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Designing A Web-Based Financial Information System Using BPMN Model for BPK Dahar

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Abstract

The development of information technology provides significant opportunities for organizations to improve operational efficiency, including in financial management. BPK Dahar in Medan, faces various challenges in the process of recording and reporting finances that are still done manually, making it vulnerable to errors and delays in information. This research aims to design a web-based financial information system that can improve the effectiveness and accuracy of financial data management at BPK Dahar. The methodology used in designing this system refers to the Business Process Model and Notation (BPMN) to model business processes systematically and easily understood. The result of this study is a web-based financial information system design that includes features for recording income and expenses, financial reports, and user data management. With the implementation of this system, it is expected that financial processes at BPK Dahar will be more structured, transparent, and easily accessible. This system also provides a basis for further development towards full digitalization in the organization's financial management.

***Keywords**: Accuracy; BPMN Model; Effectiveness; Financial Information System; Web-Based*

1. Introduction

High-quality financial statements are essential information for all parties within the company for decision-making, thus requiring an adequate information system to produce accurate, timely, and relevant financial reports.[1] The main problem at BPK Dahar is the manual input of financial reports. Starting with writing financial reports by hand, using Microsoft Excel software, and POS (Point of Sales) applications. There were several challenges in using Microsoft Excel, one of which was that the formulas used were not standardized and Microsoft Excel was not centralized in a single database. The use of POS focuses on sales applications at the cashier. Therefore, with the use of the POS application, the data that can be viewed is sales results and gross profit, but it does not include total business costs. Gross profit is the profit earned before business expenses are taken into account. Meanwhile, the information system needed by the owner of BPK DAHAR is a system that can view costs, sales data, profit and loss, net business profit, and profit sharing. Net profit is the profit after deducting expenses that are company costs. [2] Therefore, a system needs to be developed that can support and facilitate the needs of BPK DAHAR.

Starting from the problems mentioned above, the author decided to design a financial information systems using Business Process Model and Notation (BPMN). The main purpose of using BPMN is to design and identify business process modeling. [3] The designed financial information system is expected to store, analyze, manage, and present financial report data. BPMN was chosen because this model is the standard for drawing business process flows. This system is designed for four main features: expense input, sales, net profit, and profit sharing.

2. Literature Review

2.1. Information System

An information system is a combination of the words "system" and "information," which means an activity that uses technology to access information technology in order to run and support operations and management.[4]

2.2. Financial Reports

recording financial transactions, showing the financial condition at a specific point in time and providing an overview of a company's or business's performance. Financial reports can be used as a reference for making future decisions based on accurate data.[5] According to SFAC, the objective of financial reporting is to provide useful financial information for investors and potential investors, and creditors in making decisions about providing resources to the company.[6]

2.3. Business Process Model Notation (BPMN)

According to Badr and Abdulkader, BPMN is a diagrammatic representation of a business process based on flowchart techniques, designed to create graphical models.[7] The purpose of using BPMN is to make it easier to understand the business process flow of a company.
A BPMN diagram consists of several elements. According to Tampubolon & Situmorang, there are 4 elements with several notations that are part of BPMN.[3] The following is an explanation of each BPMN element:

1. Flow object which consists of two parts which are events and activities. Events are represented as circles and explain what happened at that time. These events affect the flow of the process and usually lead to a trigger or a result. Each represents the beginning of the business process, interruptions to the business process, and the end of the business process. Each of these event types is further divided into several subcategories. For example, a "message start" event, which is represented like a start event but with an additional envelope symbol inside, means the event begins with the arrival of a message. An activity represents the work (task) that needs to be completed. There are four types of activities which are tasks, looping tasks, sub-processes, and looping sub-processes.
2. Connecting object which is a message flow between processes where one event is related to another and represents that relation. There are four types of connecting objects: sequence flow, message flow, association, and data association
3. Swimlanes is used to visually categorize diagram elements. There are two types of swimlanes: pool and lane.
4. Artifact is used to provide explanations in the diagram. It consists of 3 types which are data object, group, and annotation.

3. Research Method

BPMN was chosen because this model is the standard for drawing business process flows. This system is designed for four main features: expense input, sales, net profit, and profit sharing. Here are some other features that will be designed in this system: admin, raw material list, expense type list, sales list, and profit and loss. As for some additional features based on the owner's request, such as information on the source of data entry and daily revenue information at the initial display. In the financial information system research that will be designed, the application is named CALCA.

