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Integrating Audit Trail Technology in Cash Accounting Systems: Implications for Fraud Prevention and Financial Reporting Effectiveness

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Abstract

This study examines the effectiveness of a technology-based cash accounting system in preventing fraud and enhancing the quality of financial reporting at the Regional Water Company (PDAM Tirta Tamiang). A qualitative descriptive method was applied using observation, in-depth interviews, and documentation, while data were analyzed through thematic analysis to capture implementation practices in financial management. The findings indicate that the system contributes significantly to fraud prevention through improved transparency and transaction traceability. The digital audit trail feature strengthens accountability by recording all financial activities systematically and enabling continuous monitoring. However, human factors remain a critical vulnerability, particularly regarding misuse of access rights and weaknesses in internal control, suggesting that technology alone is insufficient without strong governance mechanisms. In addition, the system enhances the efficiency and accuracy of financial reporting. Automation of transaction recording and integration with accounting modules accelerates reporting processes, reduces human error, and improves the reliability of financial statements. Financial reconciliation is also more effective and consistent with applicable accounting standards. From a managerial perspective, strengthening internal controls through strict access management, routine audits, and continuous monitoring is essential. Employee training is also required to ensure effective and ethical use of accounting technology, alongside organizational policies that reinforce transparency and accountability.

Keywords: Cash Accounting System, Technology, Fraud, Financial Reports, Governance

INTRODUCTION

The problem of accounting fraud has been increasingly frequent in the media coverage and audit reports of numerous corporations in recent years (Putri et al., 2024). Fraud usually falls into two types: external fraud perpetrated by parties outside the company and internal fraud perpetrated by employees, managers and executives within the company itself (Wahyu et al., 2025). This event illustrates that the risk of fraud does not only emerge from external forces, but can also stem from inadequacies in the company's internal systems (Limba, 2025).

Fraud in accounting can include the misappropriation of assets, manipulation of financial statements, and corrupt practices (Ayuni et al., 2024). The abuse of assets is the theft or the use without authorization of the assets of the organization, while the manipulation of financial reports is the presentation of information that does not correspond to the real conditions, in order to mislead the consumers of the reports (T. Sihombing, 2021). Corruption is the abuse of office, especially of public office, for private or collective benefit (Paranoan, 2022). These three types of fraud indicate that fraud has a wide influence and it needs to be prevented in a systematic way.

Fraud cases also happened in regional drinking water companies (PDAM) in Indonesia, such as PDAM Mojokerto. Misappropriation of equity capital and corporate cash was found in this case which caused state losses of billions of rupiahs. The tactics adopted were misuse of funds, cash distribution without authority and procurement of goods outside procedures." The case highlights how insufficient control in a region might provide an opportunity for fraud in financial management.

In fraud prevention, internal audit and the effectiveness of internal controls are important fundamental tools. Internal audits guarantee that the actions of the organization are in line with the existing procedures and standards and can help to identify potential inconsistencies at an early stage. At the same time, internal controls play a role in limiting the chance for fraud through an obvious monitoring system, procedures, and separation of roles .

However, the outcomes of prior investigations have been inconsistent. Some studies imply that internal audit has a major effect on fraud prevention, while others find that the success of internal audit depends on the quality of execution and the independence of internal auditors (Bhaktiar, 2021). Again, strong internal controls are not necessarily a guarantee for fraud prevention if the human variables like moral hazard and misuse of authority are still prevalent. This condition reveals a study gap about the consistency of the role of internal audit and internal control in preventing fraud.

The urgency of this research is heightened given the persistent prevalence of human error in corporate accounting and control systems. The data suggests that most problems in information and accounting systems arise from human factors, either as errors or fraud. This reaffirms the very important role of enhancing the internal control system and optimizing the internal audit in the effort to limit the risk of fraud, especially in public sector institutions such as PDAMs that administer public funds and services.

These occurrences and research gaps call for a deeper study on the function of internal audit and the effectiveness of internal controls in avoiding fraud. This study intends to evaluate how these two variables contribute to eliminating accounting fraud at the Aceh Tamiang Regency Regional Water Company (PDAM). The results are expected to make theoretical contributions to the growth of public sector accounting literature and practical contributions to establishing more transparent, accountable, and effective financial governance.

LITERATURE REVIEW

Accounting System

A system is basically a set of interacting components to achieve a given purpose. The system consists of input, process and output as the primary aspects in its functioning (Sauri & Suteja, 2024). Accounting is the process of finding, assessing and communicating economic information to aid decision making (Sugito et al., 2024). With the growth of digital technology, the accounting system is today considered as a set of integrated processes and procedures for the collection, classification, summarization and reporting of financial information systematically and in real time (Handayani et al., 2023). An accounting system also comprises forms, records and reports that are integrated to provide administrative control and decision making functions (Kevin L. Papiorek; Martin R.W., 2024). In the digital age an accounting system is not only a recording instrument but also a management mechanism that can enhance the transparency, efficiency and accuracy of an organisation's financial information (Tsuma, 2025).

