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Information System Design Using the Financial Ratio Method at CV Bali Indigo

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Abstrak

Perkembangan teknologi informasi mendorong meningkatnya kebutuhan akan informasi keuangan yang akurat dan tepat waktu, khususnya pada usaha kecil dan menengah. Banyak UKM masih menggunakan pencatatan akuntansi manual atau semi-terkomputerisasi yang belum terintegrasi dengan analisis kinerja keuangan, sehingga menimbulkan ketidakefisienan dan keterbatasan dalam pengambilan keputusan. Penelitian ini bertujuan untuk merancang dan mengimplementasikan sistem informasi akuntansi menggunakan metode rasio keuangan pada CV Bali Indigo. Sistem yang diusulkan mengintegrasikan pencatatan transaksi keuangan, penyusunan laporan keuangan secara otomatis, serta analisis rasio keuangan dalam satu sistem terpadu. Rasio keuangan utama yang mencakup rasio likuiditas, profitabilitas, dan solvabilitas dihitung secara otomatis untuk memberikan indikator objektif terhadap kinerja keuangan perusahaan. Metodologi penelitian meliputi analisis kebutuhan sistem, perancangan sistem, implementasi, dan evaluasi sistem. Hasil penelitian menunjukkan bahwa sistem yang dikembangkan mampu meningkatkan akurasi dan ketepatan waktu pelaporan keuangan serta meningkatkan kegunaan informasi keuangan melalui analisis rasio dan rekomendasi manajerial. Penelitian ini membuktikan bahwa integrasi metode rasio keuangan dalam sistem informasi akuntansi merupakan pendekatan yang efektif untuk mendukung evaluasi kinerja keuangan pada usaha kecil dan menengah.

Kata kunci: *Sistem Informasi Akuntansi, Rasio Keuangan, Kinerja Keuangan, Usaha Kecil dan Menengah, Sistem Pendukung Keputusan*

Abstract

The advancement of information technology has intensified the demand for reliable and timely financial information, particularly within small and medium sized enterprises. Many SMEs continue to apply manual or partially computerized accounting practices that are not fully integrated with financial performance evaluation, leading to inefficiencies and limited managerial insight. This study focuses on the design and implementation of an accounting information system based on the financial ratio method to support financial management at CV Bali Indigo. The proposed system consolidates financial transaction recording, automated financial statement generation, and financial ratio analysis within a single integrated framework. Key financial ratios, including liquidity, profitability, and solvency indicators, are calculated automatically to provide objective measures of financial performance. The research methodology encompasses system requirement analysis, system design, implementation, and evaluation stages. The findings indicate that the implemented system enhances both the accuracy and timeliness of financial reporting while improving the usefulness of financial information through automated ratio analysis and managerial support features. By delivering

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structured financial insights and real time analytical outputs, the system facilitates more informed managerial decision making. Overall, the results confirm that integrating financial ratio analysis into an accounting information system represents an effective approach for strengthening financial performance evaluation in small and medium sized enterprises.

Keywords: *Accounting Information System, Financial Ratio Analysis, Financial Performance, Small and Medium Enterprises, Decision Support System*

1. INTRODUCTION

The accelerated development of information technology has fundamentally reshaped how organizations handle and use financial information. Accounting information systems have progressed beyond basic transaction recording and now function as integrated platforms that support financial reporting, analytical evaluation, and strategic decision making. In modern business contexts, particularly within small and medium sized enterprises, access to reliable and timely financial information is essential for sustaining competitiveness and long term growth. An accounting information system allows organizations to systematically capture, process, store, and present financial data in an organized structure, thereby strengthening transparency, accountability, and internal control [1]. Prior research indicates that the adoption of effective accounting information systems positively affects organizational performance by improving the quality of accounting information and facilitating managerial decision making [2]. Furthermore, increasing operational complexity and regulatory demands have intensified the need for systems that not only document financial transactions but also deliver analytical insights into an organization's financial condition. Financial ratio analysis is widely recognized as one of the most fundamental and practical techniques for evaluating financial performance because it converts financial statement data into meaningful indicators related to liquidity, profitability, solvency, and operational efficiency [3]. For enterprises such as CV Bali Indigo, which operate in a competitive and dynamic market environment, the integration of accounting information systems with financial ratio analysis is increasingly essential to support informed and objective managerial decision making.

