Accounting Transformation to Determine Fraud: The Role of Digital Accounting and Forensic Accounting with Internal Control

Maiercherinra Daud
Universitas Kristen Indonesia Paulus; Makassar, Indonesia
E-Mail: maiercherinra@ukipaulus.ac.id

Eben Haezer Basran Patandean
Universitas Kristen Indonesia Paulus; Makassar, Indonesia
E-Mail: ebenpatandean@gmail.com

Submitted:
MAY 2025

Accepted:
JULY 2025

ABSTRACT

The increasing complexity of financial transactions in the digital era has heightened the need for effective fraud detection mechanisms. Digital accounting and forensic accounting have emerged as key innovations, but their effectiveness in preventing fraud remains influenced by the internal systems within organizations. This study aims to examine the mediating role of internal control in the relationship between digital accounting, forensic accounting, and fraud detection effectiveness. To achieve this objective, the research employed a quantitative approach using Partial Least Squares Structural Equation Modeling (PLS-SEM). Data were collected from 110 financial professionals working in various organizations across Makassar, Indonesia. The findings reveal that digital accounting and forensic accounting do not have a direct significant effect on fraud detection. However, both significantly influence internal control, which in turn has a strong and positive impact on fraud detection. These results underscore the central role of internal control systems in enhancing the effectiveness of accounting technologies in fraud prevention. In conclusion, the study highlights the strategic importance of strengthening internal controls as an integrative platform for technological and investigative tools in combating financial fraud, and offers valuable insights for future research and organizational policy development.

Keywords: *Accounting Transformation, Digital Accounting, Forensic Accounting, Fraud Detection, Internal Control.*

ABSTRAK

Meningkatnya kompleksitas transaksi keuangan di era digital telah meningkatkan kebutuhan akan mekanisme deteksi penipuan yang efektif. Akuntansi digital dan akuntansi forensik telah muncul sebagai inovasi utama, tetapi efektivitasnya dalam mencegah penipuan masih dipengaruhi oleh sistem internal dalam organisasi. Penelitian ini bertujuan untuk menguji peran mediasi pengendalian internal dalam hubungan antara akuntansi digital, akuntansi forensik, dan efektivitas deteksi penipuan. Untuk mencapai tujuan ini, penelitian ini menggunakan pendekatan kuantitatif menggunakan Partial Least Squares Structural Equation Modeling (PLS-SEM). Data dikumpulkan dari 110 profesional keuangan yang bekerja di berbagai organisasi di Makassar, Indonesia. Temuan ini mengungkapkan bahwa akuntansi digital dan akuntansi forensik tidak memiliki efek signifikan langsung pada deteksi penipuan. Namun, keduanya secara signifikan memengaruhi pengendalian internal, yang pada gilirannya memiliki dampak yang kuat dan positif pada deteksi penipuan. Hasil ini menggarisbawahi peran sentral sistem pengendalian internal dalam meningkatkan efektivitas teknologi akuntansi dalam pencegahan penipuan. Sebagai kesimpulan, penelitian ini menyoroti pentingnya strategis dalam memperkuat pengendalian

JIAKES
Jurnal Ilmiah Akuntansi Kesatuan
Vol. 13 No. 4, 2025
pp. 865-878
IBI Kesatuan
ISSN 2337 – 7852
E-ISSN 2721 – 3048
DOI: 10.37641/jiakes.v13i4.3778

internal sebagai platform integratif untuk peralatan teknologi dan investigasi dalam memerangi penipuan keuangan, dan menawarkan wawasan berharga untuk penelitian masa depan dan pengembangan kebijakan organisasi.

***Kata kunci**: Transformasi Akuntansi, Akuntansi Digital; Akuntansi Forensik; Deteksi Penipuan; Pengendalian Internal.*

INTRODUCTION

Over the next decades, improved data innovation created a contemporary scene of commercial exercises and budget announcements. Digitalizing accounting forms offers important benefits in the form of productivity, speed, and information accuracy. On the other hand, advanced change also makes unused vulnerabilities to different shapes of budgetary extortion. Reports from administrative organizations and reviews show a noteworthy increment in extortion cases that abuse advanced innovation crevices, such as electronic information control, exchange report building, and abuse of electronic installment frameworks (Beemamol 2024; Setiawan et al., 2025).

