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Determinants of Fraud Prevention in Village Fund Governance: Evidence from Village Governments in Motoling District, Indonesia

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Abstract

This research investigates the factors influencing fraud prevention in village fund governance within Indonesia's decentralized fiscal system, where increasing public fund allocations have heightened the risk of misuse and governance challenges. Although prior studies have widely examined fraud in the public sector, limited research has explored the integrated roles of internal control systems, whistleblowing mechanisms, and village apparatus competence within a unified framework at the village level. This study aims to assess how institutional control mechanisms and the competence of human resources influence fraud prevention in the management of village funds. The novelty of this study lies in the development of an integrated empirical model using a census-based approach that includes all village officials in one district, thereby providing a more contextually relevant and representative evaluation. A quantitative explanatory methodology was utilized through Partial Least Squares Structural Equation Modeling (PLS-SEM) using data gathered from 81 village government officials in the Motoling District. The findings indicate that village apparatus competence exerts the strongest positive influence on fraud prevention, followed by internal control systems and whistleblowing mechanisms. This study contributes to the village fund governance literature by integrating internal control systems, whistleblowing mechanisms, and village apparatus competence within a single explanatory framework to examine their relative roles in fraud prevention. The evidence is derived from a cross-sectional self-reported survey of village government officials in Motoling District, Indonesia; therefore, the findings should be interpreted within this specific context and should not be generalized beyond similar governance settings without further empirical validation.

KEYWORDS

fraud prevention; internal control; whistleblowing; apparatus competence; pls-sem.

Introduction

The Indonesian government dedicates significant financial resources each year to villages as a component of its decentralization policy focused on enhancing rural development and community welfare. In 2023, village funds reached IDR 70 trillion and increased to IDR 71 trillion in 2024, distributed to more than 75,000 villages nationwide. While this fiscal commitment has significantly strengthened local development, it has simultaneously intensified governance risks, particularly those associated with fraud and the misuse of public funds (Rifai et al., 2024; Wahyudi et al., 2022). This duality highlights a critical challenge in ensuring that financial decentralization is accompanied by robust accountability mechanisms.

Against this national background, Motoling District in South Minahasa Regency represents a relevant context for examining fraud prevention in village fund governance. Previous studies conducted in the Motoling area have reported persistent challenges in village financial accountability, including limited transparency in financial disclosure, inadequate community participation in village fund planning, and weaknesses in

supervisory mechanisms related to village fund management (Onibala et al., 2022). These governance conditions indicate that, despite the implementation of decentralization policies, institutional and administrative challenges remain at the village level, making Motoling District an appropriate setting for investigating how internal control systems, whistleblowing mechanisms, and village apparatus competence contribute to fraud prevention.

Empirical evidence further indicates that the increasing volume of village funds has been accompanied by a rising incidence of corruption cases at the village level. Reports from anti-corruption institutions consistently show that village fund corruption remains among the most frequently prosecuted public sector offenses, with village heads representing a substantial proportion of perpetrators. These conditions reflect persistent structural weaknesses in village financial governance, particularly in internal control systems, oversight practices, and human resource capacity (Anam et al., 2023; Muhtar et al., 2023; Prihatmanto et al., 2023). Consequently, strengthening fraud prevention mechanisms has become an urgent priority to safeguard public resources and sustain trust in decentralized governance.

Previous studies have identified internal control systems, whistleblowing mechanisms, and apparatus competence as critical determinants of fraud prevention in public sector financial management. Internal control functions as a primary safeguard to reduce irregularities and detect fraud at an early stage, while whistleblowing mechanisms serve as an early warning system that enhances transparency and accountability. In addition, competent village officials are expected to manage public resources in a professional and ethical manner. However, prior empirical findings remain inconclusive, particularly regarding the role of apparatus competence, with several studies reporting inconsistent or varying effects on fraud prevention outcomes (Afnisah et al., 2025; Mufliza & Januarti, 2023; Shaleh et al., 2022). This inconsistency indicates that the relationships among these determinants are not yet fully understood and require further empirical clarification.