Despite the acknowledged importance of accounting information systems, many small and medium sized enterprises continue to face persistent challenges in managing their financial information effectively. In practice, accounting activities in SMEs are often conducted using manual procedures or basic spreadsheet applications that lack integration and standardization [4]. Such approaches frequently result in data redundancy, inconsistencies, delayed reporting, and an increased risk of human error. These limitations make it difficult for management to obtain reliable financial information on a timely basis, particularly when financial performance needs to be evaluated using financial ratios. Several studies report that the absence of a well designed accounting information system leads to poor quality accounting information, which in turn negatively affects managerial decision making and organizational performance [5]. Other research also highlights that ineffective accounting systems reduce the ability of organizations to monitor financial performance continuously and systematically [6]. Furthermore, financial ratio analysis in many SMEs is performed manually and only on an irregular basis, which reduces its usefulness as a continuous performance monitoring tool. The general problem addressed in this research is the lack of an integrated accounting information system that supports both systematic financial recording and structured financial performance analysis using financial ratios. This problem is particularly relevant for CV Bali Indigo, where existing accounting practices have not fully supported management needs for accurate, consistent, and analytical financial information.

In response to these challenges, this research aims to design an accounting information

system that integrates financial ratio analysis as an essential analytical component for CV Bali Indigo. The primary research goal is to develop a system framework that is capable of recording financial transactions accurately, generating standardized financial statements, and automatically calculating key financial ratios to support financial performance evaluation. The motivation for conducting this study is driven by the increasing need for small and medium sized enterprises to adopt digital accounting solutions that are not only operationally efficient but also capable of providing meaningful analytical insights. Prior research indicates that the success of an accounting information system implementation is strongly influenced by its ability to deliver relevant, reliable, and timely information that aligns with organizational objectives [7]. By embedding financial ratio analysis directly into the accounting information system, the proposed approach seeks to eliminate the separation between data recording and financial analysis processes. This integration allows management to monitor financial performance continuously and objectively using indicators such as current ratio, debt to equity ratio, return on assets, and net profit margin [8]. Financial ratios have been widely applied as performance measurement tools because they provide a concise and interpretable representation of an organization's financial condition [9]. The proposed solution involves designing a structured accounting information system that integrates transaction processing, general ledger management, financial reporting, and financial ratio computation within a unified system architecture tailored to the operational context of CV Bali Indigo.

The contribution of this research is both practical and academic in nature. From a practical perspective, this study provides a systematic design of an accounting information system that addresses common weaknesses found in manual and semi digital accounting practices in SMEs. The integration of financial ratio analysis into the system enhances the usefulness of accounting information by transforming financial data into performance indicators that support managerial evaluation and strategic planning. From an academic perspective, this research contributes to the literature on accounting information systems by demonstrating how financial ratio methods can be effectively incorporated into system design to improve decision support capabilities. The evaluation of the proposed system focuses on assessing improvements in information accuracy, reporting timeliness, and analytical usability compared to existing practices at CV Bali Indigo [10]. Previous studies suggest that these factors are critical indicators of accounting information system success and user satisfaction [11]. In conclusion, this research highlights the importance of designing accounting information systems that not only fulfill recording and reporting functions but also support financial analysis and performance evaluation. By offering a comprehensive system design and evaluation framework, this study provides valuable insights for small and medium sized enterprises seeking to improve financial management practices and for researchers interested in the development and application of accounting information systems in SME contexts.

2. METHODOLOGY

Recent studies emphasize the strategic role of accounting information systems in supporting financial management and decision making in small and medium sized enterprises [12]. Modern systems integrate data processing, reporting, and analysis to improve information quality and timeliness. Empirical research shows that accounting information system quality influences managerial decision effectiveness through reliable financial data [13]. System adoption is also associated with improved reporting efficiency and financial performance in SMEs [14]. However, analytical activities are frequently treated as external to system design.

Other studies highlight accounting information systems as mechanisms for internal control and financial monitoring. Integrated systems reduce errors and enhance transparency, enabling continuous oversight of financial transactions [15]. Financial ratio analysis remains a dominant method for evaluating liquidity, profitability, and solvency in SMEs [16]. Financial

ratios provide interpretable performance indicators that support managerial decisions [17]. Nevertheless, ratio analysis is commonly applied after reporting, limiting its usefulness for continuous evaluation.