In Indonesia, the increase in cases of terrifying mail is not limited to the private segment, but also in reducing public education, accidents, and view partnerships. This wonder makes improvements and exploration of the location of fear tor a step-by-step important topic that can be considered more deeply. Without the consequences of multipurpose terror, organizations are problematic to physically create and mention money in relation to increasingly problematic misconduct (Ghozali 2021; Sarstedt et al., 2023). To address the challenges of expanding advanced extortion, organizations require an approach that does not depend exclusively on a single strategy. Advanced bookkeeping is shown as a vital advancement that can increase straightforwardness and responsibility of financial reports through computerization of recording, real-time information preparation, and data technology-based announcing frameworks (Shaleh 2024; Abu-Dabaseh et al., 2025; Alzoubi, 2025).

At the same time, scientific bookkeeping plays a central part in in-depth monetary examination endeavors to identify signs of extortion, collect prove, and bolster the case handling (Islam et al., 2024). In spite of the fact that DA and FA have demonstrated viable independently, their usage does not essentially ensure the victory of extortion location on the off chance that not bolstered by a satisfactory Internal Control (IC) framework. In this setting, IC does not as it were work as a supporting component, but also gets to be a vital prepare that bridges the commitment of measurable bookkeeping and review innovation to the viability of extortion location. Hence, the cooperative energy between Digital Accounting (DA), Forensic Accounting (FA), and IC may be an essential prerequisite for organizations to realize a comprehensive extortion location framework. In spite of the fact that past studies have inspected the impact of DA and FA on extortion discovery, most studies consider put IC as it were as a control variable or directing variable that fortifies or debilitates the relationship between factors (Busulwa and Evans, 2021; Begkos et al., 2024).

Therefore, a significant research gap remains, namely the need to examine the role of IC as a mediating variable that clarifies the process through which accounting technology and forensic auditing impact an organization's fraud detection capability. Understanding the mediating role of IC offers new insights into the causal pathways that are often overlooked in existing research. This study is grounded in Cressey's fraud triangle theory, which posits that fraud arises when three conditions are met: opportunity, pressure, and rationalization (Tickner & Button, 2021; Sarstedt et al.,2023). In this theoretical framework, the application of DA and FA reduces fraud opportunities by increasing data transparency and reinforcing the evidence trail of financial transactions. However, these benefits cannot be fully realized in the absence of a structured IC system (Ghozali 2021; Pramezwary et al., 2021).

Internal controls are formal procedures that ensure accounting technologies are not just implemented symbolically but are embedded into consistent operational practice to detect irregularities effectively. While the technology acceptance model (TAM) explains how organizations adopt and use technological innovations, IC provides the procedural backbone to ensure these innovations are effectively applied in day-to-day financial operations. This theoretical alignment supports the assumption that IC serves as a mediating variable that bridges the influence of DA and FA on the perception and detection of fraud.

This study aims to contribute to the theoretical development by proposing a new conceptual model that explores the mediating role of IC in the relationship between DA, FA, and fraud perception. The model enriches the body of literature on digital and forensic accounting by offering an integrative perspective, especially relevant for organizations in developing countries that often face challenges in building resilient internal systems. From a practical perspective, the findings of this research are expected to serve as valuable input for organizational leaders in formulating internal control strategies that are aligned with technological advancements and forensic procedures.

LITERATURE REVIEW & HYPOTHESIS DEVELOPMENT

Theoretical Framework

This study is based on the fundamentals of the development of conceptual frameworks: fraud triangle theory by Tickner and Button (2021), agent theory by Jensen (1976), and Technology Acceptance Model (TAM) by Kashada and AllaEddinGhaydi (2020). These three theories are used to explain the relationship between technology use, internal control systems, and the effectiveness of fraud detection in organizations. The triangular theory of fraud explains how fraud occurs due to pressure, opportunity, and rationalization (Manley et al., 2021). In the meantime, agent theory emphasizes the importance of surveillance mechanisms to reduce conflicts of interest between agents and school leaders. TAMs are used to explain factors that influence the acceptance of digital accounting systems through organizations (Subriadi & Baturohmah, 2023). These theories are the basis for explaining the impact of internal controls on digital accounting, forensic accounting, and perceptions of fraud.