Despite the expanding body of research on village fund governance, several significant gaps remain. First, existing studies generally examine institutional control mechanisms and human resource competence separately rather than integrating them into a single analytical framework. For example, Mufliza & Januarti (2023) primarily focused on institutional governance mechanisms, whereas Gobel et al. (2025) concentrated on the competence of village officials without simultaneously examining internal control and whistleblowing mechanisms. Consequently, the interaction among these determinants remains insufficiently understood. Second, empirical evidence at the village government level is still limited. Although Kristanto (2023) investigated fraud prevention in village fund management, the study was restricted to a single village case, while Purba et al. (2023) focused mainly on financial supervision rather than fraud prevention mechanisms. These studies therefore provide limited evidence regarding governance dynamics across multiple villages within the same administrative district. Third, methodological limitations remain evident because most previous studies employed sampling techniques rather than a census approach. As highlighted by Baskoro (2025) and Wijayanti et al. (2025), the use of sampled respondents may reduce population representativeness and increase the potential for sampling bias. Research involving all village officials within a district remains scarce, indicating the need for a census-based approach to provide more comprehensive empirical evidence (Baskoro, 2025; Kristanto, 2023; Purba et al., 2023; Wijayanti et al., 2025).

To address these gaps, this study examines the influence of village apparatus competence, whistleblowing mechanisms, and internal control systems on fraud prevention in village fund administration. Specifically, the study seeks to answer the following research question: to what extent do human resource competence and institutional control mechanisms influence fraud prevention in village fund governance? By employing a census-based quantitative approach and integrating multiple determinants within a single structural model, this study provides a more through empirical understanding of village-level fraud prevention.

The novelty of this study lies in three main contributions. First, it develops an integrated empirical model that simultaneously examines institutional and human factors in fraud prevention, thereby extending prior fragmented analyses. Second, it utilizes a census approach covering all village officials within a single district, providing a more accurate and representative depiction of governance conditions at the micro level. Third, it provides context-specific evidence from village governments, which remains underexplored in the broader literature on financial governance in the public sector. These contributions not only enrich the theoretical discourse on fraud prevention and governance but also offer policymakers practical recommendations for strengthening accountability systems in village financial management. Fraud Triangle Theory provides a relevant theoretical foundation for explaining fraud prevention in village fund governance. According to the theory, fraud occurs when three elements coexist: pressure, opportunity, and rationalization. Among these elements, opportunity can be substantially reduced through effective internal control systems and whistleblowing mechanisms, while competent village apparatus strengthen ethical decision-making and professional accountability, thereby minimizing the likelihood of fraudulent behavior. Accordingly, fraud prevention is expected to be more effective when institutional governance mechanisms are supported by capable and ethical human resources (Wahyudi et al., 2022; Afnisah et al., 2025; Mufliza & Januarti, 2023). Based on this theoretical perspective and prior empirical findings, the hypotheses of this study are formulated as follows:

H1: Internal control systems have a positive effect on fraud prevention in village fund governance.
H2: Whistleblowing mechanisms have a positive effect on fraud prevention in village fund governance.
H3: Village apparatus competence has a positive effect on fraud prevention in village fund governance.

Methods

Research Design and Framework

To investigate the hypothesized relationships between internal control systems, whistleblowing mechanisms, village apparatus competence, and fraud prevention in village fund governance, this study employed a quantitative approach with an explanatory cross-sectional design. The research framework was developed based on governance theory and prior empirical studies, positioning fraud prevention as the endogenous variable, while internal control systems, whistleblowing mechanisms, and village apparatus competence were specified as the exogenous variables (Nurcahya et al., 2025).

The conceptual model illustrates the hypothesized causal relationships among these constructs, where each independent variable is expected to directly influence fraud prevention outcomes. As presented in Figure 1, the research framework visually represents the structural relationships and proposed hypotheses, providing a clear depiction of how institutional control mechanisms and human resource capacity interact within the governance system. Partial Least Squares Structure Equation Modeling (PLS-SEM) is then used to

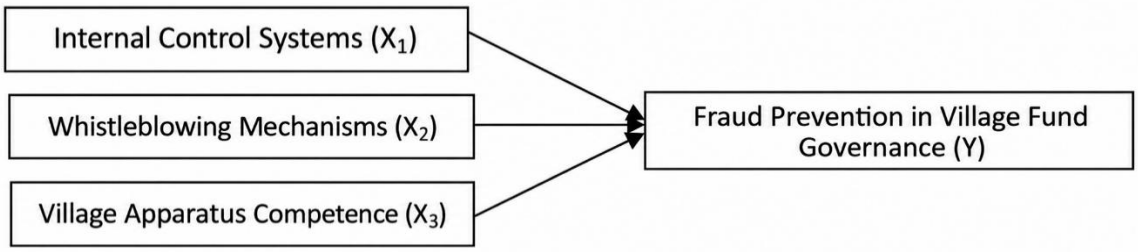


Figure 1. Research Framework

examine this model in order to determine the significance and strength of the correlations between latent variable (Razak et al., 2024).

