Soedirman Accounting, Auditing and Public Sector (SAAP)
Vol. 4 No. 1 Year 2025, Pages 126 - 138

DESIGN OF A CLOUD-BASED ACCOUNTING INFORMATION SYSTEM USING GOOGLE WORKSPACE TO SUPPORT FINANCIAL REPORTING COMPLIANCE OF KALIMASADA VILLAGE-OWNED ENTERPRISES

Warsidi [1], Farhan Ananta Cahyadi[2], Sofia Zahira[3]

[1]Jenderal Soedirman University
[2]Jenderal Soedirman University
[3]Jenderal Soedirman University

Abstrak

Pengelolaan laporan keuangan Badan Usaha Milik Desa (BUM Desa) Kalimasada hingga kini masih dilakukan secara manual menggunakan buku catatan. Metode tersebut menimbulkan beragam kelemahan, antara lain tingginya risiko salah saji, kehilangan data dan manipulasi informasi, lambatnya proses penyusunan laporan serta rendahnya transparansi dan akuntabilitas. Penelitian ini bertujuan merancang sistem informasi akuntansi berbasis *cloud* menggunakan Google Workspace untuk meningkatkan kualitas laporan keuangan dan kepatuhan pelaporan BUM Desa Kalimasada. Kajian ini menggunakan pendekatan *Participatory Action Research* dengan melibatkan pengurus BUM Desa dalam observasi, diskusi kelompok terarah (*Focus Group Discussion*) dan wawancara mendalam. Tahapan penelitian meliputi identifikasi kebutuhan, perancangan sistem dengan memanfaatkan Google Sheets, Google Drive dan Google Docs, pelatihan penggunaan serta evaluasi implementasi. Sistem yang dirancang mencatat transaksi secara otomatis, menghubungkan data ke jurnal, buku besar, neraca lajur dan laporan keuangan, serta menyediakan akses *real-time* bagi pengurus. Hasil implementasi menunjukkan peningkatan akurasi dan efisiensi pencatatan, penyusunan laporan yang lebih cepat dan tersusun, serta peningkatan transparansi dan akuntabilitas bagi pemangku kepentingan. Dengan sistem ini BUM Desa Kalimasada dapat memenuhi standar pelaporan sesuai Keputusan Menteri Desa Nomor 136 Tahun 2022. Penelitian ini merekomendasikan penggunaan sistem secara berkelanjutan serta perluasan fitur untuk mendukung unit usaha lainnya.

Keywords: Accounting Information System; cloud; Google Workspace; Village-Owned Enterprises; *Participatory Action Research* ; financial reports
JEL CODE: M40, M41, M48

1. Introduction

Indonesia has 83,971 villages, each with distinct economic and social potential (Central Bureau of Statistics Indonesia 2023). The government encourages the establishment of Village-Owned Enterprises (BUM Desa) as a driving force for the village economy and an instrument for community empowerment. BUM Desa, a legal entity, is established through village deliberations to utilize local potential for the welfare of residents (Government Regulation Number 11 of 2021). To operate independently and professionally, BUM Desa must implement accountable and transparent governance, particularly in financial reporting. Decree of the Minister of Villages, Disadvantaged Regions, and Transmigration No. 136 of 2022 provides guidelines for preparing BUM Desa financial reports on an accrual basis, including a

statement of financial position, profit and loss statement, cash flow statement, and notes to the financial statements (Minister of Villages, Disadvantaged Regions, and Transmigration 2022).

However, field practice shows that many Village-Owned Enterprises (BUM Desa) still use manual methods for recording and reporting their finances. This study examines the case of BUM Desa Kalimasada in Kalijaran Village, Maos District, Cilacap Regency. This BUM Desa operates in the rental of multipurpose buildings and complementary trade, but does not yet have an adequate accounting information system (AIS). Transactions are recorded in notebooks, financial reports are prepared manually, and archival documentation has not been digitized. This situation results in potential misstatements, reporting delays, limited access by stakeholders, and low transparency. This phenomenon is also recognized in various studies that emphasize the importance of accountable and transparent financial reports for BUM Desa to gain trust and grow (Hadi 2020; Rambu Ana & Ga 2021; Margareta & Siahaan 2022).