The Determinants of Fraud Detection

Digital accounting integrates IT into financial reporting, enhancing speed and accuracy through technologies like cloud computing and AI (Busulwa & Evans, 2021; Al-Raggad & Al-Raggad, 2024). According to TAM, perceived ease of use and usefulness significantly influence employee acceptance of digital accounting systems. Furthermore, digital accounting is directly tied to Fraud Triangle Theory since it can drastically reduce the "opportunity" gap through automatic logging, non-manipulation audit trails, and algorithm-based anomaly detection. Real time anomaly detection allows for fast intervention, minimizes potential financial losses, and enables enterprises to effectively battle increasingly complicated fraud schemes (Li et al. 2025; Shodiq et al. 2025). Such solutions also boost stakeholder trust by making financial disclosures more transparent and accountable (Jatmiko 2020; Begkos et al. 2024).

Forensic Bookkeeping is a way to consider exams recorded in fraudulent and illegal financial activities. As part of agency theory, forensic bookkeeping reduces information asymmetry between principles and agents by providing evidence-based analysis of financial reporting inconsistencies. This function is critical given the rising complexity of modern fraud schemes (Alkhalaileh et al. 2024). The forensic accounting approach encompasses data analysis, transaction tracking, and the compilation of legal evidence. This procedure improves the internal control system and aids in the creation of investigative reports that can be used as legal proof. Empirical evidence suggests that organizations that use forensic procedures have stronger monitoring mechanisms and more effective fraud prevention strategies (Ringle et al., 2020; Imjai et al., 2024).

Internal audits are an integral part of an organization's internal control framework. According to the Fraud Triangle Theory, internal audit helps to reduce the element of "opportunity" by creating a disciplined and transparent supervisory environment. Internal audit operations include risk assessment, compliance testing, and monitoring of operational procedures (Anthony et al. 2023). In addition, internal auditing improves agent theory by monitoring management campaigns and determining monitoring mechanisms that control agent benefits according to client targets. Empirical evidence indicates that there are few fraud cases in organizations with strong internal controls (Jatmiko 2020; Oba et al., 2024; Nisaa et al., 2024).

H1: Digital accounting has a positive impact on fraud detection effectiveness.
H2: Forensic accounting has a positive effect on fraud detection.
H3: Internal control has a positive effect on fraud detection.

Factors Affecting Internal Control

The implementation of digital accounting is not only effective for financial processes, but also strengthens the internal control structure. From the point of view, TAM, a user-friendly digital system that provides immediately advantage will increase the acceptance of the internal listeners. This allows listeners to be more effective, with rapid access to data and trends analysis in real time (Yang et al., 2024). Digital accounting provides automatic and alarming surveillance features for transactions away from normal models, thus improving internal audit capabilities to detect control. The automation of the system in detecting suspicious transactions reduces the dependence on manual supervision, this is a source of errors or common violations.

Forensic accounting can be seen as an extension of regular internal exams focusing on fraud decisions and exams. As part of institutional theory, forensic accounting strengthens the governance system by providing detailed and evidence-based information to determine the reliability of financial reporting. This investigative strategy enables firms to create more responsive and adaptable monitoring systems, as well as increase the early discovery of internal control flaws (Hartini et al., 2023; Ng et al., 2024). When applied to internal auditing, forensic methodologies enable auditors to perform more thorough and accurate investigations (Casey & Souvignet, 2020).

H4: Digital accounting has a positive impact on internal control.
H5: Forensic accounting has a positive impact on internal control.

The Mediating Role of Internal Control

The theory of the triangle of picture grooves creates a powerful control system to overcome the possibility of fraud by combining digital bookkeeping and internal control. Digital technology creates real-time data, and internal testing plays a role in explaining and monitoring the data (Busulwa and Evans 2021; Yeni, 2024). The theory of the triangle of picture grooves creates a powerful control system to overcome the possibility of fraud by combining digital bookkeeping and internal control. Digital technology creates real-time data, and internal testing plays a role in explaining and monitoring the data (Busulwa and Evans 2021).

Forensic accounting requires full support of internal control systems to perform properly (Manley et al., 2019). For businesses with robust internal controls, the forensic testing process is more efficient because complete and well documented data is available (Mayuri et al., 2024). The Framework Agency Theory and the Fraud Triangle Theory show how forensic accounting and internal audit can work together to develop a proactive detection system. When forensic analysis is combined with an extensive internal monitoring system, fraud detection becomes more exact and comprehensive (Nautani 2024; Ng et al. 2024). The combination of the two components results in an effective fraud prevention model.