Research Location and Timeframe

The study was conducted in Motoling District, South Minahasa Regency, North Sulawesi Province, Indonesia, which consists of seven villages: Lalumpe, Motoling, Motoling Satu, Motoling Dua, Motoling Mawale, Picuan Baru, and Raanan Lama. This location was selected due to its relevance in representing village-level governance structures within Indonesia's decentralized fiscal system. Data collection was carried out over a defined period in 2024, ensuring temporal consistency in capturing respondents' perceptions (Adam et al., 2024).

Population and Sampling

The population of this study comprised all village government officials working across the seven villages in Motoling District, totaling 81 individuals. These officials were employed within village government organizations responsible for village administration and the management of village funds. A census (saturated sampling) approach was employed, whereby all members of the target population were included as research respondents. The respondents were drawn from all seven village administrations, ensuring complete coverage of the study area and comprehensive representation of village governance practices within Motoling District. Consequently, this approach strengthens the external validity of the findings within the study context and provides more accurate empirical evidence than would be obtained from a sample-based design. Furthermore, the total sample size of 81 respondents satisfies the minimum sample size requirement for Partial Least Squares Structural Equation Modeling (PLS-SEM). According to the "10-times rule" proposed by Hair et al. (2022), the minimum sample should be at least ten times the largest number of structural paths directed at a latent construct or the largest number of indicators used to measure a construct. In the present study, the endogenous construct (fraud prevention) receives three structural paths, while the largest measurement construct consists of eight indicators, indicating a minimum recommended sample of 80 observations. Therefore, the sample size of 81 respondents is considered adequate to produce reliable and robust PLS-SEM estimates.

Types and Sources of Data

Primary data were collected using a structured self-administered questionnaire designed to measure four latent constructs: internal control systems (8 items), whistleblowing mechanisms (6 items), village apparatus competence (6 items), and fraud prevention (6 items). Internal control systems were measured using indicators adapted from the COSO (2013) Internal Control–Integrated Framework. Whistleblowing mechanisms were measured using indicators adapted from Fahreza et al. (2022), while village apparatus competence and fraud prevention were measured using indicators adapted from Romadaniati et al. (2020). Representative measurement items included the effectiveness of the control environment, the availability of whistleblowing channels, employees' knowledge and skills, and organizational practices promoting honesty and transparency in village fund management. All questionnaire items were measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) (Ariantika & Suhendro, 2025). The questionnaire was administered in Bahasa Indonesia because all respondents were Indonesian village government officials. Prior to distribution, the questionnaire was reviewed to ensure the clarity, readability, and consistency of the measurement items with the research constructs. Construct validity and reliability were subsequently evaluated using convergent validity, discriminant validity, Cronbach's alpha, composite reliability, and average variance extracted (AVE) within the PLS-SEM measurement model. To support the study's theoretical framework, secondary data on public sector governance and village fund management were gathered from scholarly publications, government regulations, books, and pertinent literature (Hutuely & Rumra, 2023).

Data Collection Procedure

During the 2024 data collection period, questionnaires were directly sent to village government officials in order to gather data. Clear instructions on the study's goal and how to fill out the questionnaire were given to respondents. To ensure data quality and completeness, the researcher supervised the distribution and retrieval process. In addition, documentation techniques were employed to obtain supporting information related to village governance structures and institutional characteristics (Kesa et al., 2024; Putra, 2023). This systematic procedure was intended to minimize response bias and enhance the reliability of the collected data.

Measurement of Variables

Dependent Variable : Fraud Prevention (Y)

Fraud prevention refers to systematic efforts aimed at minimizing opportunities, incentives, and rationalization for fraud in the administration of public finances (Imran et al., 2023; Tuharea et al., 2024). This construct was measured using indicators reflecting integrity promotion, transparency, supervisory mechanisms, and reduction of fraud opportunities.

Independent Variable : Internal Control System (X1)

Policies and processes intended to offer a reasonable level of assurance regarding the accomplishment of corporate goals are referred to as internal control. The COSO (2013) framework, which includes the control environment, risk assessment, control activities, information and communication, and monitoring activities, was used to measure this variable (COSO, 2013).