The model used in this research is the BPMN model. The following is a diagram of the BPMN model:

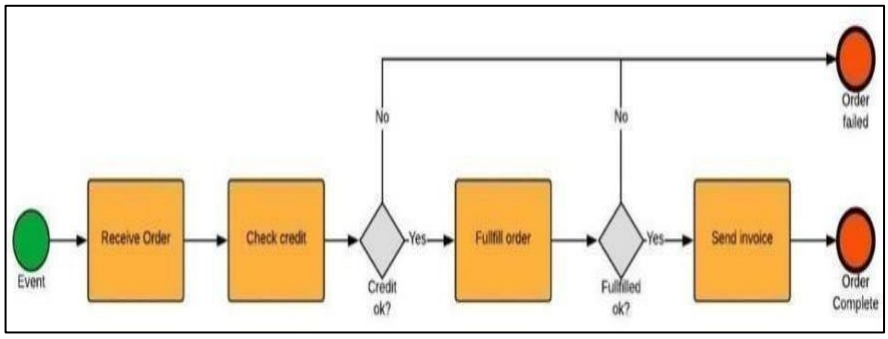

Fig. 1: BPMN Model

The input design of the proposed system includes income input form to add or delete data related to income and expense input form to add or delete data related to expenses.The output design of the proposed system includes income report, expenditure report, net income report, and profit sharing report.

4. Results

The results of this research are based on the design of a web-based financial information system using the BPMN method at BPK Dahar. To visualize the web-based application, the following are some of the results:

