Providing an Appropriate Model for Identifying and Evaluating the Factors Affecting the Quality of Internal Controls

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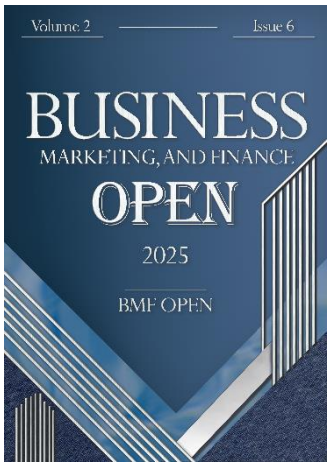

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Abstract: The purpose of the present study is to propose an appropriate model for identifying and evaluating the factors influencing the quality of internal controls. To achieve this objective, a set of indicators and components related to internal control quality was identified through a review of theoretical foundations and research literature, as well as interviews with experts and professionals in the relevant field. The research approach is mixed-method (qualitative-quantitative) and has been conducted using a multiple grounded theory method. Accordingly, data analysis has been performed at both empirical and theoretical levels. The empirical data were collected through theoretical sampling and 15 semi-structured interviews with experts who had successful experience in implementing internal control systems during the years 2019 and 2023. The theoretical data were obtained through a comprehensive review of the literature. In the findings section, after identifying and extracting the main factors and indicators of internal control quality, a quantitative study was conducted to design the model and to ensure its accuracy and appropriateness. For this purpose, the demographic characteristics of the study sample were first examined, and then the data were summarized using descriptive statistical techniques in tabular format. Subsequently, the designed model of internal control quality was evaluated using confirmatory factor analysis to validate the identified components concerning causal conditions, the core phenomenon, strategies, contextual factors, intervening factors, and the consequences of internal control quality. In the next phase, the proposed model for identifying the factors affecting the quality of internal controls was assessed using the structural equation modeling (SEM) technique within a mixed-methods research approach. The results obtained from the structural equation model fitting in the quantitative section, based on the estimated T-values and p-values, allowed for decision-making regarding the acceptance or rejection of the significance of the relationships between constructs. If the observed T-statistic values in testing the significance of relationships between variables exceed +1.96 or fall below -1.96, or if the p-values for the paths are less than 0.05, the relationships between constructs are considered statistically significant with 95% confidence.

Keywords: Quality, Internal Controls, Board Structure, Proper Documentation of Procedures.

1. Introduction

In an increasingly complex and dynamic financial environment, internal control systems have emerged as vital mechanisms for ensuring financial integrity, organizational accountability, and the quality of financial reporting.

The growing demands for transparency and public accountability across both public and private sectors have made the quality of internal controls a significant area of interest in management and accounting research. High-quality internal controls are not only pivotal in maintaining the accuracy of financial information but are also instrumental in minimizing financial misstatements, fraud, and operational inefficiencies [1, 2]. The essential components of such systems—ranging from information technology integration and audit quality to governance structure and human resources competence—collectively determine their effectiveness in practice [3, 4].

Recent scholarly discourse emphasizes that the reliability and quality of financial reporting are highly dependent on the robustness of internal control structures, particularly in environments susceptible to bureaucratic inefficiencies and limited oversight mechanisms [5, 6]. Studies investigating regional governments and public organizations demonstrate that weaknesses in internal control systems can lead to unreliable financial reports, decreased public trust, and misuse of public resources [7, 8]. Moreover, the operationalization of internal control systems remains uneven across jurisdictions, often depending on the level of information technology integration, professional expertise, and audit responsiveness within each organizational context [9, 10].

The quality of internal controls is also closely tied to the role of technology, which increasingly serves as an enabler of accountability and automation. Several empirical studies have underscored that the utilization of information technology systems significantly strengthens the effectiveness of internal controls by enhancing data accuracy, access to real-time information, and system monitoring capabilities [8, 11]. Notably, local government institutions that have adopted digital financial information systems have reported improvements in the consistency and timeliness of their financial statements [9, 12]. Nevertheless, the success of such digital integration largely hinges on the technological competence of staff and the system's alignment with existing control frameworks [10, 13].

Beyond technology, the effectiveness of internal controls is intrinsically linked to human capital—specifically, the competence, integrity, and commitment of personnel responsible for implementing and supervising these systems [3, 14]. Competent human resources are necessary to interpret control requirements, detect irregularities, and enforce regulatory compliance [2, 15]. Without adequate training and continuous professional development, even the most sophisticated internal control systems may underperform or be circumvented, leading to significant financial reporting risks [6, 16]. This highlights the necessity of integrating HR development programs within broader control system reforms to ensure sustainable improvements in control quality.