Independent Variable : Whistleblowing Mechanism (X2)

Whistleblowing refers to reporting systems that enable individuals to disclose unethical or illegal practices within an organization. This variable was measured through indicators related to system implementation, reporting mechanisms,

procedures, and whistleblower protection (Artyukhov et al., 2024; Imron Heriyanto, 2025).

Independent Variable : Village Apparatus Competence (X3)

Apparatus competence refers to the knowledge, skills, and professional attitudes required to perform administrative and financial management duties effectively and ethically. This construct was measured using indicators of knowledge, skills, and work attitudes (Gobel et al., 2025; Putra, 2022).

Instrument Validity and Reliability

The outer model assessment in PLS-SEM was used to analyze the validity and reliability of the research instruments in order to guarantee measurement precision and consistency. Given that all variables were measured using self-administered questionnaires completed by the same respondents at a single point in time, the potential for Common Method Bias (CMB) was considered. To minimize this risk, respondents were informed that their responses would remain anonymous and confidential, thereby reducing evaluation apprehension and social desirability bias. In addition, Harman's single-factor test was performed as a statistical assessment of CMB. The results indicated that the first unrotated factor explained less than 50% of the total variance, suggesting that common method bias was not a serious concern in this study (Podsakoff et al., 2003).

Factor loadings and Average Variance Extracted (AVE) were used to evaluate convergent validity, and the Fornell–Larcker criterion was used to evaluate discriminant validity. In line with current PLS-SEM recommendations (Hair et al., 2022; Henseler et al., 2015),discriminant validity was further assessed using the Heterotrait–Monotrait ratio (HTMT). All HTMT values were below the recommended threshold of 0.90, confirming adequate discriminant validity and indicating that each construct was empirically distinct despite the relatively high correlations observed among several constructs. Cronbach's Alpha and Composite Reliability coefficients were used to assess reliability. Every construct satisfied the suggested threshold values, demonstrating the validity and reliability of the measurement model (Anshari et al., 2024; Diansari et al., 2023).

Data Analysis Technique

The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4 software (Diansari et al., 2023; Mufliza & Januarti, 2023). PLS-SEM was selected because the research aims to examine the hypothesized relationships among multiple latent constructs and to maximize the predictive capability of the proposed model rather than to confirm an established theoretical framework. This variance-based approach is appropriate for explanatory and prediction-oriented research involving complex structural models with multiple latent variables. Furthermore, PLS-SEM is suitable for studies with relatively small sample sizes. As explained in the sampling section, the sample of 81 respondents satisfies the minimum sample size requirement based on the 10-times rule proposed by Hair et al. (2022), thereby providing an adequate basis for estimating the structural model. The analysis comprised two stages: assessment of the measurement model (outer model), including convergent validity, discriminant validity, Cronbach's alpha, composite reliability, and average variance extracted (AVE), followed by evaluation of the structural model (inner model), including path coefficients, coefficient of determination (R^2), and hypothesis testing through bootstrapping.

The analysis was conducted in two main stages. First, the outer model evaluation assessed measurement validity and reliability through convergent validity, discriminant validity, and internal consistency tests. Second, the inner model evaluation examined the structural relationships among variables using path coefficients, hypothesis testing, and the coefficient of determination (R^2) to evaluate predictive strength. Hypothesis testing was conducted using the bootstrapping procedure with 5,000 bootstrap subsamples in SmartPLS 4. Because all hypotheses predicted positive relationships, statistical significance was evaluated using a one-tailed test at the 5% significance level. These analyses provide a comprehensive assessment of both the measurement model and the structural model, enabling the proposed hypotheses to be tested systematically.

Ethical Considerations

By making sure that every participant gave their consent and was aware of the study's objectives, this study complied with ethical research guidelines. Respondent anonymity and confidentiality were rigorously upheld, and the information gathered was only utilized for scholarly research.

Result and Discussion

This study involved 81 village government officials from seven villages in Motoling District, South Minahasa Regency. As presented in Table 1, the distribution of respondents is relatively proportional across villages, with the number of respondents ranging from 9 to 13 individuals per village. This distribution indicates adequate representation of the study population and supports the robustness of subsequent statistical analysis.

According to the assessment of the measurement model, every indicator meets the requirements for convergent validity. Each loading factor value above the suggested threshold of 0.70, as Table 2 illustrates, proving that each indication accurately represents its corresponding latent construct.