Several system design studies improve reporting timeliness but rely on manual ratio computation [18]. SME oriented systems enhance recording accuracy while leaving performance analysis external [19]. Digital transformation literature emphasizes automated financial indicators for transparency and access to financing [20]. Comparative studies show that computerized systems improve accuracy while separated analysis.

2.1 Research Object and Data Source

The dataset utilized in this research comprises archived financial transaction records, including accounting journals, general ledger documentation, trial balance reports, and formal financial statements such as the balance sheet and income statement. These data are obtained directly from the company through document analysis and interviews with accounting staff and management. The collected data represent real operational conditions and are used as the basis for system requirement analysis and financial ratio computation. In this study, the utilization of the collected financial data is illustrated through the accounting information system flowchart shown in Figure 1. The flowchart describes how historical financial transaction data obtained from CV Bali Indigo are input into the system, validated, processed for financial ratio computation, and analyzed to produce financial and ratio reports. This workflow demonstrates the transformation of real operational data into structured information used for system requirement analysis and financial performance evaluation.

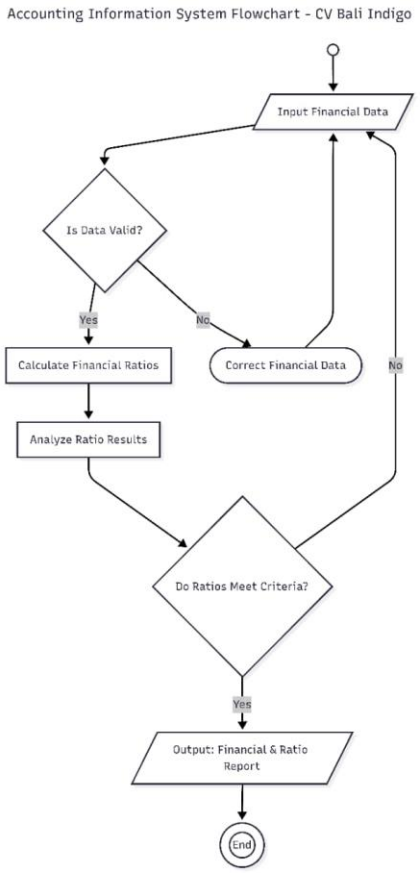

Figure 1. Accounting information system flowchart for financial data processing and financial ratio analysis at CV Bali Indigo

As shown in Figure 1, the system begins with financial data input, followed by a validation process to ensure data accuracy. If the data are invalid, correction is required before further processing. Once validated, the system automatically calculates financial ratios and analyzes the results. The system then evaluates whether the calculated ratios meet predefined financial criteria. If the criteria are satisfied, the system generates financial and ratio reports as the final output.

2.2 Data Preparation and Accounting Process Analysis

Before system design, the collected financial data are analyzed to understand the existing accounting workflow and identify weaknesses in the current process. This stage includes the classification of transaction data, verification of data completeness, and mapping of accounting cycles, including transaction recording, posting to the general ledger, and financial statement preparation. The analysis reveals that financial reporting and ratio calculations are previously conducted manually, which leads to inefficiency and inconsistency. Therefore, data preparation focuses on structuring transaction data into standardized formats that can be processed automatically by the proposed information system.

2.3 Financial Ratio Method Implementation

The financial ratio method is implemented as the main analytical approach within the proposed accounting information system to evaluate the financial performance of CV Bali Indigo. Financial ratios are selected because they provide standardized, quantitative, and widely accepted indicators for assessing liquidity, activity efficiency, solvency, and profitability. By integrating financial ratio calculations directly into the accounting information system, the analysis process becomes automated, consistent, and timely, thereby improving the accuracy and usefulness of financial information for managerial decision making.

The implementation process is initiated once the system produces formal financial statements, specifically the balance sheet and income statement. These reports constitute the fundamental sources of data for ratio analysis. After verification and storage in the system database, the accounting data are processed to retrieve relevant financial elements such as current assets, current liabilities, cash, receivables, inventories, fixed assets, total assets, total liabilities, equity, net sales, cost of goods sold, earnings before interest and taxes, and net profit after tax. Expressing ratio results in percentage form facilitates comparison across accounting periods and supports performance trend analysis.