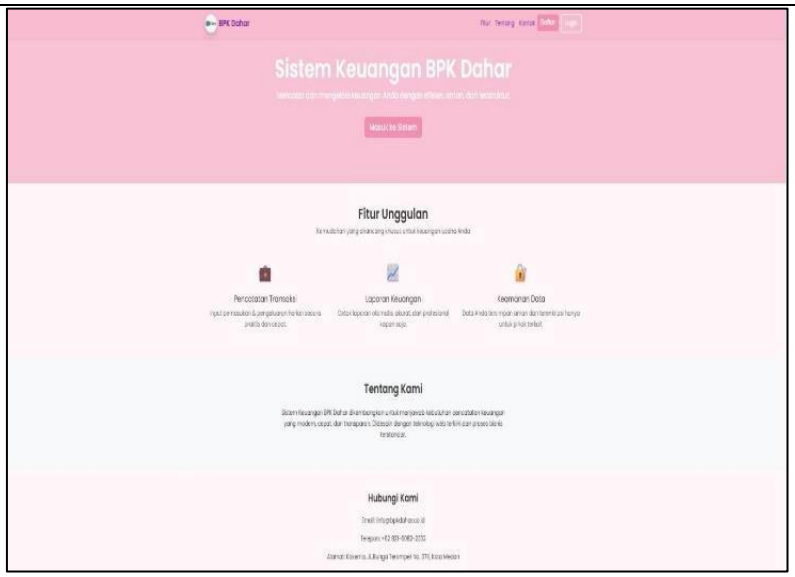

Fig. 2: Home Page Interface

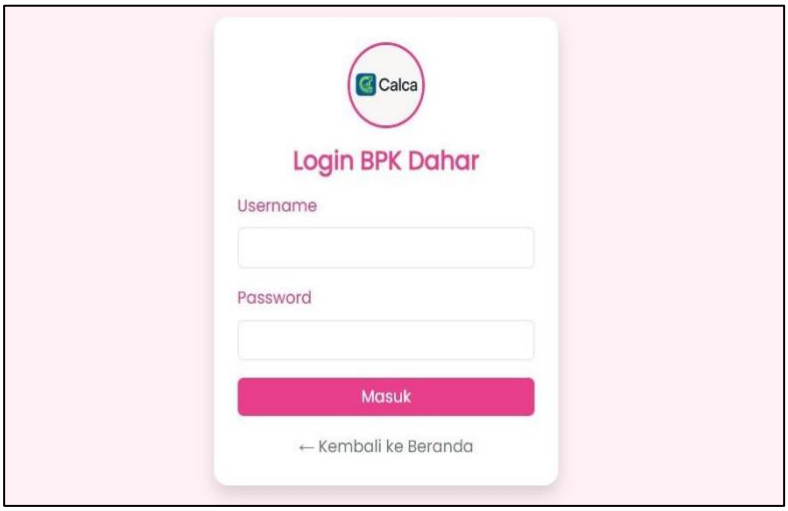

Fig. 3: Login Page Interface

Fig. 4: Dashboard Owner Interface

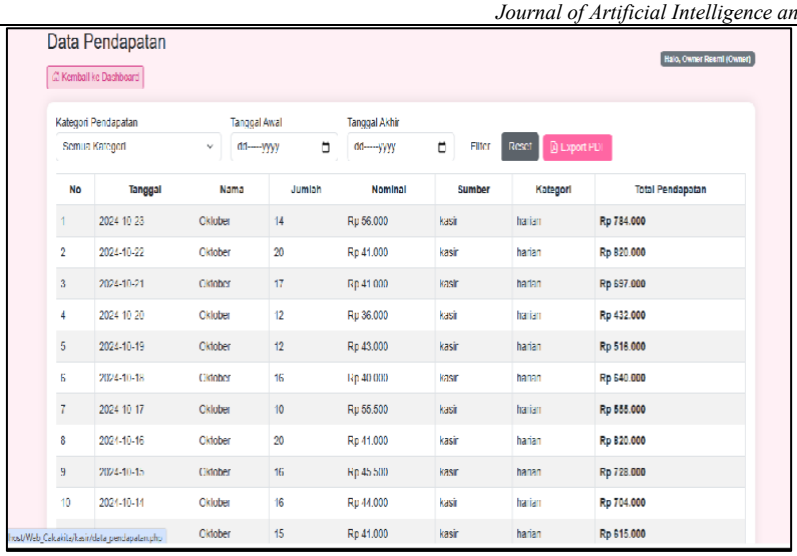

Fig. 5: Revenue Data Interface

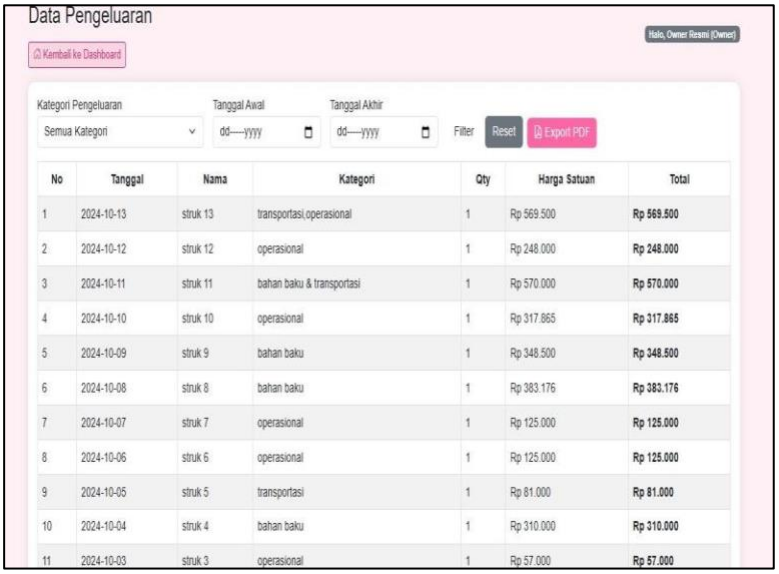

Fig. 6: Expense Data Interface

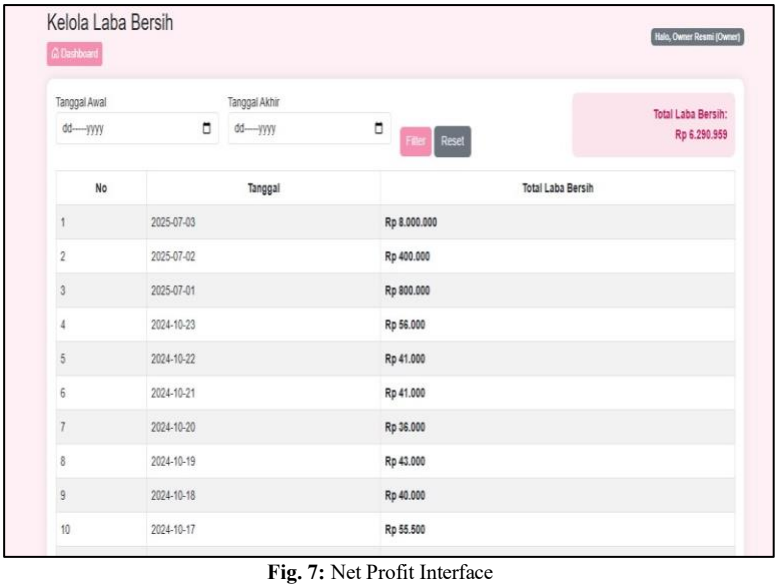

Fig. 7: Net Profit Interface

Fig. 8: Profit Sharing Interface

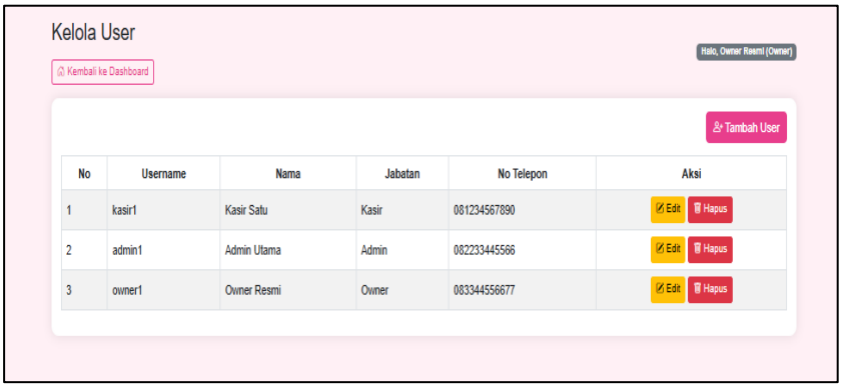

Fig. 9: Manage Users Interface

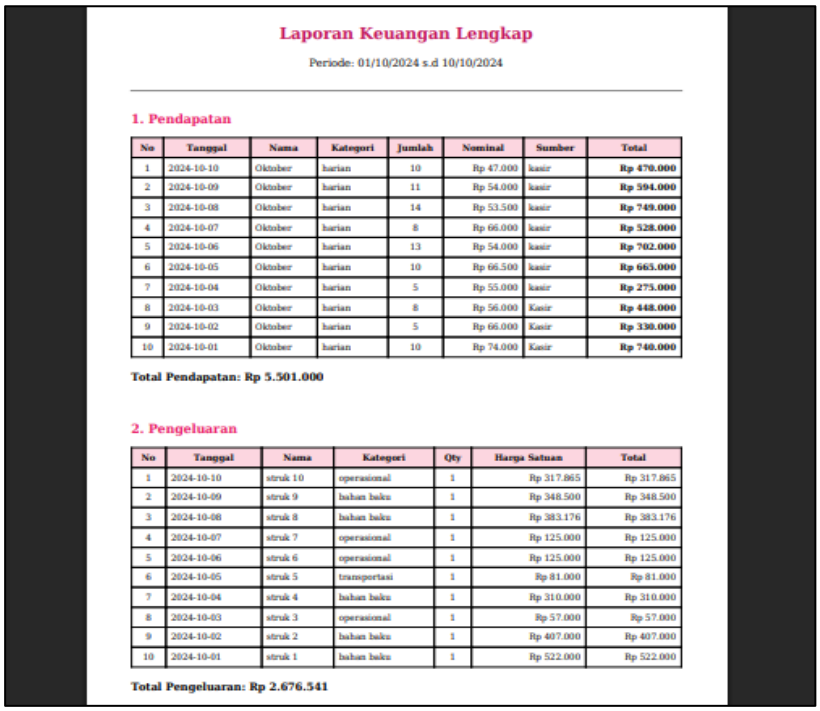

Fig. 10: Reports Interface

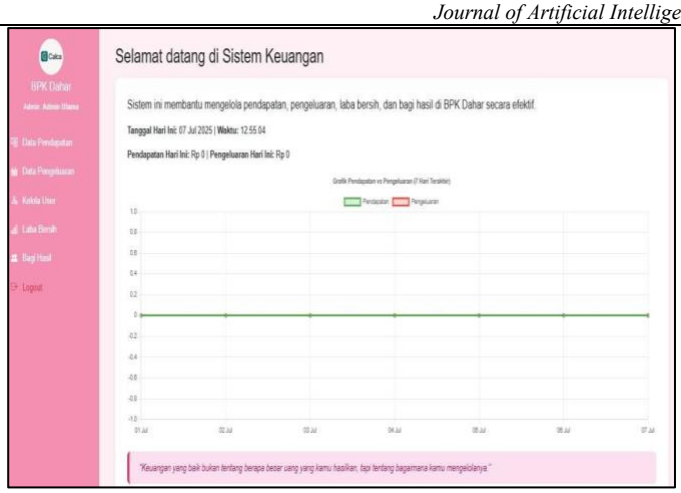

Fig. 11: Admin Dashboard Interface

Fig. 12: Cashier Dashboard Interface

5. Conclusion

After completing the information system analysis and design process, the following conclusions can be drawn: The design of the financial reporting system website can meet the needs of BPK Dahar. The features built into this application, including revenue, expenses, net profit, and profit sharing, are appropriate and address the issues facing BPK Dahar's financial