The Average Variance Extracted (AVE) values shown in Table 3 offer additional proof of convergent validity. Every construct has an AVE value more than 0.50, meaning that a significant amount of the variance in the relevant indicators can be explained by the constructs.

The Fornell-Larcker criterion was used to evaluate discriminant validity. Each variable is empirically distinct and reflects a distinct aspect of village fund governance, as shown in Table 4, where the square root of AVE for each construct is larger than its correlations with other constructs. Nevertheless, several inter-construct correlations are relatively high, particularly between Internal Control and Fraud Prevention, as well as between Internal Control and Apparatus Competence. Such correlations may indicate conceptual proximity among governance-related constructs. Therefore, to provide a more rigorous assessment of discriminant validity, the Heterotrait–Monotrait ratio (HTMT) was also evaluated in accordance with current PLS-SEM recommendations (Hair et al., 2022; Henseler et al., 2015). The HTMT values for all construct pairs were below the recommended threshold of 0.90, confirming that discriminant validity was achieved despite the relatively strong inter-construct correlations. Accordingly, the structural relationships and path coefficients can be interpreted without evidence of discriminant validity violations.

The reliability assessment results, as shown in Table 5, indicate strong internal consistency across all constructs. Cronbach's Alpha values exceed 0.60, and Composite Reliability values are above 0.70, confirming that the measurement instruments are reliable and consistent.

The structural model demonstrated substantial explanatory power. As presented in Table 6, the coefficient of determination (R^2) indicates that internal control systems, whistleblowing mechanisms, and village apparatus competence jointly explain 92.0% of the variance in fraud prevention. This result suggests that the proposed model provides a high level of explanatory

Table 1. Distribution of Research Respondents

Village	Number of Respondents
Lalumpe	11
Motoling	9
Motoling Satu	12
Motoling Dua	13
Motoling Mawale	11
Picuan Baru	12
Raanan Lama	13
Total	81

Source: Primary Data (2024)

Table 2. Loading Factor Values

Variable	Indicator	Loading Factor
Internal Control	SPI.1–SPI.8	0.735–0.944
Whistleblowing	W.1–W.6	0.745–0.835
Apparatus Competence	K.1–K.6	0.729–0.936
Fraud Prevention	P.1–P.6	0.707–0.940

Source: Processed Data (2024)

Table 3. Average Variance Extracted (AVE)

Variable	AVE
Internal Control	0.786
Whistleblowing	0.620
Apparatus Competence	0.699
Fraud Prevention	0.705

Source: Processed Data (2024)

Table 4. Discriminant Validity (Fornell–Larcker Criterion)

Construct	IC	WB	AC	FP
Internal Control (IC)	0.951			
Whistleblowing (WB)	0.802	0.829		
Apparatus Competence (AC)	0.887	0.787	0.836	
Fraud Prevention (FP)	0.933	0.826	0.840	0.954

Source: Processed Data (2024)

Table 5. Reliability Test Results

Variable	Cronbach's Alpha	Composite Reliability
Internal Control	0.960	0.967
Whistleblowing	0.878	0.907
Apparatus Competence	0.911	0.932
Fraud Prevention	0.913	0.934

Source: Processed Data (2024)

Table 6. Coefficient of Determination (R^2)

Endogenous Variable	R^2
Fraud Prevention	0.920

Source: Processed Data (2024)

capability within the study context. However, this finding should be interpreted with caution because all constructs were measured using self-reported perception-based questionnaires collected from the same respondents at a single point in time. Consequently, the relatively high R^2 value may be partially influenced by common method variance or conceptual overlap among the measured constructs. Therefore, the reported explanatory power should not be interpreted as definitive evidence of predictive accuracy beyond the present research setting.

The results of hypothesis testing are summarized in Table 7. Statistical significance was evaluated using the bootstrapping procedure in SmartPLS with a one-tailed significance test at the 5% significance level because all hypotheses specified directional (positive) relationships based on governance theory and prior empirical evidence. Under a one-tailed test, the critical t-value is 1.645, indicating that the observed path coefficients exceeded the required threshold for statistical significance.