H6: Internal control mediates the impact of digital accounting on fraud detection.
H7: Internal control mediates the effect of forensic accounting on fraud detection.

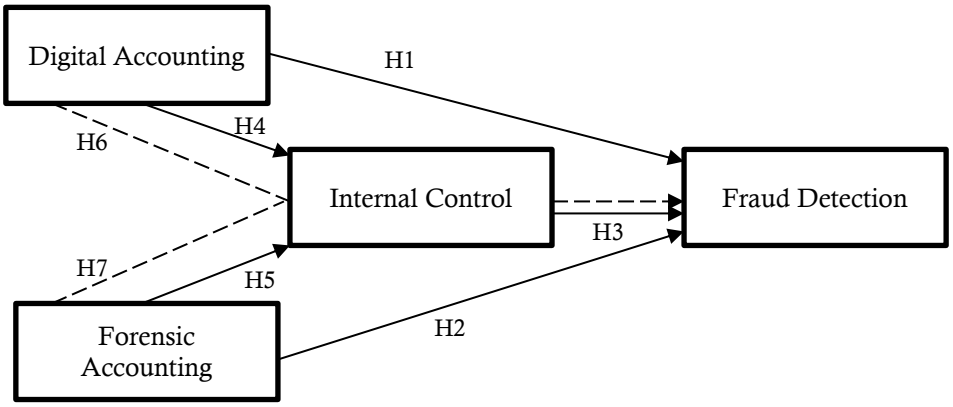

Figure 1. Conceptual Framework

Figure 1 is a conceptual framework model that illustrates the relationship between Digital Accounting (DA), Forensic Accounting (FA), Internal Control (IC), and Fraud Detection (FD). This model presents seven hypotheses (H1–H7) that test the direct and indirect effects between variables. H1 shows the direct effect of DA on FD, while H2 tests the direct effect of FA on FD. H3 links IC with FD, indicating the role of internal control in detecting fraud. Meanwhile, H4 and H5 test the effects of DA and FA on IC, respectively. H6 and H7 are mediation hypotheses that show that IC is an intermediary variable between DA and FD (H6), and between FA and FD (H7). In other words, this framework assumes that digital accounting and forensic accounting can improve the effectiveness of internal control, which in turn contributes to fraud detection. This model is used to test the contribution of each variable in improving the monitoring system and preventing fraud in the accounting environment.

RESEARCH METHOD

This study was conducted in Makassar, South Sulawesi, a major economic hub in Eastern Indonesia. The city was selected due to the growing number of companies adopting digital accounting practices and implementing forensic accounting within their internal financial systems. The research was carried out over a defined period, aligning with the stages of field data collection and analysis. A quantitative research methodology utilizing a causal design was implemented to investigate the direct and indirect links among the study variables. This design was used to furnish empirical evidence about the influence of digital accounting and forensic accounting on fraud detection, with internal control acting as a mediating variable.

The target population for this study consisted of companies based in Makassar that have adopted digital accounting systems and incorporated forensic accounting practices into their financial operations. An initial pool of 155 companies was identified. A purposive sampling method was employed to select respondents according to predetermined criteria: participating firms were required to utilize digital accounting technologies, maintain a dedicated forensic accounting function, and implement structured internal control mechanisms. Eligible respondents included Internal Controls, accountants, or finance managers with at least two years of professional experience. Applying these criteria, 110 qualified individuals were selected to complete the survey, meeting the minimum sample size necessary for Structural Equality model using some of the smallest squares (SEM-PLS).

In this study, both primary and secondary data were used. For primary data, a structured questionnaire was used, and it included a five-point Likert scale to measure how respondents felt about the different factors being studied. Secondary data came from

scientific journals, financial records, and other related documents, which helped in understanding and talking about the findings (Ofem et al., 2024).

In this study, both primary and secondary data sources were used. Key data were collected using a standardized questionnaire that assessed participants' impressions of key study variables using a 5-point Likert scale. Secondary data originated from scientific literature, specialized journals, financial documents, and other related documents to support interpretation of results and discussion of results (Ofem et al., 2024). The research examined four main constructs: Digital Accounting (X1), Forensic Accounting (X2), Internal Control (Y1), and Fraud Detection (Y2).