Audit mechanisms—both internal and external—also constitute a critical dimension of internal control evaluation. Studies affirm that regular audits not only reinforce the discipline of financial reporting but also serve as deterrents against fraud and misuse of assets [4, 17]. Internal auditors, in particular, play a vital role in providing real-time feedback to management, assessing compliance with financial standards, and identifying areas requiring corrective action [18]. External audits, when executed with independence and professionalism, add an additional layer of credibility and verification, thereby improving the trust of stakeholders in the organization’s financial transparency [1, 19].

Furthermore, governance structures, including the role of audit committees, board independence, and ownership distribution, significantly influence the quality of internal controls. Empirical investigations have shown that organizations with active and independent audit committees tend to implement more effective internal control measures and produce higher quality financial statements [4, 19]. Similarly, a well-functioning board of directors that is free from management influence is more likely to enforce robust internal control systems and ensure alignment with ethical and strategic goals [7, 18]. Ownership structure also plays a nuanced role—concentrated

ownership might improve oversight in some contexts but can also reduce the incentive to implement rigorous controls if dominant owners have conflicting interests [5, 11].

Internal control quality is further shaped by the regulatory and institutional environment within which organizations operate. Comparative studies indicate that countries with strong regulatory frameworks and clear government accounting standards tend to achieve better outcomes in financial control and reporting quality [8, 14]. In contrast, the absence of unified control standards or ambiguous regulatory mandates often results in fragmented practices and inconsistent reporting outputs [3, 20]. Thus, institutional reforms aimed at clarifying control expectations and strengthening oversight bodies are essential to improving financial governance at both micro and macro levels [11, 13].

From a theoretical standpoint, several models have been proposed to assess and structure internal control systems, including the widely referenced COSO framework. However, studies increasingly suggest the need for contextual adaptation of such models, especially in local government or hybrid enterprise settings where structural, cultural, and resource-based constraints diverge significantly from those in private-sector firms [12, 15]. For instance, in village-owned enterprises or public service institutions, the implementation of internal controls is often hindered by a lack of trained personnel, political interference, or misaligned performance incentives [6, 10]. Therefore, it is imperative that internal control frameworks be flexible and scalable, allowing for iterative refinement in response to organizational learning and external change [2, 9].

The convergence of multiple variables—technological, organizational, human, and regulatory—suggests that a holistic, integrative approach is necessary to assess and improve internal control quality. Merely deploying software systems or establishing audit committees is insufficient unless accompanied by supportive organizational culture, continuous monitoring, and responsiveness to identified deficiencies [3, 14]. Moreover, transparency and public disclosure of internal control effectiveness have been found to enhance external accountability and investor confidence, further reinforcing the need for high control quality [5, 21].

In conclusion, the literature clearly affirms that internal control quality is a multifaceted construct that requires aligned efforts in areas of technology, governance, regulation, human capital, and audit mechanisms. These systems function best when embedded within a culture of accountability and transparency and supported by institutional capacity. While much progress has been made in understanding individual determinants, there remains a need for comprehensive models that integrate these variables and offer actionable insights for policymakers and organizational leaders. The current study seeks to fill this gap by empirically examining the structural model of factors influencing internal control quality using both direct and indirect relational paths among key constructs derived from the literature.

2. Methodology

This study was conducted using a mixed-methods research design (an extensive review study with a qualitative content analysis approach). The research is exploratory in nature. Based on the exploratory design, in the qualitative phase, the dimensions and indicators that form the foundation for evaluating the effectiveness of internal controls were extracted and initially categorized through a literature review. Then, expert opinions were gathered through a structured questionnaire, and the factors were prioritized using the frequency-based method. The data collection tool in the qualitative section was note-taking. The statistical population included experts (university faculty members in the fields of accounting and auditing), and the sampling method was snowball sampling. In this method, the researcher begins by conducting in-depth interviews with several experts who meet the desired criteria

and then asks them to refer other individuals with the same qualifications. In this way, each participant becomes a source for identifying additional participants, gradually increasing the sample size. In this phase, the sample size is not predetermined and is instead determined by theoretical saturation—that is, interviews with experts continue until a point is reached where the data no longer yield new codes or categories.