Internal control systems have a positive and significant effect on fraud prevention ($\beta = 0.258$, $t = 1.809$, $p = 0.037$), indicating that stronger control mechanisms are associated with improved fraud prevention outcomes. Whistleblowing mechanisms also exhibit a positive and statistically significant effect ($\beta = 0.099$, $t = 1.760$, $p = 0.041$). However, the relatively small standardized coefficient suggests that the practical contribution of whistleblowing mechanisms is limited compared with the other predictors included in the model. This finding indicates that, although whistleblowing contributes to fraud prevention, its influence remains relatively modest within the context of village fund governance. One possible explanation is that village officials may still be reluctant to report irregularities because of fear of retaliation, close interpersonal relationships within village communities, limited protection for whistleblowers, and cultural norms that discourage reporting misconduct. Consequently, whistleblowing systems may not yet function as fully effective governance mechanisms unless supported by stronger institutional safeguards and greater trust in reporting procedures.

Village apparatus competence demonstrates the strongest positive and statistically significant effect on fraud prevention ($\beta = 0.627$, $t = 3.670$, $p < 0.001$), highlighting its dominant contribution to the proposed structural model.

Furthermore, the modified R^2 value shown in Table 8 is 0.917, signifying that 91.7% of the variability in fraud prevention is accounted for by the model, whereas the leftover 8.3% is due to additional factors not examined in this research.

This outcome reinforces the reliability and strength of the structural model.

Interpretation of Key Findings

The findings demonstrate that institutional governance mechanisms and human resource competence jointly contribute to strengthening fraud prevention in village fund governance. Rather than merely confirming significant statistical relationships, these results indicate that fraud prevention is achieved through the interaction between organizational control systems and the capability of village officials to implement them effectively. This finding supports the argument of Fraud Triangle Theory that reducing opportunities for fraud requires not only formal control mechanisms but also competent individuals capable of maintaining accountability and ethical decision-making.

Among the three determinants, village apparatus competence exerts the strongest influence on fraud prevention, suggesting that human resource quality plays a more substantial role than procedural controls alone. This finding implies that internal control systems and whistleblowing mechanisms may not operate optimally unless supported by knowledgeable, skilled, and ethically responsible personnel. Consequently, strengthening the competence of village officials should be regarded as a strategic priority for improving village financial governance rather than merely as an administrative requirement.

Table 7. Path Coefficients

Path	Coefficient	T-Statistic	P-Value
Internal Control → Fraud Prevention	0.258	1.809	0.037
Whistleblowing → Fraud Prevention	0.099	1.760	0.041
Apparatus Competence → Fraud Prevention	0.627	3.670	0.000

Source: Processed Data (2024)

Table 8. Adjusted R^2

Variable	Adjusted R^2
Fraud Prevention	0.917

Source: Processed Data (2024)

Although whistleblowing mechanisms were found to have a statistically significant effect, their relatively small coefficient suggests that their practical contribution remains limited. This finding may reflect the governance characteristics of village administrations, where close interpersonal relationships, concerns about retaliation, and limited institutional protection for whistleblowers reduce the effectiveness of formal reporting mechanisms. Therefore, strengthening legal protection and fostering a culture that supports ethical reporting are necessary to maximize the effectiveness of whistleblowing systems.

Comparison with Previous Studies

The positive relationship between internal control systems and fraud prevention is consistent with the findings of Wahyudi et al. (2022), who demonstrated that stronger internal control mechanisms significantly reduce opportunities for village fund fraud by improving accountability and strengthening monitoring practices in Indonesian village governments. The consistency between the two studies suggests that effective internal controls remain a fundamental governance mechanism across different village settings, thereby reinforcing the generalizability of this relationship.

Similarly, the positive influence of whistleblowing mechanisms supports the findings of Mufliza & Januarti (2023), who reported that effective reporting systems enhance transparency and facilitate the early detection of financial irregularities in village fund management. However, the relatively small effect observed in the present study indicates that the effectiveness of whistleblowing systems may depend on contextual factors, such as organizational culture, trust in reporting mechanisms, and the level of protection provided to whistleblowers.

This study also extends previous literature regarding village apparatus competence. While Afnisah et al. (2025) found that competent village officials significantly strengthen fraud prevention through improved financial management capabilities, Shaleh et al. (2022) suggested that organizational culture and institutional conditions may reduce the direct influence of individual competence. The present findings provide additional evidence that competence remains the strongest determinant when institutional mechanisms and human resource factors are examined simultaneously within an integrated model. This result therefore contributes to resolving previous inconsistencies and demonstrates that the effectiveness of competence becomes more evident when evaluated alongside governance mechanisms rather than in isolation.