In this study, we used the SEM-PLS methodology for data analysis using SMARTPLS software. This method was chosen for its effectiveness when examining the complex relationship between variables and their reliability when working with relatively small sample sizes. The analytical approach includes reviewing convergence and discriminant validity and reliability tests for Cronbach's alpha and combined negligence. The hypothesis was assessed by path analysis and bootstrapping methods to examine both direct and indirect effects. Model description performance and overall adjustments were evaluated using R-Squared (R2), Q-Quadrat (Q2), and model adaptation indexes.

RESULTS

The demographic information in Table 1 provided by respondents indicates a broad collection of professionals working in financial roles across several sectors in Makassar. The gender breakdown indicated that males represented 58.2% and females accounted for 41.8%. This composition indicates a relatively balanced representation in financial responsibilities within organizations.

The age distribution indicates that the majority of respondents were 25-34 years old (35.5%) and 35-44 years old (42.7%). This is an intermediate career expert whose majority of participants are likely to have relevant industry knowledge; Knowledge of digital and forensic accounting systems. Regarding professional roles, finance managers formed the largest group (40.9%), followed by book owners (30%) and internal examiners (29.1%). These roles are usually responsible for financial reporting and monitoring internal controls, which follows the focus of research on accounting systems and fraud detection. A significant portion of responders (46.4%) had six to ten years of professional experience and reflected a robust professional background. In the meantime, 28.2% had 10 years of experience, improving the knowledge and reliability provided by the survey. After all, trading companies and distributors were most represented in terms of sector distribution (40%), followed by the services sector (37.3%) and the production firm (22.7%). This illustrates a variety of industries using digital and forensic accounting methods in the region to improve the generalizability of results in a variety of business contexts.

Table 1. Respondent Demographic Profile (n=110)

Characteristics	Category	Frequency	Percentage (%)
Gender	Male	64	58,2%
	Female	46	41,8%
Age	25-34 years	39	35.5%
	35-44 years	47	42.7%
	> 45 years	24	21.8%
Position in Company	Internal Auditor	32	29.1%
	Financial Manager	45	40.9%
	Accountant	33	30.0%
Work Experience	2-5 years	28	25.5%
	6-10 years	51	46.4%
	>10 years	31	28.2%
Company Sector	Manufacturing	25	22.7%
	Services	41	37.3%
	Trade and Distribution	44	40.0%

Measurement models were evaluated in this study using construct validity and dependability using criteria such as indicator reliability, internal consistency, convergent validity, and discriminatory validity. Table 2 shows an overview of the evaluation results. Convergent validity was assessed based on mean variance (AVE) and outer Fee. All indicators showed factor loading above the required threshold of 0.70, and AVE values met the minimum criterion of 0.50, confirming appropriate convergence validity. Furthermore, the combination of Cronbach's Alpha and reliability values (CR) for all constructs exceeded the 0.70 threshold, implying robust internal consistency and measurement. The validity of the discriminant was assessed by the HTMT criteria (Heterotrait-Monotrait ratio). All HTMT values were below the recommended threshold of 0.90. This indicates that the components differ empirically according to the proposed recommendations.

Table 2. Summary of Measurement Model Evaluation Results

Construct	Code	Loading	Cronbach's Alpha	CR	AVE	HTMT (Max)
Digital Accounting	DA1	0.892	0.902	0.912	0.775	0.516
	DA2	0.888				
	DA3	0.928				
	DA4	0.809				
Forensic Accounting	FA1	0.901	0.916	0.923	0.800	0.665
	FA2	0.930				
	FA3	0.910				
	FA4	0.834				
Internal Control	IC1	0.856	0.852	0.856	0.700	0.842
	IC2	0.761				
	IC3	0.861				
	IC4	0.850				
Fraud Detection	FD1	0.919	0.891	0.907	0.694	0.842
	FD2	0.869				
	FD3	0.848				
	FD4	0.718				
	FD5	0.815				

The findings of the external demonstrate appraisal suggest that the buildings employed in this study are of high quality and legitimacy. All measuring devices displayed high loadings when compared to idle develops, demonstrating strong marker consistency and quality. The internal consistency of each build was proved to be solid, as evidenced by satisfactory unwavering quality coefficients. Both convergent and discriminant validity criteria were met, indicating that the measurement instruments accurately represent the desired theoretical notions while remaining distinct from one another. The approval process establishes a strong foundation for moving forward with basic demonstrate inspection, confirming that the estimation show accurately and consistently depicts the essential builds.