Information sources included both library/documentary materials and field data. Charmaz (2006) considers qualitative data as unstructured or semi-structured and emphasizes the use of tools such as in-depth interviews, focus group discussions, observation, and projective techniques alongside secondary sources. In this study, qualitative data were collected through semi-structured interviews with experts possessing the highest level of knowledge in the field. Although face-to-face interviews are time-consuming and costly, they yield rich data. The data collected in this phase were in audio or textual form. The analysis of collected data was performed through coding using MAXQDA software version 2020. Following the Strauss and Corbin (1998) grounded theory approach, the coding process included open coding, axial coding, and selective coding. During selective coding, overlap analysis was conducted to establish relationships between components, prioritize them, and ultimately identify and explain the factors influencing the effectiveness of internal control evaluations.

The overall stages of the research are as follows:

- Stage 1: Conducting interviews with individuals who have successful experience in implementing internal control systems and reviewing the literature to generate data.
- Stage 2: Analyzing data obtained from Stage 1.
- Stage 3: Inductive coding, including first-level coding (concept generation) and second-level coding (category formation). In this stage, frequently occurring data are labeled.
- Stage 4: Pattern coding, in which categories are grouped, and logical relationships between them are explained. Then, internal and external contextual conditions, actions, and the results and consequences of those actions are identified.
- Stage 5: Selective coding, which involves constructing the final theory. Through a narrative explanation of how each category influences the core phenomenon, categories are revised, refined, and completed, leading to the identification of factors influencing the quality of internal control systems.

Finally, a validation process was conducted, and the final theory and its concepts and categories were compared with the existing literature. MAXQDA version 10 software was used for data analysis. The research period spanned the years 2019 and 2023, and participants were selected theoretically. This method involves selecting individuals who offer the highest explanatory power, and sampling continues until theoretical saturation is reached—that is, when new data no longer differ from previously collected data. When data collection reaches a point of diminishing returns, the study is considered methodologically complete.

To ensure reliability, and with participants' consent, all interviews were recorded, transcribed, and thoroughly analyzed and coded. Subsequently, two interviews were randomly selected, and an independent researcher—after receiving necessary training—was asked to code them. The Cohen's kappa coefficient was calculated to be 0.75, indicating substantial agreement. In this formula, the proportion of times a specific code is used by both coders is multiplied by the proportion used by each coder, and the results are summed to yield the expected agreement. A coefficient greater than 0.60 indicates acceptable reliability. Test-retest reliability was also assessed, which refers to the consistency of data classification over time. Three interviews were randomly selected and coded twice at a 30-day interval. The codes from both time points for each interview were compared, and the degree of agreement and disagreement was calculated to determine the stability index for each. Codes that were the same at both time points

were classified as agreements, and differing codes were classified as disagreements (Khastaar, 2009). The formula used for calculating test-retest reliability with the stability index is as follows:

(Number of agreements × 2) / Total number of codes

To ensure content validity of the interview questions, the CVR (Content Validity Ratio) and CVI (Content Validity Index) were employed. A panel of five experts reviewed the questions, all of which were rated as essential. Accordingly, the CVR was calculated as 0.99, which falls within the acceptable range considering that the minimum acceptable CVR for a five-member panel is 0.99. The overall CVI was calculated at 0.89, indicating strong content validity for the questions.

3. Findings and Results

In this study, the axial codes were grouped, and a final table of variables and associated indicators was developed based on the perspectives of experts and professionals in accounting and auditing within the field of internal controls.

Table 1. Detailed Categorization of Factors Affecting the Quality of Internal Controls

Category Type	Category	Items
Causal Conditions	Board Structure	1. Number and diversity of board members influence decision-making quality and oversight.
		2. Board members' expertise in internal controls, risk, and finance enhances control quality.
		3. Board independence from executive management is a key quality criterion.
		4. Effective coordination between board and executives improves control processes.
		5. Regular board performance evaluations support internal control improvement.
	Internal Auditor Characteristics	6. Internal auditor must have expertise in internal controls and audit standards.
		7. Auditor independence from management is essential.
		8. Strong interpersonal communication is required.
		9. Understanding of business context and risks is important.
		10. Effective oversight within audit teams improves control.
		11. Use of IT tools significantly supports audit quality.
	Board Committees	12. Audit committee identifies weaknesses and recommends improvements.
		13. Risk committees help timely risk identification and enhance controls.
		14. Governance committees align decisions with ethics and strategy to support controls.
Core Phenomenon	Environmental Factors	15. Organizational complexity increases risk of control failures.
		16. Information asymmetry hampers risk detection and assessment.
		17. Transparency improves accuracy of controls.
		18. Accountability and follow-up enhance effectiveness.
		19. Legal and ethical commitment of managers strengthens control.
	Performance Factors	20. Quality of audit information affects internal control functioning.
		21. Accurate financial reporting supports risk identification.
		22. Audit unit size should enable proper risk coverage.
Strategies	Documentation of Procedures	23. Documentation must be accurate, comprehensive, and actionable.
		24. Unexecutable procedures hinder quality improvement.
	External Auditing	25. Reputable audit firms enhance stakeholder trust.
		26. Auditor rotation and limited tenure reduce conflict of interest.
		27. External auditor opinions help improve controls.
		28. Audit fees may influence audit quality and control effectiveness.
	Organizational Components	29. Risk management focus improves internal control quality.
		30. Adherence to corporate governance principles supports control.
		31. Ethical, transparent culture strengthens controls.
		32. Organizational type (public/private) affects control structure.