Practical and Theoretical Implications

From a theoretical standpoint, this study supports theories of governance and fraud prevention by showing that the integration of institutional systems and human capital is necessary for effective fraud prevention. The findings indicate that control systems alone are insufficient without competent personnel who are capable of implementing and sustaining governance practices effectively (Nor et al., 2025).

Practically speaking, the findings show that village officials' capacity-building programs must be given top priority by local governments and legislators. Continuous training, professional development, and ethical reinforcement programs are essential to enhance competence and integrity. In addition, strengthening internal control systems and institutionalizing whistleblowing mechanisms should be considered integral components of governance reform. These initiatives are essential to raising village fund management's general efficacy, accountability, and transparency.

Limitations and Cautions

Despite the significant contributions this work makes, a number of limitations should be noted. It is more difficult to determine causal correlations between the variables under study when a cross-sectional methodology is used. Furthermore, the use of self-reported data raises the possibility of biases, such as respondents' propensity to give socially acceptable responses. Furthermore, the focus on a single district may restrict the broader applicability of the findings, particularly when considering regions with different governance structures and institutional environments.

Recommendations for Future Research

Future studies are encouraged to adopt longitudinal research designs to better capture causal relationships and changes in fraud prevention practices over time, particularly following the implementation of governance reforms or capacity-building programs for village officials. Expanding the geographical scope to include multiple districts, provinces, or regions with different governance characteristics would improve the generalizability of the findings and enable comparisons across institutional contexts.

In addition, future research should examine potential moderating or mediating variables that may strengthen or weaken the relationship between village apparatus competence and fraud prevention. Variables such as leadership style, governance maturity, ethical organizational culture, and community participation may provide a more comprehensive explanation of fraud prevention mechanisms in village fund governance.

Considering that this study relied primarily on self-reported questionnaire data, future studies are also encouraged to validate the proposed model using objective data sources, such as internal audit reports, external audit findings, fraud investigation records, or village financial accountability reports. Combining survey data with documentary evidence or qualitative interviews would reduce common method bias and provide a more comprehensive understanding of fraud prevention practices.

Finally, future studies may employ mixed-method approaches to explore not only whether institutional control mechanisms and human resource competence influence fraud prevention, but also how and why these mechanisms operate within different village governance settings. Such approaches would provide richer contextual insights into the behavioral and organizational factors underlying fraud prevention.

Conclusion

This study sought to answer the following research question: to what extent do human resource competence and institutional control mechanisms influence fraud prevention in village fund

governance? The findings demonstrate that internal control systems, whistleblowing mechanisms, and village apparatus competence all have positive and significant effects on fraud prevention. Among these determinants, village apparatus competence exerts the strongest influence, indicating that the effectiveness of fraud prevention depends not only on institutional governance mechanisms but also on the capability and professionalism of village officials. These findings contribute theoretically to the fraud prevention and public governance literature by providing empirical evidence that integrating institutional control mechanisms with human resource competence offers a more comprehensive explanation of fraud prevention in village fund governance than examining each factor independently. This study therefore extends previous research by validating an integrated framework within the context of decentralized village governance.

Despite its contributions, this study has several limitations. First, the cross-sectional research design captures respondents' perceptions at a single point in time, limiting the ability to establish causal relationships among the variables. Accordingly, the findings should be interpreted as evidence of hypothesized associations rather than definitive causal effects. Second, all constructs were measured using self-reported questionnaires completed by the same respondents, which may increase the risk of common method variance and perceptual bias despite the satisfactory measurement model assessment. Third, the study was conducted exclusively among village government officials in Motoling District, South Minahasa Regency. Although a census approach ensured complete coverage of the target population within the study area, the findings may not be fully generalizable to villages with different institutional, socio-economic, or governance characteristics. Future studies are therefore encouraged to employ longitudinal or multi-source research designs, incorporate objective governance indicators or multiple respondent groups, and examine broader geographical settings to strengthen the robustness and generalizability of the findings.

Author contributions

The development and completion of this research benefited greatly from the contributions of each author. The first author oversaw the creation of the study framework, collected the data, used PLS-SEM to analyze the data, and wrote the first draft of the publication. The co-authors contributed significantly to the manuscript's overall academic quality by strengthening the research design, guaranteeing the validity of the analytical techniques, and offering insightful criticism. The final version has been thoroughly examined and authorized by all writers, who also take full responsibility for the accuracy, dependability, and integrity of the work.

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