The basic show is evaluated to analyze the proposed connections among inactive elements and to determine the model's overall predictive validity. This stage involves the use of different basic factual measurements, such as the coefficient of assurance (R^2) to survey informative capacity, the impact estimate (f^2) to assess the relative impact of exogenous factors, and the significance of way coefficients (β). These are inspected through bootstrapping strategies to discover the strength and unwavering quality of the proposed pathways.

Table 3. R-Square Value

Variable	R-Square	R-Square Adjusted
Internal Control	0.472	0.416
Fraud Detection	0.5651	0.547

Based on Table 3, the R^2 esteem means the degree of fluctuation within the subordinate variable explained by the independent factors within the show. This think about decided that the Inside Control develop encompasses a R^2 value of 0.427, showing that 42.7% of its variety is accounted for by Advanced Bookkeeping and Legal Bookkeeping. The Extortion Discovery build yielded an R^2 estimate of 0.561, implying a direct illustrative control, with Computerized Bookkeeping, Measurable Bookkeeping, and Inside Control collectively explaining 56.1% of its fluctuation.

The effect size (f^2) quantifies the relative influence of an exogenous construct on an endogenous construct. Table 4 illustrates the F-Square relationship between each variable.

Table 4. F - Square Value

Variable	Digital Accounting	Forensic Accounting	Internal Control	Fraud Detection
Digital Accounting			0.138	0.013
Forensic Accounting			0.381	0.009
Internal Control				0.564
Fraud Detection				

Based on Table 4, the effect sizes (f^2) of the variables are interpreted as follows: The Digital Accounting variable concerning Internal Control has a f^2 value of 0.138, indicating a small effect size. Conversely, the Forensic Accounting variable concerning Internal Control produces a f^2 value of 0.381, signifying a substantial effect. The impact of Internal Control on Fraud Detection is significant, with a f^2 value of 0.564. The Digital Accounting variable exerts a direct effect on Fraud Detection, with a f^2 value of 0.013, indicating a minor effect size. Likewise, Forensic Accounting exhibits a minimal impact on Fraud Detection, indicated by a f^2 value of 0.009. The results show that whereas Digital and Forensic Accounting substantially impact Internal Control, their direct effects on Fraud Detection are negligible, highlighting the mediating function of Internal Control.

Table 5. Model Fit Result

Model	Estimated Model	Saturated Model
SRMR	0.057	0.057
d_ULS	0.504	0.504
d_G	0.303	0.303
Chi-square	173.939	173.939
NFI	0.865	0.865

The structural model is highly relevant and provides an excellent overall match. Table 5 indicates a Standardized Root Mean Square Residual (SRMR) value of 0.057, which is less than the recommended maximum threshold of 0.080, suggesting good model fit. Figure 2 displays the path coefficients generated by the structural equation model, which represent the magnitude and direction of the suggested links between the components.