Contextual Factors	Ownership Structure	33. Highly concentrated ownership may impair controls.
		34. Public and nonprofit entities often centralize control with governmental owners.
		35. Governmental ownership enables external oversight and control.
	Company Structure	36. Large firms require stronger internal control systems.
		37. Rapid growth necessitates adaptive control updates.
		38. Voluntary disclosure builds public trust and reduces risks.
		39. High financial leverage increases risk and need for controls.
		40. Strong internal controls positively affect stock value.
		41. Shareholder changes require adaptive mechanisms.
		42. Group affiliates need inter-unit control coordination.
		43. Organizational tenure increases experience and control maturity.
		44. Strategic structures enhance internal governance and controls.
	Managerial Decisions	45. Disclosure of related-party transactions helps avoid conflicts.
		46. Transaction documentation provides audit trail for accountability.
Intervening Factors	Economic Factors	47. Market risks necessitate tighter controls.
		48. Lack of financial resources impairs internal control implementation.
		49. Macroeconomic policy shifts alter control priorities.
	Political Factors	50. Political corruption weakens internal controls.
		51. Strong democracies support better governance and control quality.
		52. Corporate governance laws help organizations improve controls.
	Regulatory and Market Conditions	53. Change in trading frequency may impact fraud risk and control demands.
		54. Market competition and cost pressures may weaken controls.
	Legislators	55. Internal audit charters must be adhered to for effectiveness.
		56. Mandatory audit standards guide consistent implementation.
		57. Comprehensive internal control manuals improve quality.
		58. Managerial training in control design and reporting is essential.
		59. Auditor recommendations offer valuable external insights.
Outcomes	Asset Protection	60. Internal controls improve organizational processes and safeguard assets.
		61. Transparency reduces fraud and protects resources.
		62. Employee awareness of control policies reduces misuse.
		63. Strong controls enhance public trust and asset protection.
	Risk and Penalty Reduction	64. Controls reduce fraud, legal penalties, and financial loss.
	Organizational Productivity	65. Internal controls enhance operational execution and efficiency.
		66. Internal control culture reduces errors.
		67. Transparency and accountability boost institutional performance.
	Customer Satisfaction	68. Economic transparency builds trust and strengthens controls.
		69. Defined standards improve product/service quality and customer confidence.
		70. Error reduction in processes increases accuracy and satisfaction.
		71. Product/service reliability builds customer loyalty.
	Information Quality	72. Non-financial information (e.g., HR, operations, risks) is vital for evaluating control systems and overall organizational efficiency.

72. Besides financial data, non-financial information (e.g., customer, operational, HR, and risk data) is crucial for internal control evaluation. The quality of this information serves as an essential outcome for assessing the effectiveness and impact of internal control systems.

Table 2. Factor Loadings of Model Components Affecting Internal Control Quality and Their Significance Tests

Path	Factor Loading	Standard Error	T-Statistic	P-Value	VIF
Board Structure to Causal Conditions	0.853	0.022	38.653	0.000	1.655
Internal Auditor Characteristics to Causal Conditions	0.852	0.033	26.060	0.000	1.822
Board Committees to Causal Conditions	0.830	0.044	19.071	0.000	1.689