This study addresses these issues by designing a *cloud -based AIS* using Google Workspace. This platform was chosen because it is easy to use, affordable, supports real-time collaboration, and provides various applications such as Google Sheets, Google Docs, Google Drive, Google Forms, and Google Sites. This choice aligns with previous digitalization initiatives that utilized Google Workspace for administrative training and financial reporting system development (Alfian et al. 2022; Amri et al. 2024; Mulyani & Tanjung 2023). The designed system is expected to facilitate automatic transaction recording, processing, and reporting, as well as improve compliance with Village-Owned Enterprise (BUM Desa) financial reporting standards. The research focuses on improving the quality of financial reports, transparency, accountability, and efficiency of financial management at BUM Desa Kalimasada.

The research problem formulation is: (1) how to design a *cloud- based accounting information system* using Google Workspace that can help BUM Desa Kalimasada improve the quality of financial reports? and (2) how to implement the system to support BUM Desa's financial reporting compliance? The research objective is to design, implement and evaluate a *cloud -based AIS that suits the needs of BUM Desa Kalimasada. The benefits of the research include theoretical contributions to the public sector information system literature as well as practical contributions in the form of a cloud*- based AIS model that can be replicated by other BUM Desa.

2. Literature Review

2.1 Compliance Theory

Compliance refers to an attitude of obedience to rules or orders. In the context of financial reporting, compliance theory emphasizes the importance of timely report submission in accordance with the provisions of authorities such as the Financial Services Authority (OJK). The application of compliance theory encourages organizations to fulfill reporting obligations, thereby increasing the credibility and usefulness of reports for stakeholders (Marfuah et al., 2021). Law Number 8 of 1995, Article 86 Paragraph 1, requires public companies to submit periodic and incidental reports to supervisory authorities. The same applies to Village-Owned Enterprises (BUM Desa), as regulated by Decree of the Minister of Villages, Disadvantaged Regions, and Transmigration No. 136/2022 concerning the preparation of accrual-based financial reports.

2.2 Information System

An information system is defined as a combination of people, equipment, and procedures that collect, record, store, and process data to produce information that supports decision-making (Rahmawati, 2018). Information system components include input , processing models or procedures, output , technology, databases, and controls (Romney et al., 2021). Information systems provide timely and relevant information to management and stakeholders, thereby improving organizational efficiency and effectiveness.

2.3 Accounting

Accounting is the language of business that provides financial information systems for various organizations. According to Susanto (2017), accounting is no longer simply the art of recording, categorizing, summarizing, and reporting business transactions but has evolved into a complex financial information system that helps management understand and manage its financial activities. The accounting cycle consists of three stages : recording transaction evidence in journals, summarizing through financial data processing at the end of the period, and reporting through the preparation of financial statements (Margareta & Siahaan, 2022). This cycle repeats itself and is part of the accounting information system.

2.4 Accounting Information System

An accounting information system (AIS) is a system that collects, records, stores, and processes accounting data to produce financial information useful for planning, monitoring, and decision-making (Salihi & Wiansari, 2022). An AIS involves six components: system users; procedures and instructions; data related to organizational activities; software; information technology infrastructure; and internal controls. The objectives of an AIS include collecting and storing transaction data, transforming data into useful information, improving internal controls, and reducing administrative costs (Romney et al., 2021). System documentation, such as flowcharts, helps understand the relationships between processes and is essential for AIS design (Krismiaji, 2010).

2.5 System Development Methodology

Commonly used system development methods include *the System Development Life Cycle* (SDLC) and *Agile Development* . SDLC encompasses planning, analysis, design, and implementation stages, sequentially conducted so that the output of each stage becomes input for the next stage (Dennis et al., 2012). *Agile Development* simplifies the SDLC with short iterations (1–4 weeks) and intensive collaboration between developers and users (Dennis et al., 2012). This study uses a *Participatory Action Research* (PAR) approach, which differs from both SDLC and *Agile* . PAR views communities as active subjects, emphasizes actions that bring about social change, and involves participants in all stages of the research (Baum et al., 2006). The PAR method is more suitable for system development in community-based Village-Owned Enterprises (BUM Desa) because the process is collaborative and oriented towards local needs.