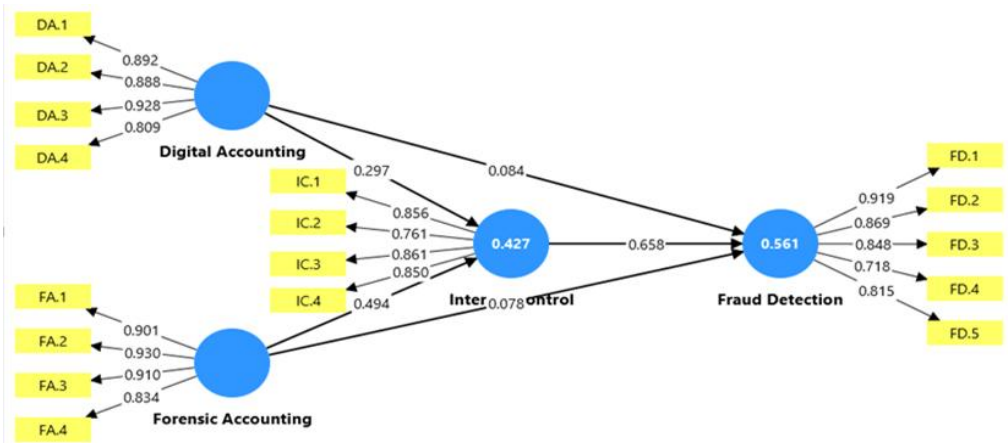

Figure 2. Structural Equation Modelling

This study used the bootstrapping method in Smart-PLS 4 to check if the proposed relationships were significant, as shown in Figure 2. In research related to economics and management, a significance level of 5% ($p < 0.05$) or 10% ($p < 0.10$) is usually accepted. If the t-statistic is higher than 1.960 and the p-value is less than 0.050, the hypothesis is considered supported, meaning the endogenous variable is significantly affected by the exogenous construct. However, if the p-value is more than 0.050 and the t-statistic is lower than 1.960, the hypothesis is not supported, implying there is no statistically significant link between the variables. This approach helps make sure that the decision to accept or reject a hypothesis is based on strong statistical evidence from the data.

Table 6. Path Coefficient and Hypothesis Test

Hypothesis	Relation	Original Sample	Mean	SD	T-Statistics	P-Values	Description
H1	DA → FD	0.084	0.087	0.088	0.984	0.343	Not Supported
H2	FA → FD	0.078	0.076	0.104	0.745	0.456	Not Supported
H3	IC → FD	0.658	0.657	0.102	6.450	0.000	Supported
H4	DA → IC	0.297	0.300	0.089	3.329	0.001	Supported
H5	FA → IC	0.494	0.495	0.091	5.422	0.000	Supported
H6	DA → IC → FD	0.195	0.198	0.069	2.831	0.005	Supported
H7	FA → IC → FD	0.325	0.325	0.077	4.246	0.000	Supported

Table 6 shows the primary theory (H1), recommending a coordinate positive relationship between computerized bookkeeping (DA) and extortion discovery (FD), was not supported ($\beta = 0.084$, $p = 0.343$). Moreover, the moment speculation (H2), which explored the effect of scientific bookkeeping (FA) on extortion location, was moreover not backed ($\beta = 0.078$, $p = 0.456$), suggesting that not one or the other advanced nor measurable bookkeeping autonomously moves forward the adequacy of extortion discovery.

In contrast, the third hypothesis (H3) was supported ($\beta = 0.658$, $p = 0.000$), verifying that internal control (IC) exerts a substantial positive influence on fraud detection. This indicates that internal monitoring systems are essential for identifying fraudulent activities within organizations. Hypotheses four (H4) and five (H5) investigated the influence of digital accounting and forensic accounting on internal control. Both were supported, with digital accounting significantly influencing internal control ($\beta = 0.297$, $p = 0.001$), and forensic accounting showing a stronger relationship ($\beta = 0.494$, $p = 0.000$).

Moreover, hypotheses six (H6) and seven (H7) examined the mediating function of internal control in the association between digital accounting, forensic accounting, and fraud detection. The results support both mediation hypotheses, with indirect effects of digital accounting on fraud detection via internal control being significant ($\beta = 0.195$, $p = 0.005$), as well as the mediation from forensic accounting to fraud detection ($\beta = 0.325$, $p = 0.000$).

DISCUSSION

The findings of the study revealed that Digital Accounting (DA) and Forensic Accounting (FA) have no substantial direct impact on Fraud Detection (FD). This finding contradicts the basic assumption of past research and studies that information technology and forensic audit approaches can directly improve fraud detection efforts (Clavería Navarrete & Carrasco Gallego, 2023; Theodorakopoulos et al., 2024). These findings suggest that technology-based fraud detection theory should take into account the function of intervening factors, such as internal controls, in bridging the effectiveness of technology and forensic procedures on detection outcomes. This expands the fraud triangle and control theory in the context of upgrading accounting systems.

Organizations cannot simply embrace digital technology or forensic methodologies without a solid internal control framework, the ability of these technologies to detect fraud will be limited (Haryono 2017; Ghozali 2021; Sarstedt et al., 2023). This underlines the value of training, supervision, and thorough system integration.