Performance Factors to Core Phenomenon	0.925	0.015	63.221	0.000	2.069
Environmental Factors to Core Phenomenon	0.929	0.014	68.446	0.000	2.069
External Auditing to Strategies	0.799	0.038	21.072	0.000	1.355
Proper Documentation of Procedures to Strategies	0.764	0.036	21.120	0.000	1.307
Organizational Components to Strategies	0.765	0.035	21.675	0.000	1.263
Managerial Decisions to Contextual Factors	0.853	0.024	34.833	0.000	2.010
Company Structure to Contextual Factors	0.933	0.012	77.552	0.000	3.179
Ownership Structure to Contextual Factors	0.834	0.043	19.568	0.000	2.113
Economic Factors to Intervening Factors	0.830	0.036	23.225	0.000	2.239
Political Factors to Intervening Factors	0.831	0.037	22.728	0.000	2.355
Legislators to Intervening Factors	0.914	0.025	36.571	0.000	2.976
Regulations and Market to Intervening Factors	0.735	0.034	21.486	0.000	1.586
Financial and Non-Financial Information to Outcomes	0.830	0.022	37.277	0.000	2.110
Organizational Productivity to Outcomes	0.798	0.039	20.672	0.000	2.100
Customer Satisfaction to Outcomes	0.868	0.030	29.295	0.000	2.681
Asset Protection to Outcomes	0.886	0.018	49.827	0.000	3.129
Risk Reduction to Outcomes	0.793	0.036	21.773	0.000	1.922

Based on the estimated results, Cronbach's alpha and composite reliability coefficients (CR) of the constructs in the model of factors affecting internal control quality are greater than 0.70, indicating acceptable reliability. Additionally, results show that the AVE coefficient for all six constructs is above 0.50, and the validity coefficients exceed 0.70, confirming the convergent validity of the constructs. The appropriate quality of the model constructs is also affirmed by the positive values of the CV.Com coefficients.

Table 3. Results for Reliability, Convergent Validity, and Construct Quality

Construct (Sub-Category)	Cronbach's Alpha	Validity Coefficient (RoA)	Composite Reliability (CR)	Average Variance Extracted (AVE)	CV.Com
Strategies	0.770	0.771	0.820	0.602	0.230
Contextual Factors	0.845	0.853	0.907	0.765	0.481
Causal Conditions	0.800	0.805	0.882	0.714	0.399
Intervening Factors	0.847	0.855	0.898	0.688	0.457
Core Phenomenon	0.836	0.837	0.924	0.859	0.449
Outcomes	0.892	0.898	0.920	0.698	0.517

According to the Fornell-Larcker matrix for the model of factors influencing internal control quality, the square root of the AVE for each variable is greater than the correlations between them (as seen below the diagonal), indicating that each construct shares more variance with its indicators than with other constructs. This confirms the discriminant validity of the constructs.

Table 4. Fornell-Larcker Matrix for Constructs

	1 (Strategies)	2 (Contextual)	3 (Causal)	4 (Intervening)	5 (Core Phenomenon)	6 (Outcomes)
1	0.776					
2	0.723	0.874				
3	0.714	0.805	0.845			
4	0.778	0.689	0.654	0.830		
5	0.739	0.556	0.588	0.726	0.927	
6	0.662	0.443	0.480	0.519	0.589	0.836

The HTMT (Heterotrait-Monotrait) ratio for all constructs in the model was below 0.90, indicating that the discriminant validity based on this index is also confirmed.

Table 5. HTMT Index Values for Constructs

	Strategies	Contextual	Causal	Intervening	Core Phenomenon	Outcomes
Strategies						
Contextual	0.858					
Causal	0.876	0.872				
Intervening	0.825	0.820	0.787			
Core Phenom.	0.820	0.661	0.715	0.857		
Outcomes	0.851	0.504	0.567	0.594	0.678	

The significance testing of outer weights for the constructs in the model revealed that all variable indicators are statistically significant at the 0.001 level.

Table 6. Results of the Significance Test for Outer Weights of the Constructs in the Model of Factors Affecting Internal Control Quality