Liquidity conditions are assessed through three key measures, including the current ratio, quick ratio, and cash ratio. Among these measures, the current ratio indicates the firm's capacity to fulfill short term liabilities by relying on its available current assets, as defined in equation (1).

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}} \times 100\% \qquad (1)$$

The quick ratio evaluates liquidity by excluding inventories and is calculated as shown in equation (2).

$$\text{Quick Ratio} = \frac{\text{Cash} + \text{Accounts Receivable} + \text{Marketable Securities}}{\text{Current Liabilities}} \times 100\% \qquad (2)$$

The cash ratio reflects the firm's capacity to settle short term obligations by utilizing cash and near cash resources, as expressed in equation (3).

$$\text{Cash Ratio} = \frac{\text{Cash} + \text{Marketable Securities}}{\text{Current Liabilities}} \times 100\% \qquad (3)$$

Activity related performance is evaluated by examining the effectiveness of asset utilization in supporting sales generation. In this context, the accounts receivable turnover is determined using the formulation presented in equation (4).

$$\text{Receivables Turnover} = \frac{\text{Net Sales}}{\text{Average Accounts Receivable}} \times 100\% \qquad (4)$$

Inventory turnover is calculated as shown in equation (5).

$$\text{Inventory Turnover} = \frac{\text{Net Sales}}{\text{Inventory}} \times 100\% \qquad (5)$$

Fixed asset turnover is calculated as shown in equation (6).

$$\text{Fixed Asset Turnover} = \frac{\text{Net Sales}}{\text{Fixed Assets}} \times 100\% \qquad (6)$$

Total asset turnover is calculated as shown in equation (7).

$$\text{Total Asset Turnover} = \frac{\text{Net Sales}}{\text{Total Assets}} \times 100\% \qquad (7)$$

Solvency performance is evaluated using the debt to asset ratio and debt to equity ratio. The debt to asset ratio reflects the proportion of total assets financed by liabilities and is calculated as shown in equation (8).

$$\text{Debt to Asset Ratio} = \frac{\text{Total Liabilities}}{\text{Total Assets}} \times 100\% \qquad (8)$$

The debt to equity ratio measures the proportion of liabilities relative to shareholders' equity, as shown in equation (9).

$$\text{Debt to Equity Ratio} = \frac{\text{Total Liabilities}}{\text{Total Equity}} \times 100\% \qquad (9)$$

Profitability performance is evaluated using several indicators. Among these, the gross profit margin indicates the firm's capacity to obtain gross earnings from its sales activities, as shown in equation (10).

$$\text{Gross Profit Margin} = \frac{\text{Net Sales} - \text{Cost of Goods Sold}}{\text{Net Sales}} \times 100\% \qquad (10)$$

Operating profit margin evaluates operating efficiency and is calculated as shown in equation (11).

$$\text{Operating Profit Margin} = \frac{\text{Net Sales} - \text{Cost of Goods Sold} - \text{EBIT}}{\text{Net Sales}} \times 100\% \qquad (11)$$

Net profit margin measures the proportion of net profit generated from net sales and is calculated as shown in equation (12).

$$\text{Net Profit Margin} = \frac{\text{Net Profit After Tax}}{\text{Net Sales}} \times 100\% \qquad (12)$$

Return on investment evaluates the company's ability to generate profit from total assets and is calculated as shown in equation (13).

$$\text{Return on Investment} = \frac{\text{Net Profit After Tax}}{\text{Total Assets}} \times 100\% \qquad (13)$$

Return on assets measures asset utilization efficiency and is calculated as shown in equation (14).

$$\text{Return on Assets} = \frac{\text{Net Profit}}{\text{Total Assets}} \times 100\% \qquad (14)$$

All financial ratios are calculated automatically by the system for each accounting period and presented in structured analytical reports. The system allows management to compare ratio values across periods, enabling trend analysis and continuous monitoring of financial performance. Through the accurate and comprehensive implementation of financial ratio methods within the accounting information system, financial evaluation becomes more systematic, reliable, and effective in supporting managerial control and strategic decision making.

2.4 System Evaluation

System evaluation is conducted to assess the effectiveness of the proposed information system compared to the previous manual accounting practices. The evaluation focuses on several criteria, including accuracy of financial reports, timeliness of information delivery, ease of use, and analytical usefulness of financial ratio outputs. The evaluation process involves validating system outputs against manually calculated results and gathering feedback from system users within CV Bali Indigo. Improvements in reporting efficiency and decision support capability are analyzed qualitatively to determine the contribution of the proposed system to financial management practices.