Cash is the most liquid element in current assets that plays an important role in the continuity of corporate operations, because practically all business transactions are always tied to cash inflow and outflow (Nasib et al., 2026). Cash might be cash or cash equivalent assets which can be easily converted to cash to meet the organization's short-term obligations (Sujarwo & Fathoni, 2023). Poor cash management creates potential for anomalies and fraud, hence a control system based on technology is essential (Terienta et al., 2026). Therefore, the cash accounting system can be characterized as a system of procedures, forms, records and technology that are linked together to process collections and disbursements of cash in a systematic, regulated and real-time process (Fathoni et al., 2024). This system is used as a tool to provide correct financial information and also to improve internal control, increase transparency and promote accountability and fraud prevention in contemporary enterprises (Sujarwo & Fathoni, 2025).

Fraud

Fraud is defined by the accounting and auditing literature as a "deliberate act of deception, deviation or irregularity to obtain personal gain or to injure another party" (Duffin & Djohan, 2022).

Fraud includes any act of deception or breach of trust intended to obtain money, property or services, or to avoid an obligation, for personal advantage (Lokanan, 2023). In a broader perspective, fraud is an illegal crime, systemic and difficult to eradicate, because it involves human factors, system inadequacies and inadequate internal organizational controls (Syah, 2025).

Fraud can take on different forms such as misappropriation of assets, manipulation of financial statements, and corruption in public and private sector organizations (Paul & Ogburie, 2025). In terms of concept, fraud is an error from a purposeful erroneous act and provides wrong or misleading information to the users of financial reports (Wahyuni & Budiwitjaksono, 2017). Therefore, fraud is not simply an administrative error, but an act that has elements of intent and a breach of ethics and law (E. Sihombing et al., 2019).

From the auditing standpoint, fraud auditing is the examination process specifically designed to detect, prevent and uncover signs of fraud in financial transactions (Meha, 2026). This is more detailed than a broad audit in that it is focused on efforts to discover patterns of deviation and testing audit evidence that leads to allegations of fraud (Harianto et al., 2025). The primary purpose of fraud auditing is to offer reasonable assurance that the financial statements are not materially misstated as a result of fraud and to safeguard organizational assets against misuse (Pasaribu, 2024). Therefore, the development of an effective internal control system is an important factor to support the efforts to prevent and identify fraud on a continuing basis

METHODOLOGY

The data collection strategies in this study were carried out using many approaches in order to get comprehensive and relevant information on the variables investigated. First a library study was conducted to study some of the key literatures such as books, scientific journals, papers and prior research connected to the technology-based cash accounting system in promoting accountability and reducing fraud. This study aims at enriching the theoretical underpinning and developing a conceptual framework for understanding the interaction between research variables.

Second, direct observation was carried out on the operational operations of PDAM Tita Aceh Tamiang, including the process of documenting credit sales transactions and reporting receivables. These observations enabled the researchers to form a solid knowledge of how the accounting system was implemented and to what extent it supported the work activities of the business. Third, in-depth interviews were performed with key individuals, including the Head of Finance, the Head of the Supervisory Unit and the Head of Administration. The interviews were intended to acquire detailed and structured information concerning the operations, documentation, recording methods and procedures of the cash receipts and disbursements accounting system.

The data gathered from the literature study, observations, and interviews were analyzed using a qualitative approach complemented by descriptive analysis. This analytical technique was utilized to systematically describe and analyze the data to achieve a clear knowledge of the events being examined. Thus, the results of the analysis are expected to provide a comprehensive picture of the effectiveness of the accounting system in enabling financial responsibility and control in the relevant agency.

RESULTS and DISCUSSION

Fraud Prevention

The results of the interview analysis show that the application of a cash accounting system based on technology at the Aceh Tamiang Regency Water Company (PDAM) has a significant impact in fraud prevention. Another important aspect that is considered to be most effective is the digital audit trail. It is an automatic recording mechanism that captures all transaction activity in a chronological and structured manner. This capability allows the details of each transaction to be tracked back to who performed it, the time it was done and the device utilized for the transaction. As a result, this technique enhances transparency and makes tracking easier in case of balance imbalances or signs of misappropriation.

However, research also demonstrates that the availability of technology-based procedures does not totally reduce the danger of fraud. Potential weaknesses resulting from human elements remain, such as misuse of access permissions, poor regular oversight, and the possibility of collaboration amongst staff. This situation shows that system-based controls need to be reinforced by routine manual monitoring by internal auditors. Evaluation of user access privileges is also a critical part in decreasing fraud potential within the system.