Variable	Outer Weight	Standard Error	T-Statistic	P-Value
Board Structure to Causal Conditions	0.433	0.034	12.694	0.000
Internal Auditor Characteristics to Causal Conditions	0.378	0.031	12.294	0.000
Board Committees to Causal Conditions	0.373	0.028	13.359	0.000
Performance Factors to Core Phenomenon	0.532	0.013	42.533	0.000
Environmental Factors to Core Phenomenon	0.547	0.013	41.056	0.000
External Auditing to Strategies	0.442	0.021	21.140	0.000
Proper Documentation of Procedures to Strategies	0.411	0.022	19.095	0.000
Organizational Components to Strategies	0.436	0.024	18.022	0.000
Managerial Decisions to Contextual Factors	0.394	0.023	17.227	0.000
Company Structure to Contextual Factors	0.405	0.018	23.077	0.000
Ownership Structure to Contextual Factors	0.343	0.019	18.118	0.000
Economic Factors to Intervening Conditions	0.278	0.016	17.913	0.000
Political Factors to Intervening Conditions	0.279	0.019	14.653	0.000
Legislators to Intervening Conditions	0.344	0.016	21.154	0.000
Regulations and Market to Intervening Conditions	0.303	0.021	14.393	0.000
Financial and Non-Financial Information to Outcomes	0.258	0.017	15.285	0.000
Organizational Productivity to Outcomes	0.205	0.019	10.934	0.000
Customer Satisfaction to Outcomes	0.247	0.015	16.594	0.000
Asset Protection to Outcomes	0.261	0.014	18.211	0.000

Based on the results, the constructs in the model of factors influencing internal control quality have been confirmed in terms of confirmatory validity, reliability (Cronbach's alpha, composite reliability), convergent and discriminant validity, and overall construct quality. Therefore, the measurement model is evaluated as appropriate.

The endogenous variables in the internal control quality model have been confirmed by the CV.RED index. The R^2 value for the construct "Impact of Internal Controls on Organizational Productivity" is at a moderate level, while for the other constructs it is substantial. It can be observed that all dimensions of the internal control quality model have significant effect sizes in measurement. The overall model quality, based on the goodness-of-fit index (GOF = 0.619), is evaluated as strong. The SRMR index of the model (0.095) is less than 0.1, indicating acceptable fit.

Table 6. Model Fit Indices for the Model of Factors Influencing Internal Control Quality

Construct	CV.RED	R^2	Level	GOF	SRMR
Strategies	0.446	0.810	Substantial	0.619	0.095

Contextual			
Causal			
Intervening			
Core Phenomenon	0.277	0.346	Moderate
Outcomes	0.277	0.438	Moderate

According to the results obtained from confirmatory factor analysis (CFA), all fit indices for the model of factors affecting internal control quality have acceptable values, and the model quality is validated.