system. The application of Business Process Model and Notation (BPMN) notation in the financial information system design significantly simplifies the resolution of reporting issues at BPK Dahar. For further research, it is recommended that researchers address the website's shortcomings by adding a password reset feature in case the user forgets their password.

References

[1] T. Sartika Pratiwi and Padriyansyah, "PERANAN SISTEM INFORMASI DALAM PENYAJIAN LAPORAN KEUANGAN: SEBUAH KAJIAN
LITERATUR," *Strategi*, vol. 14, no. 2, Oct. 2024.

[2] S. Ningsih, W. B. Utami, A. R. Hidayatullah, and L. D. Novianti, "PENGARUH LABA KOTOR, LABA OPERASI, DAN LABA BERSIH DALAM
MEMPREDIKSI ARUS KAS DI MASA MENDATANG (Studi Empiris Perusahaan Manufaktur Sektor Industri Barang Konsumsi Yang Terdaftar Di Bursa Efek Indonesia Periode 2018-2020)," *JAP (Jurnal Akuntasi dan Pajak)*, vol. 23, no. 2, pp. 1–10, 2023.

[3] C. Novian, Y. M. Idah, and Z. Rifai, "PEMODELAN PROSES BISNIS PENGADAAN BARANG (STOK) MENGGUNAKAN PENDEKATAN