2.6 Village-Owned Enterprise Financial Reporting Policy

Decree of the Minister of Villages, Disadvantaged Regions, and Transmigration No. 136 of 2022 provides guidelines for preparing financial reports for Village-Owned Enterprises (BUM Desa). These reports must include a statement of financial position, a profit and loss statement, a cash flow statement, and notes to the financial statements prepared on an accrual basis. These reports must present information fairly and honestly, and in accordance with the basic framework for preparing BUM Desa financial reports. The accounting period for BUM Desa is the same as for other businesses, namely January 1–December 31, and reports are submitted on time to enhance accountability (Minister of Villages, Disadvantaged Regions, and Transmigration 2022).

3. Research Methods

3.1 Research Design

This study employed *a Participatory Action Research* (PAR) design with a qualitative approach. PAR seeks to understand and improve social conditions through active community involvement and generate beneficial actions (Baum et al., 2006; Martono, 2016). Village-Owned Enterprise (BUM Desa) administrators were not only the research subjects but also acted as colleagues in designing and implementing the system. A qualitative approach was chosen to gain a deeper understanding of the financial recording process, user needs, and the local context of the BUM Desa.

3.2 Research Location and Subjects

The research location was the Kalimasada Village-Owned Enterprise (BUM Desa) in Kalijaran Village, Maos District, Cilacap Regency, Central Java Province. This BUM Desa manages the rental of a multipurpose building and several trading activities. The research subjects included the BUM Desa Chair, Secretary, Treasurer, and other board members involved in financial management, as well as several village residents who participated in discussions.

3.3 Data Collection Sources and Techniques

Primary data was obtained through observation, focus group discussions (*FGDs*), and in-depth interviews. Observations were conducted to understand the manual recording system used by Village-Owned Enterprises (BUM Desa) and identify problems. The FGDs involved BUM Desa administrators and researchers to map issues, develop system requirements, and design implementation strategies. In-depth semi-structured interviews were conducted with the Treasurer and Chair of the BUM Desa to obtain detailed information on transaction flows, reporting, and challenges encountered. Secondary data were obtained from government regulations, BUM Desa financial reporting guidelines, academic literature, and BUM Desa internal documentation.

3.4 Research Steps

The research stages follow the PAR framework: (1) building partnerships with Village-Owned Enterprise (BUM Desa) administrators through visits and informal discussions; (2) determining a research agenda for social change with a focus on increasing financial transparency and accountability; (3) participatory mapping to identify assets, potential, and constraints through observation and visual mapping; (4) problem formulation and in-depth analysis using problem trees generated from FGDs; (5) designing strategies and actions for change in the form of developing a *cloud- based AIS* ; (6) training and system implementation and reflection on the results; and (7) expanding the scale of the movement and support, including drafting Village Regulations related to financial governance and plans for developing new business units. The research was conducted from September–December 2024 according to a schedule agreed upon with the BUM Desa administrators.

4. Results and Discussion

4.1 Description of Kalimasada Village-Owned Enterprises

Kalimasada Village-Owned Enterprise (BUM Desa Kalimasada) is located on Jalan Masjid 297, Kalijaran Village, and provides multi-purpose building rental services and trades in supporting goods such as food, beverages, and sports equipment. The multi-purpose building is used by the community for sports activities, meetings, and social events. Prior to the research, rental transactions were recorded manually in a general ledger, with financial reports compiled separately in another ledger. Supporting documents were stored in paper archives without a digital indexing system. This resulted in frequent late reporting, data copying errors, and difficulties in monitoring daily balances and cash flows. The management recognized the importance of a more integrated system but was hampered by limited resources and technological capabilities.