Support for Financial Accountability

In addition to preventing fraud, the technology-based cash accounting system also contributes greatly to increasing financial responsibility at the Aceh Tamiang Regency Water Company (PDAM). The study results indicate considerable changes in the financial reporting process, especially in speed and efficiency. Before the system was implemented the reporting was manual and took a reasonably lengthy period from recording and processing of data to reconciliation.

When a technology-based system is introduced, the process becomes faster and more efficient since the data of transactions may be processed automatically and in real-time. You do not require extensive manual recaps to produce financial reports fast. Furthermore, the accuracy of the data has been greatly enhanced due to the system's reduction of human errors such as input errors and calculation errors.

The integration between the cash system and accounting modules also increases the automated recording process in the general ledger, resulting in more systematic financial reporting and compliance with applicable accounting rules. This has a positive effect on management decision making, as financial information is provided sooner, more correctly and more up-to-date. Thus, a technology-based cash accounting system not only increases operational efficiency but also strengthens accountability and transparency in the organization's overall financial management

DISCUSSION

The results of the research demonstrate that the technology-based cash accounting system has an important role in preventing fraud through the digital audit trail feature. This feature has the ability to record all the transaction actions in a chronological order starting from user identification, transaction time and the device utilized. This finding is in line with research findings (Ghose et al., 2025) which suggested that digital-based systems promote transparency and reduce the possibility of manipulation of financial data. Every transaction is traceable with a complete digital trail which makes an organization's internal controls more effective (Sapuguh & Malindo, 2025).

However, this study also indicated that technology considerations cannot totally reduce the danger of fraud, as there are still gaps resulting from human factors including misuse of access rights and collusion among employees. These findings are consistent with (Halawani & Alharbi, 2024), which underlines that the major shortcoming of digital accounting systems is precisely the user behaviour. As a result, technology-based systems require internal auditors to do manual checks to confirm the accuracy and dependability of transaction data.

Also, technology-based cash accounting systems have been found to improve the efficiency and accuracy of creating financial reports (Campa et al., 2026). Manual operations of recording and reporting can now be processed in real time, therefore expediting the publication of financial results (Azman et al., 2026). This is in line with research (Paul & Ogburie, 2025) that indicates that digital accounting leads to fewer input errors and a better quality of the derived financial information.

Moreover, the cash system incorporated within the accounting module is useful in improving the reconciliation process and generating more accurate reports that conform to accounting rules. This has a positive effect on managerial decision-making since financial information is available faster, more correctly and more relevantly (Andre & Sinaga, 2025). This is consistent with the findings (Lokanan, 2023) that integrated accounting information system increases the quality of management decision by delivering more credible and timely data (Sari, 2026).

From a managerial perspective, the findings of this study highlight the importance for the PDAM's management to optimize the utilization of technology-based cash accounting systems by tightening the access control of its users and improving the function of internal auditors. Regular evaluation of access rights, multi-layered system of authorizations and human resource training are significant techniques to limit the risk of fraud. A blend of technology, internal controls and better human resource skills can be key in helping firms achieve more transparent, responsible and efficient financial governance in a sustainable manner.

CONCLUSION

The findings of this study demonstrate that the technology-based cash accounting system plays a vital role in enhancing the efficacy of financial management at the Aceh Tamiang Regency Regional Water Company (PDAM) in terms of fraud prevention and financial responsibility. One of the important features to increase transparency is the digital audit trail feature that strengthens the audit trail and allows for systematic tracking of each transaction. However, human variables, in particular the risk of misuse of access rights, still affect system effectiveness. Therefore, the organization should continue to tighten internal controls and the oversight of internal auditors.

In the area of financial accountability, a cash accounting system based on technology has been found to enhance efficiency, speed and accuracy of the financial reporting process. This system allows real time recording and reporting, providing more relevant and reliable financial information as per the appropriate accounting rules. The integration of transaction data with accounting modules also speeds up the reconciliation process and helps enhance managerial decision making.

Based on the research results, it is suggested that the Aceh Tamiang Regency Water Company (PDAM) should improve internal control policy, especially in limiting and periodically evaluating system user access privileges. Also, there is a need for constant capacity building of human resources in the use of technology based accounting systems for efficient system performance. Besides, management also needs to improve the function of internal auditors in conducting frequent monitoring and evaluation to decrease the potential for fraud.

This study has certain limitations in the qualitative descriptive approach where only one object of research is focused so that the results cannot be extended to all similar organizations. Therefore, it is recommended to do further research using quantitative or mixed-methods approach with a larger sample size and to include other variables such as human resource competency, organizational culture, and information system security to gain a more comprehensive picture of the effectiveness of technology-based accounting systems in preventing fraud.

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