3. RESULTS AND DISCUSSION

This section reports the outcomes derived from applying the proposed accounting information system using the financial ratio method at CV Bali Indigo, followed by a discussion of the findings. The results focus on system functionality, accuracy of financial reports, and the usefulness of financial ratio analysis in supporting managerial decision making. The discussion interprets the results by comparing the proposed system with the previous manual accounting practices used by the company.

3.1 User Interface Implementation

The dashboard interface provides a concise overview of the financial condition of CV Bali Indigo. This interface displays key financial indicators, including total revenue, total expenses, and net profit for the current period. In addition, graphical visualizations are used to illustrate financial performance trends, allowing users to quickly assess the balance between

income and expenses. The dashboard serves as the main entry point of the system and supports rapid financial monitoring without requiring users to access detailed reports.

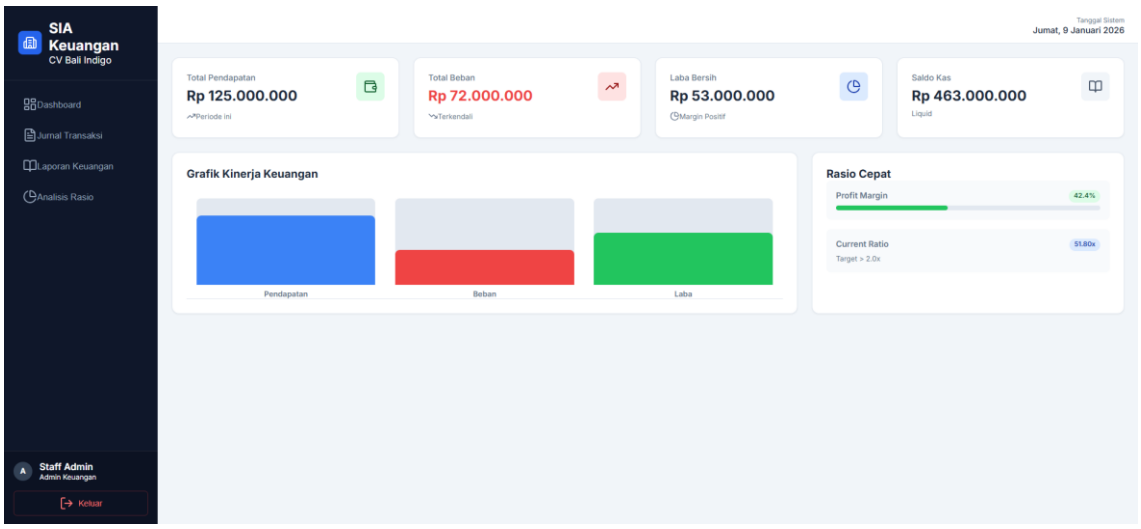

Figure 2. Dashboard Interface of the Accounting Information System

The transaction journal interface is designed to support accurate and structured recording of financial transactions. Users can input transaction details such as transaction date, description, debit account, credit account, and transaction amount. Recorded transactions are displayed in a journal table in chronological order, ensuring transparency and traceability. This interface applies the double-entry accounting principle and helps minimize input errors by guiding users through standardized transaction recording procedures.