4.2 Problem and Needs Analysis

Initial observations indicated that the manual system was prone to recording errors (e.g., miscalculations or misclassification of accounts), loss of transaction evidence, and data manipulation due to a lack of adequate internal controls. The treasurer had to copy transactions back from the journal to the general ledger, then calculate the trial balance and financial statements, making the preparation process time-consuming. The first FGD identified key needs, namely: (1) a shared, standardized list of

accounts; (2) a digital general journal that could automate the filling of account names based on codes; (3) interconnected general ledgers, trial balances, and financial statements; (4) secure, centralized data storage; (5) recording of receivables, payables, and asset depreciation; (6) ease of generating invoices to customers; and (7) a web-based system to facilitate building rental bookings and payment integration.

***Cloud*- Based Accounting Information System**

The system is designed using several Google Workspace applications. Google Sheets serves as the basis for record-keeping and reporting. Google Drive serves as *cloud document storage* , while Google Docs is used to draft Village Regulations and create documentation. Google Forms and Google Sites are used to handle customer service orders and automatically generate invoices.

Account list. The Village-Owned Enterprise (BUM Desa) account list is created in a *sheet* with columns for account code, account name , position (balance sheet or profit and loss), normal balance, and beginning balance. This list serves as a reference for all transactions. Figure 1 shows the account list compiled in Google Sheets.

Figure 1: Account List

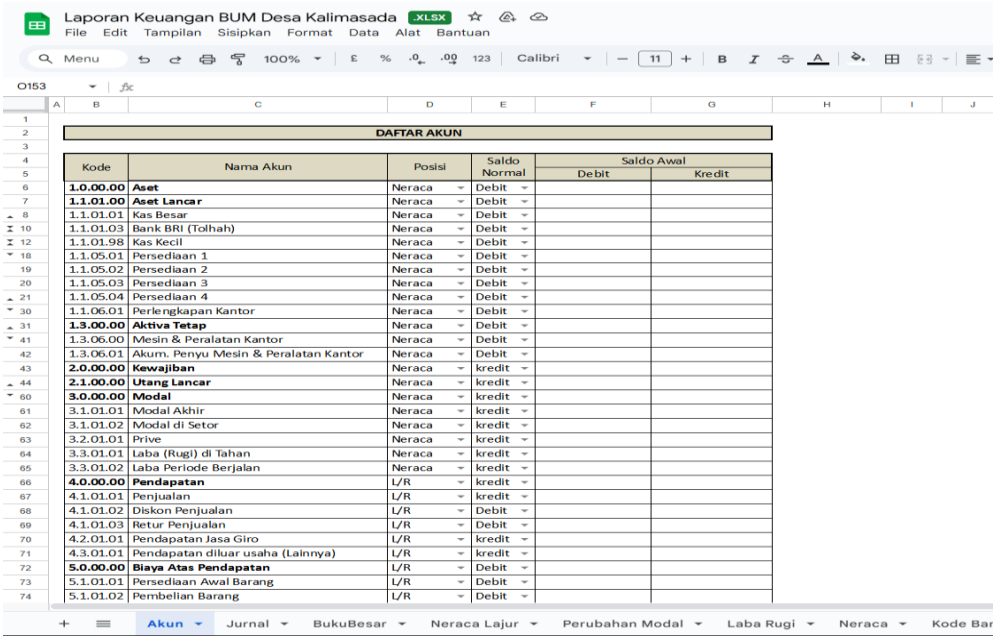

Figure 1: Account List

List the accounts in Google Sheets. Each account has a code, name , position, normal balance, and opening balance.

General journal. The general journal module is designed to allow administrators to record each transaction by entering the date, reference number, description, account code, and debit and credit amounts. The account name is automatically filled in after the code is entered. Data from this journal is then linked to the general ledger and trial balance without the need for re-entry.

General ledger and trial balance. The general ledger groups transactions by account so balances can be monitored. The trial balance adjusts debit and credit balances to ensure balance before preparing financial statements. *The sheet design* allows for automatic updates based on journal entries.

Financial statements. After the data is compiled into a worksheet, the system automatically generates an income statement, a statement of changes in equity, and a statement of financial position. Figure 2 shows the format of an income statement prepared in Google Sheets. This report separates revenue, cost of goods sold, operating expenses, and gross profit according to accounting standards.