The third hypothesis, that Internal Control (ICC) has a considerable impact on Fraud Detection, is strongly validated (β = 0.658, p = 0.000). This supports earlier research findings that emphasize the importance of internal control systems in preventing and detecting fraud (COSO, 2013; Djaelani & Mokoginta, 2022). These findings support and expand the application of agency theory and fraud deterrence theory, in which internal control is the primary tool for minimizing information asymmetry and management fraud opportunities. Management must invest proportionally in strengthening internal control systems, whether through SOPs, monitoring technologies, or internal audits, because these systems have proven to be effective in detecting fraudulent acts on a systematic and long-term basis (AL-Hadi & Al-Shaibany, 2024).

Research indicates that both digital accounting (β = 0.297) and forensic accounting (β = 0.494) have a considerable impact on internal control. This suggests that the use of accounting technology and investigative tactics can improve internal control mechanisms. Support for this theory is provided by the combination of the Resource-Based View (RBV) and the internal control framework, in which technology capabilities and audit experience are organizational assets that can enhance the dependability of internal control systems.

Organizations can improve the quality of their internal controls by implementing digital accounting systems and proactive forensic procedures. The deployment of ERP technology, AI-based anomaly detection, and in-depth investigative methods will improve the financial reporting system's integrity (Daraojimba et al., 2023; Vutumu et al., 2025). Support for hypotheses H6 and H7 suggests that Internal Control mediates the relationship between Digital and Forensic Accounting in Fraud Detection. This demonstrates that audit technology and knowledge are only successful in discovering fraud when combined with a solid control system. These findings support contingency theory, which emphasizes that the success of technology is determined by the organization's internal environment. Furthermore, it demonstrates the importance of the socio-technical systems theory approach in explaining the interplay of technology, humans, and organizational structures. Financial management and Internal Controls must create control systems that are specifically tailored to the deployment of digital and forensic accounting, such as a red flag system, blockchain-based audit trails, and data mining-based forensic audits.

The findings of this study have significant implications for both theory and practice. Theoretically, this research enriches the fraud triangle, agency, and contingency theories by demonstrating the critical mediating role of internal control in the relationship between digital accounting, forensic accounting, and fraud detection. It highlights the necessity of integrating technological advancements with robust organizational governance structures to maximize fraud prevention outcomes. Practically, the results provide actionable insights for organizational leaders, auditors, and policymakers. Organizations should prioritize investments in internal control systems, such as automated monitoring tools, standardized operating procedures, and regular internal audits, to enhance the effectiveness of digital and forensic accounting practices. Training programs for financial professionals should also emphasize the integration of these technologies within a strong internal control framework to ensure their optimal application. Furthermore, regulators and standard-setting bodies can use these findings to develop guidelines that promote the alignment of technological innovations with internal control mechanisms, fostering a more resilient financial reporting environment. These implications underscore the need for a holistic approach that combines technological, procedural, and human elements to combat financial fraud effectively.

CONCLUSION

This study investigated the effects of DA and FA on FD, with IC as a mediating variable. The key findings reveal that while digital and forensic accounting independently show no significant direct effect on fraud detection, both have a substantial indirect influence through internal control. This indicates that the effectiveness of fraud detection is critically dependent on the strength and quality of an organization's internal control systems. This study contributes to the literature by highlighting the strategic mediating role of internal control in the relationship between accounting innovation and fraud detection. It expands the application of agency theory, fraud deterrence theory, and contingency theory in the digital accounting context. Specifically, it underscores the importance of technological synergy, audit competence, and governance structures in enhancing organizational fraud resilience.

Practically, the findings suggest that organizations, auditors, and regulators should not solely emphasize adopting digital or forensic technologies in isolation. Instead, they should invest in building robust internal control frameworks that can integrate and support these technologies effectively. Key actions include improving internal audit quality, ensuring compliance with control standards, and continuously evaluating the performance of anti-fraud systems. However, this study is limited by its geographical focus on enterprises in Makassar, which may restrict the generalizability of the results across different regions and industries. Additionally, the use of a cross-sectional design limits insights into how fraud detection effectiveness evolves over time. Future research should adopt longitudinal or comparative approaches across sectors and regions to strengthen external validity. Moreover, incorporating variables such as organizational culture, regulatory enforcement, and auditor independence could provide a deeper understanding of the mechanisms that enhance fraud detection in digital environments.

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