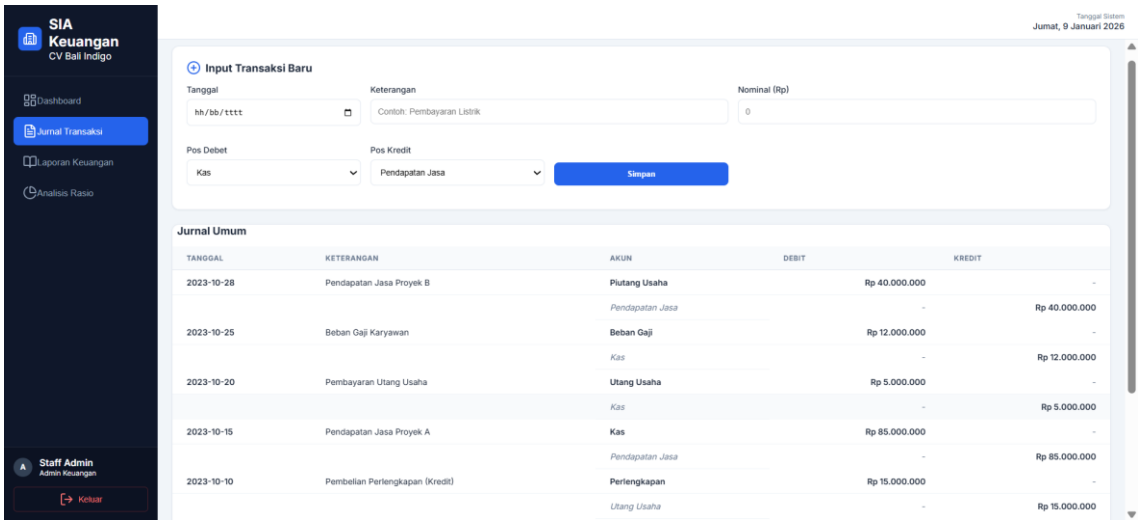

Figure 3. Transaction Journal Input Interface

The financial report interface presents automatically generated financial statements based on recorded transaction data. As shown in this figure, the income statement is displayed in a structured format, including revenue, operating expenses, total expenses, and net profit. This interface allows users to obtain up-to-date financial reports for a specific period without manual calculations. The standardized presentation improves reporting efficiency and ensures consistency in financial information.

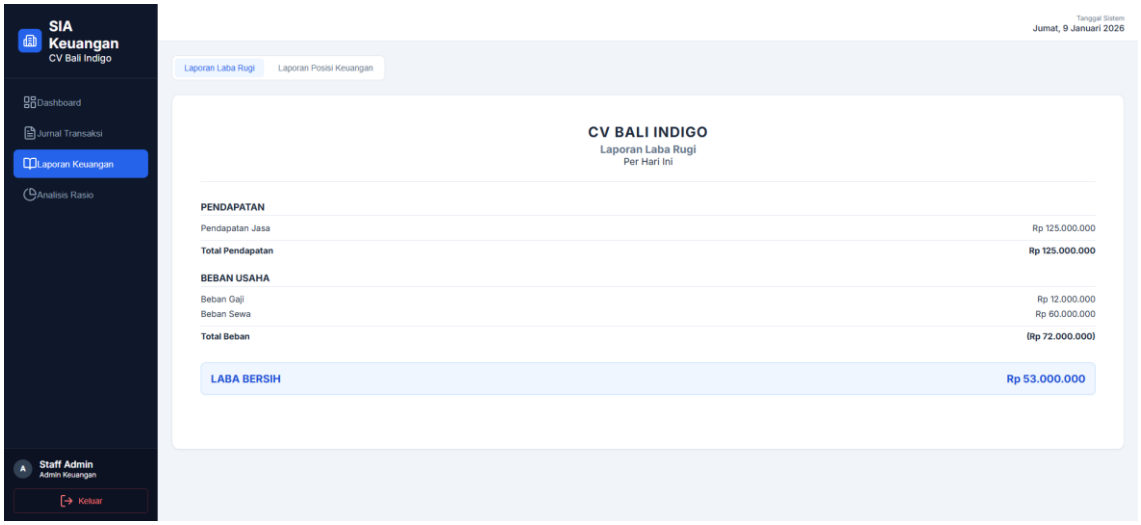

Figure 4. Financial Report Interface (Income Statement)

The financial ratio analysis interface provides analytical insights derived from the company's financial statements. This interface displays key financial ratios, including liquidity, profitability, and solvency indicators, along with their calculated values and qualitative performance categories. The inclusion of benchmark values assists users in interpreting financial performance objectively. In addition, managerial recommendations are generated based on ratio analysis results, enhancing the system's role as a decision support tool.