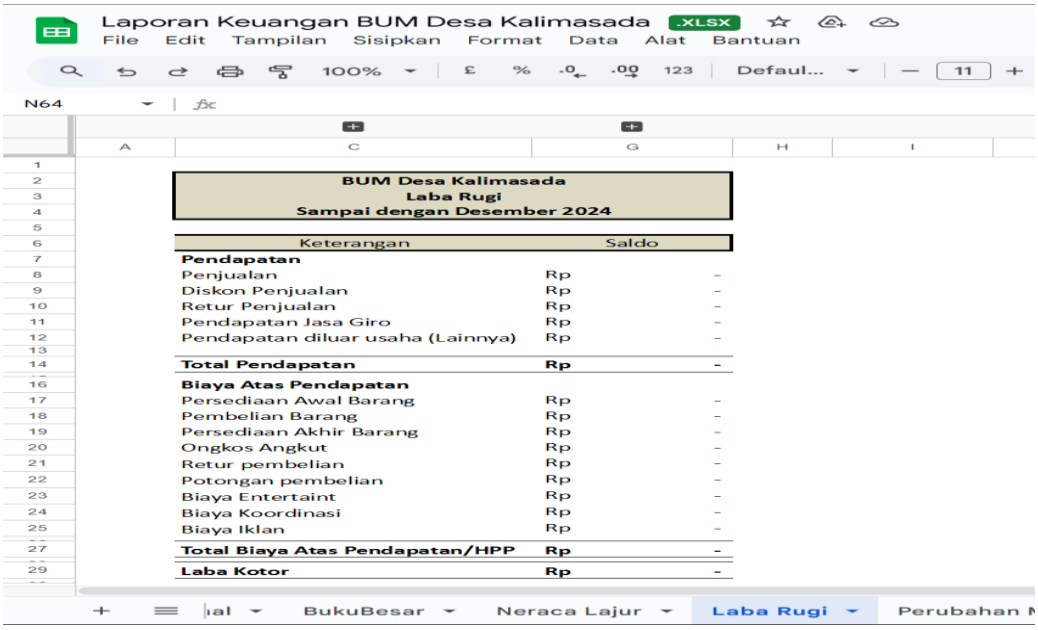

Figure 2: Gross Preofit

A view of the profit and loss statement generated by the system. The report shows revenue, cost of revenue, gross profit, and other components.

Recording receivables, payables, and depreciation. The system provides a help sheet for recording receivables and payables with specific codes and due dates. Another sheet records accumulated depreciation of fixed assets based on acquisition cost, useful life, and residual value. This feature helps the treasurer monitor receivables and payables balances, as well as the book value of assets.

Booking website and invoice integration. To improve service, researchers designed a Village-Owned Enterprise (BUM Desa) website using Google Sites. Customers wishing to rent a building can fill out a linked Google Form, and the booking data is automatically entered into Google Sheets. The system then sends an invoice to the customer and updates the revenue journal. The website also displays service information such as building rentals, electricity/internet payments, and trade. The management plans to integrate banking so payments can be automatically verified.

4.4 Implementation, Training and Evaluation

After the design was completed, researchers conducted training for BUM Desa administrators in October–November 2024. The training covered the use of Google Sheets for transaction recording, understanding the system flow, and managing Google Drive. A second FGD was held on November 25, 2024, to launch the website and evaluate the system. Administrators responded positively, stating that the system made their work easier. Feedback included suggestions for adding new business units, such as marketing organic fertilizer from farmer groups (GAPOKTAN), integrating electricity payments, and integrating banking to expedite transaction verification. Researchers and administrators then drafted a Village Regulation on digital financial governance, which will serve as the official BUM Desa guideline.

The evaluation showed that the implementation of a *cloud- based AIS* improved recording accuracy because account names and balances were automatically calculated; efficiency because financial reports could be generated without re-entry; and transparency because data could be accessed in *real time* by village administrators and officials. Administrators felt more confident because they could monitor financial positions at all times and prepare reports on time. Villagers could also view financial activity through published reports, increasing trust. Limitations identified included limited internet access in the village and the need for further training to improve administrators' proficiency in utilizing Google Workspace features.