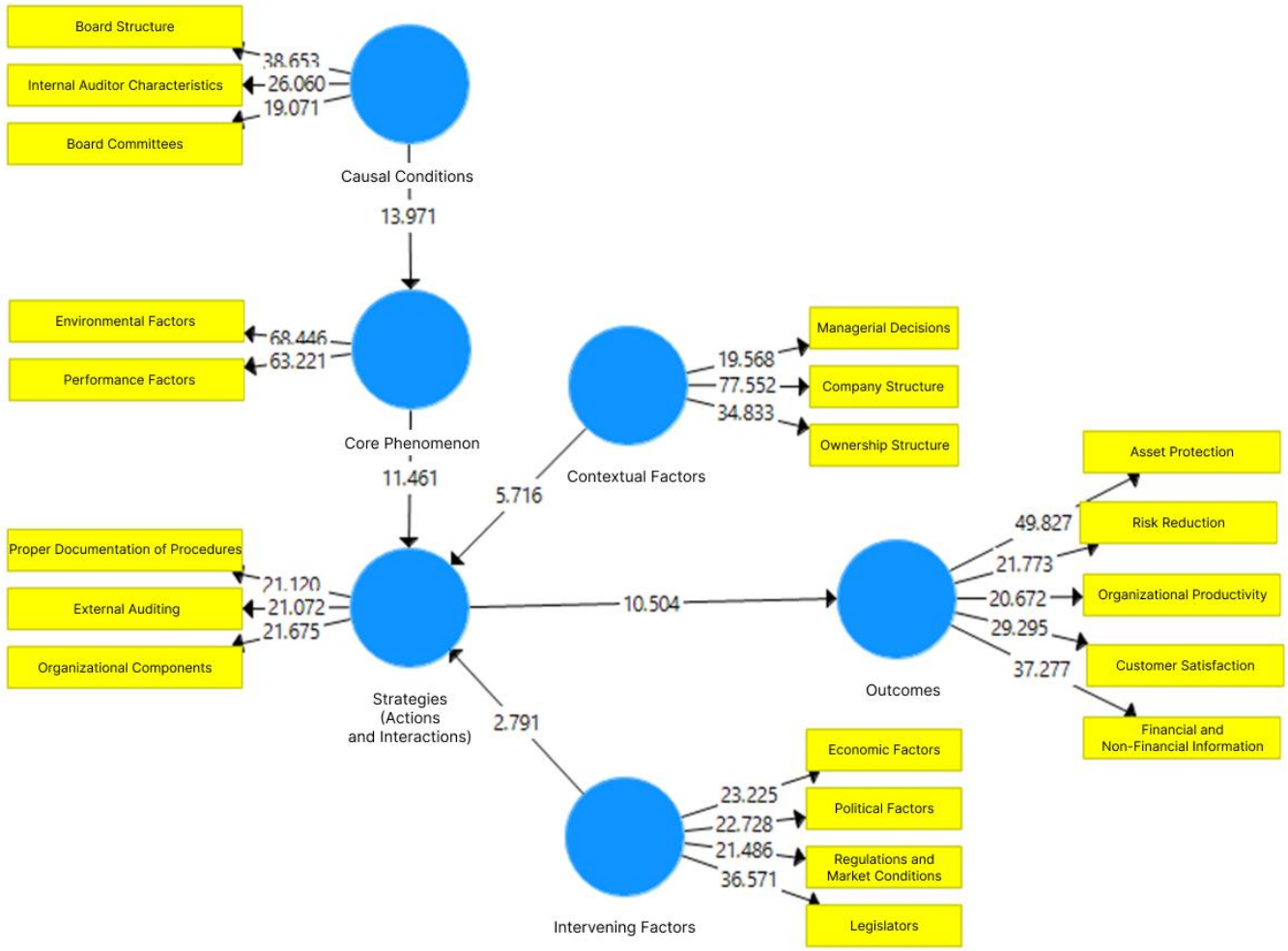

Figure 1. Structural Model of Factors Affecting Internal Control Quality (Significance Mode)

Based on the estimated T-values and P-values, it is possible to determine whether the relationships between constructs are significant. If the T-statistic is greater than 1.96 or less than -1.96, and the corresponding P-value is less than 0.05, the relationship is considered significant at the 95% confidence level.

Table 8. Model Fit Results for Direct Relationships Between Variables

Path	Standardized Coefficient	Standard Error	T-Statistic	P-Value	Effect Size	Level
Strategies → Outcomes	0.662	0.063	10.504	<0.001	0.780	Substantial
Contextual → Strategies	0.299	0.052	5.716	<0.001	0.244	Moderate
Causal → Core Phenomenon	0.588	0.042	13.971	<0.001	0.528	Substantial
Intervening → Strategies	0.176	0.063	2.791	0.005	0.058	Weak
Core Phenomenon → Strategies	0.545	0.048	11.461	<0.001	0.732	Substantial

Given that the T-statistic for the path from Causal Conditions to Core Phenomenon is 13.971 (greater than 1.96), and the P-value is less than 0.001, with a standardized coefficient of 0.588, it can be concluded that Causal Conditions have a direct and significant effect on the Core Phenomenon. The effect size is 0.528, indicating a substantial effect.

Similarly, the path from Intervening Conditions to Strategies has a T-statistic of 2.791 and a P-value of 0.005. The standardized coefficient is 0.176, which is positive. Therefore, Intervening Conditions have a direct and significant (but weak) effect on Strategies, with an effect size of 0.058.

For the path from Contextual Conditions to Strategies, the T-statistic is 5.716 and the P-value is <0.001. The standardized coefficient is 0.299, showing a direct and significant effect, with an effect size of 0.244, classified as moderate.

The path from Core Phenomenon to Strategies has a T-statistic of 11.461 and a P-value <0.001, with a standardized coefficient of 0.545. This indicates a significant and substantial direct effect, with an effect size of 0.732.

The Strategies to Outcomes path shows a T-statistic of 10.504, P-value <0.001, and a coefficient of 0.662, confirming a strong direct and significant effect. The effect size is 0.780, also substantial.

Table 9. Model Fit Results for Indirect Relationships Between Variables

Path	Standardized Coefficient	Standard Error	T-Statistic	P-Value
Causal → Core Phenomenon → Strategies	0.320	0.035	9.034	<0.001
Contextual → Strategies → Outcomes	0.198	0.040	4.892	<0.001
Intervening → Strategies → Outcomes	0.117	0.043	2.713	0.007
Core Phenomenon → Strategies → Outcomes	0.361	0.049	7.361	<0.001
Causal → Core Phenomenon → Strategies → Outcomes	0.212	0.034	6.320	<0.001

All relationships are statistically significant. As shown, Intervening Conditions, Contextual Conditions, and Core Phenomenon have positive and significant indirect effects on Outcomes via Strategies. Furthermore, Causal Conditions have an indirect and significant positive relationship with Strategies via the Core Phenomenon, and also with Outcomes via both the Core Phenomenon and Strategies. Given the significance of all direct and indirect paths, the final model of strategy implementation for improving and reforming the Social Security Organization does not require modification.