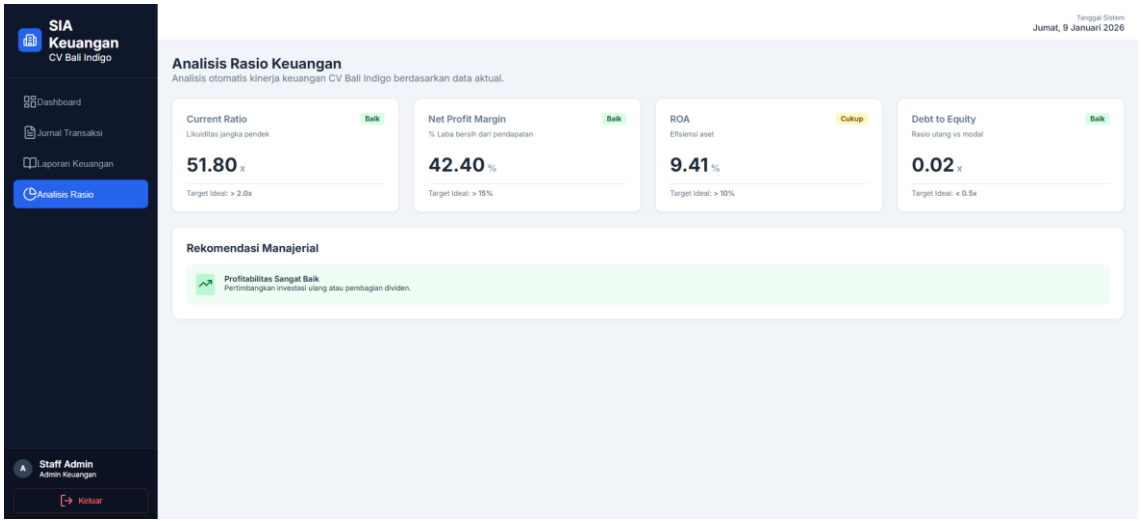

Figure 5. Financial Ratio Analysis Interface

3.2 Discussion of System Effectiveness

The integration of financial ratio analysis into the accounting information system enhances the analytical capability of the system. Unlike the previous manual approach, where ratio analysis was conducted irregularly and required additional effort, the proposed system provides ratio results automatically and in a structured format. This integration allows management to monitor financial performance continuously and identify potential financial issues at an early stage.

From a managerial perspective, the availability of financial ratios within the system improves decision support quality. Management can use ratio trends across different periods to

evaluate financial performance and plan corrective actions if necessary. The system also improves transparency, as financial data and analysis results are derived from the same data source, reducing inconsistencies between reports and analyses. These findings align with previous studies that emphasize the importance of integrated accounting information systems in improving financial information quality and decision making effectiveness.

3.3 Comparison with Previous Accounting Practices

When compared with the previous manual accounting practices at CV Bali Indigo, the proposed system demonstrates clear advantages. Manual processing required significant time and effort to prepare financial statements and calculate financial ratios, often resulting in delayed reporting. In contrast, the implemented system automates these processes and delivers faster results with higher accuracy. Furthermore, the manual approach limited the use of financial ratio analysis as a regular performance evaluation tool, whereas the proposed system enables routine and systematic financial analysis.

However, the results also indicate that the effectiveness of the system depends on the accuracy of data input and user understanding of financial ratio interpretation. While the system provides accurate calculations, management still needs sufficient accounting knowledge to interpret the ratio results correctly. This limitation suggests the need for user training and further system enhancement, such as the inclusion of interpretative guidelines for each financial ratio.

4. CONCLUSIONS

This study has designed and implemented an accounting information system using the financial ratio method to support financial management at CV Bali Indigo. The proposed system integrates financial transaction recording, financial statement generation, and automated financial ratio analysis within a unified framework. This integration addresses the limitations of previous manual and spreadsheet-based accounting practices, particularly in terms of data inconsistency, reporting delays, and limited analytical capability.

The results of the implementation indicate that the proposed system improves the accuracy and timeliness of financial reporting. Automated calculation of key financial ratios, including liquidity, solvency, and profitability ratios, enables management to evaluate financial performance more objectively and consistently. The availability of structured ratio analysis also enhances decision support by allowing management to monitor financial conditions across different accounting periods and identify potential financial issues at an early stage.

Despite these positive outcomes, the effectiveness of the system is influenced by the quality of input data and the users' understanding of financial ratio interpretation. Therefore, future work should focus on improving system usability through user training and the development of interpretative features that provide financial performance benchmarks and recommendations. In addition, further research may extend the system by incorporating forecasting techniques, comparative industry analysis, or decision support modules to enhance its strategic value. Overall, this study demonstrates that integrating financial ratio analysis into an accounting information system is a practical and effective approach for improving financial performance evaluation in small and medium-sized enterprises.

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