4.5 Discussion

cloud -based AIS design at the Kalimasada Village-Owned Enterprise (BUM Desa) aligns with AIS theory, which emphasizes systematic data collection and processing (Salihi & Wiansari, 2022). The use of Google Sheets enables automated recording and linking between sheets, reducing manual errors. The automatic account code and account name features encourage strong internal controls. Google Drive provides a secure and centralized *cloud infrastructure, supporting the principles of transparency and*

accountability. The implementation of a website and order form supports information transparency and improved public services.

Community and administrator involvement through community engagement (PAR) ensures that the developed system aligns with local needs. Unlike the top-down SDLC approach, PAR allows participants to provide input throughout the process. This strengthens ownership of the system and increases the likelihood of sustainable implementation. The adoption of simple technologies like Google Workspace is also an affordable and easily replicable innovation by other village-owned enterprises (BUM Desa), as recommended by several community service studies (Alfian et al., 2022; Margareta & Siahaan, 2022).

5. Conclusions and Implications

5.1 Conclusion

This study concludes that the manual recording system at the Kalimasada Village-Owned Enterprise (BUM Desa) has various weaknesses such as the risk of misstatement, duplication of records, late reporting, and low transparency. To address these issues, a *cloud- based accounting information system* using Google Workspace was designed using a *Participatory Action Research approach* . The system includes a list of accounts, general journal, general ledger, trial balance, financial statements, recording of receivables and payables and asset depreciation, and website ordering integration. The system implementation improves the accuracy, efficiency, transparency, and accountability of financial management at the Kalimasada Village-Owned Enterprise (BUM Desa) and facilitates compliance with reporting standards according to Decree of the Minister of Villages, Disadvantaged Regions, and Transmigration No. 136/2022. Training and mentoring for administrators play a crucial role in the successful implementation.

5.2 Implications

1. **Increased efficiency and accuracy.** *Cloud* -based AIS speeds up recording and reporting because transactions recorded in journals automatically populate the general ledger, trial balance, and financial statements. This reduces manual errors and improves data accuracy.

2. **Transparency and accountability.** The system allows village governments, administrators, and the community to access financial data in *real time* . This open access increases public trust and encourages administrator accountability.
3. **Strengthening management capacity.** Training on using Google Workspace improves the digital skills of Village-Owned Enterprise (BUM Desa) managers, enabling them to better manage finances in a modern way and meet the demands of the digital age.
4. **Support for strategic decision-making.** Structured and easily accessible data enables Village-Owned Enterprise (BUM Desa) administrators to analyze revenue, expenses, receivables, and investments, resulting in more informed business decisions.
5. **A replicable model.** Designing a system using a common and affordable application allows other Village-Owned Enterprises (BUM Desa) to emulate this model to improve their own financial governance.
6. **Contribution to the sustainability of Village-Owned Enterprises.** With a more modern financial system, Village-Owned Enterprises can increase competitiveness, strengthen public trust, and promote local economic sustainability.

5.3 Research Limitations and Suggestions

This research focuses solely on the financial reporting management aspect of Kalimasada Village-Owned Enterprises (BUM Desa). Other aspects, such as human resource management and business development, have not been analyzed in depth. The limited research time (four months) limits long-term observation of changes in financial reporting behavior. Furthermore, limited access to historical data due to manual documentation hinders broader analysis. Future research is recommended to explore information system integration with other business units, assess its impact on village revenue, and provide long-term mentoring to ensure sustainable technology adaptation.

Bibliography

Alfian, M., Kartika, D., & Ferida, A. (2022). *Implementation of a Digital-Based Accounting and Administration Information System* . DIKEMAS (Journal of Community Service), 6(1), 32–37.

Amri, N. F., Science, F., Politics, I., Makassar, U. P., Economy, F., & Bosowa, U. (2024). *Training on Administrative Data Digitalization and Simple Data Analysis Using Google Workspace and Artificial Intelligence for Administrative Staff of Pancasakti University Makassar* , 1(9), 1407–1416.

Central Bureau of Statistics of Indonesia. (2023). *Number of Villages/Sub-districts by Province* .

Baum, F., MacDougall, C., & Smith, D. (2006). Participatory action research. *Journal of Epidemiology & Community Health* , 60(10), 854–857.

