assehr.k.200331.147.

[5] Supardianto, R. Ferdiana, and S. Sulisty, “The role of information technology usage on startup financial management and taxation,” Procedia Comput. Sci., vol. 161, pp. 1308–1315, 2019, doi: 10.1016/j.procs.2019.11.246.

[6] V. Sopyani, Nihlatu; Fauziah, Sifa; Apriana, “Implementation of Zahir Accounting Version 5.1 In PT. Berhasil Beruntung Bersama,” J. Mantik, vol. 4, no. May, pp. 193–202, 2020.

[7] Sriwidharmanely and V. Syafrudin, “An Empirical Study of Accounting Software Acceptance among Bengkulu City Students,” Asian J. Account. Gov., vol. 3, no. 1, pp. 99–112, 2012, doi: 10.17576/ajag-2012-3-6521.

[8] S. N. Azizah, “Analysis of Factors Affecting the Implementation of Computer-Based Accounting Information System on Small and Medium Enterprises,” J. Ekon. Stud. Pembang., vol. 18, no. 2, pp. 111–115, 2017, doi: 10.18196/jesp.18.2.4021.

[9] W. Hardyanto, A. Purwinarko, I. M. Sudana, and E. Supraptono, “Model Development of Management Information System of Internship,” vol. 247, no. Iset, pp. 196–199, 2018, doi: 10.2991/iset-18.2018.41.

[10] Y. Bassil, “A Simulation Model for the Waterfall Software Development Life Cycle,” vol. 2, no. 5, 2012, [Online]. Available: http://arxiv.org/abs/1205.6904.

[11] P. R. Iswardani, I. W. S. Pramina, and Y. P. Sudarmodjo, “Design of Hotel Warehouse Management Information System Based on PIECES Analysis,” Int. J. Eng. Emerg. Technol., vol. 3, no. 2, pp. 104–108, 2018.

[12] A. Alshamrani and A. Bahattab, “A Comparison Between Three SDLC Models Waterfall Model, Spiral Model, and Incremental/Iterative Model,” IJCSI Int. J. Comput. Sci. Issues, vol. 12, no. 1, pp. 106–111, 2015, [Online]. Available: https://www.academia.edu/10793943/A_Comparison_Between_Three_SDLC_Models_Waterfall_Model_Spiral_Model_and_Incremental_Iterative_Model.

[13] A. P. Saputra, K. Budiarta, and W. Rinas, “Design and Analysis of Online Shop Display Based on Augmented Reality Technology,” Int. J. Emerg. Technol., vol. 1, no. 1, pp. 61–64, 2016.

[14] N. H. Z. Abai, J. H. Yahaya, and A. Deraman, “User Requirement Analysis in Data Warehouse Design: A Review,” Procedia Technol., vol. 11, no. Iceei, pp. 801–806, 2013, doi: 10.1016/j.protcy.2013.12.261.

[15] H. Joo, “A study on understanding of UI and UX, and understanding of design according to user interface change,” Int. J. Appl. Eng. Res., vol. 12, no. 20, pp. 9931–9935, 2017.