BUSINESS PROCESS MODELLING NOTATION (BPMN) (Studi Kasus: SHM Motor Purwokerto)," *Journal of Information System Management (JOISM)* vol. 3, no. 2, 2022.

[4] J. P. Hendrik Sitorus and M. Sakban, "Perancangan Sistem Informasi Penjualan Berbasis Web Pada Toko Mandiri 88 Pematangsiantar," *Jurnal Bisantara Informatika (JBI)*, vol. 5, no. 2, 2021.

[5] Umar Surya S.Pd., "Pengertian Keuangan Menurut Para Ahli: Mengupas Arti Penting Mengelola Uang secara Santai." Accessed: Aug. 11, 2025. [Online]. Available: https://tambahpinter.com/pengertian-keuangan-menurut-para-ahli/

[6] W. Riyadi, "PEMANFAATAN SISTEM INFORMASI AKUNTASI DAN PEMAHAMAN AKUNTASI PENGARUHNYA TERHADAP KUALITAS LAPORAN KEUANGAN PADA KOPERASI DI KABUPATEN MAJALENGKA," *JAKSI Jurnal Akuntansi Keuangan dan Sistem*
Informasi, vol. 1, no. 2, 2020.

[7] M. Jafar Ali Hamzah and R. Narezka Hariyanto, "Pemodelan Proses Bisnis Pendaftaran Rawat Inap pada Rumah Sakit Dewi Sri Karawang menggunakan Business Process Modeling Notation (BPMN)," *Dirgamaya Jurnal Manajemen dan Sistem Informasi* , vol. 1, no. 2, Nov. 2021, [Online]. Available: www.bpmn.org,