Damayanti, –, Sulistiani, H., & Umpu, E. F. G. S. (2021). Analysis and design of an accounting information system for managing student savings at SD Ar-Raudah Bandarlampung. *Journal of Technology and Information (JATI)* , 11(1), 40–50.

Dennis, A., Wixom, B., & Roth, R. (2012). *Systems Analysis and Design* (5th ed .). Wiley.

Glen, J. (2003). Participatory methods. *Future Research Methodology* , 2.

Gultom, I., & Ameliya, T. M. (2024). Ministry of Villages encourages Village-Owned Enterprises to be audited by public accountants. *Antara News* .

Hadi, B. (2020). *Pocket Book on Transparency and Accountability of Village Budget Realization* . Community Collaboration and Services for Welfare (KOMPAK).

Jogiyanto. (2016). *Business Research Methodology* (6th). BPFE.

Krismiaji. (2010). *Accounting Information System* (3rd ed .). UPP STIM YPKN.

Kusumawardani, W. (2024). Vocational lecturers hold training on management and financial literacy of village-owned enterprises. *UNAIR News* .

Marfuah, M., Sakilah, S., & Prasetyo, P. P. (2021). Determinants of the timeliness of financial report submission of mining companies in Indonesia. *Accounting Research Forum* , 9(1).

Margareta, E., & Siahaan, A. L. (2022). Development of a Microsoft Excel-based financial reporting system at the Village-Owned Enterprise (BUM Desa) in Jaranguda Village, Karo Regency. *Journal of Education and Counseling* , 4(6).

Marina, A., Wahjono, S. I., & Kurnoawati, T. (2021). Implementation of a sharia accounting information system to comply with hospital business ethics. *Nusantara Journal of Business Management Applications* , 6(1), 109–117.

Martono, N. (2016). *Social Research Methodology: Key Concepts* (1st ed .). Rajawali Pers.

Minister of Villages, Development of Disadvantaged Regions and Transmigration of the Republic of Indonesia. (2022). *Decree of the Minister of Villages, Development of Disadvantaged Regions and Transmigration Number 136 of 2022 concerning Guidelines for Compiling Financial Reports of Village-Owned Enterprises* .

Mulyani, & Tanjung, A. A. (2023). Sales information systems as a competitive strength enhancer for MSMEs. *Medika Journal: Medika* , 2(1), 25–33.

Cilacap Regent Regulation Number 27 of 2022 concerning the Cilacap Regency Regional Development Plan for 2023–2026.

Government Regulation Number 11 of 2021 concerning Village-Owned Enterprises.

Putri, O. L. A., & Ayem, S. (2021). The effect of the implementation of PSAK 45 and the timeliness of financial report submission on the accountability of financial reports of non-profit organizations. *Owner* , 5(2).

Rahmat, A., & Mirnawati, M. (2020). Participatory action research model in community empowerment. *Aksara: Journal of Nonformal Education* , 6(1), 62–71.

Rahmawati, I. (2018). *Accounting Information Systems Textbook* . Umsida Press.

Rambu Ana, A. T., & Ga, L. L. (2021). Analysis of accountability and transparency of village-owned enterprise financial reporting (Case Study of Ina Huk Village-owned Enterprise). *Journal of Accounting: Transparency and Accountability* , 9(1), 62–72.

Robbins, S., & Judge, T. (2017). *Organizational Behavior* (16th ed .). Salemba Empat Publisher.

Romney, M. B., Steinbart, P. J., Summers, S. L., & Wood, D. A. (2021). *Accounting Information Systems* (15th ed .). Pearson.

Salihi, S. S., & Wiansari, W. (2022). Accounting information systems in improving internal control over the income of Murhum General Hospital, Baubau City. *Ecotechnopreneur: Journal of Economics, Technology and Entrepreneurship* , 1(1), 1–19.

Sekaran, U., & Bougie, R. (2016). *Research Methods for Business* (7th ed .). Wiley.

Susanto, A. (2017). *Accounting Information Systems: An Integrated Conceptual Understanding* . Lingga Jaya.