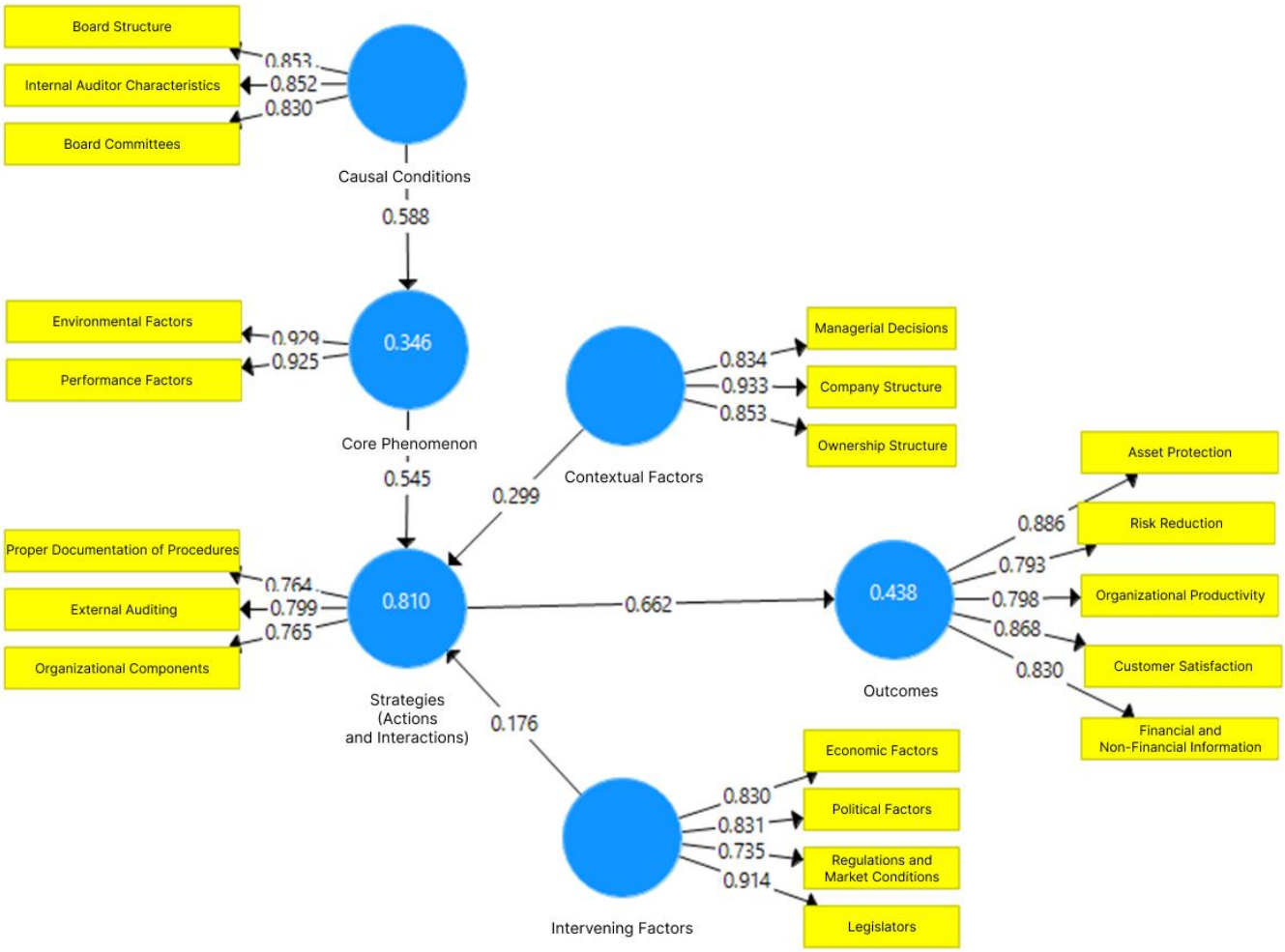

Figure 2. Structural Model of Factors Affecting Internal Control Quality (Beta Values)

4. Discussion and Conclusion

The findings of this study provide empirical support for the structural model of factors affecting the quality of internal controls, offering important insights into both the direct and indirect relationships among constructs. The results from confirmatory factor analysis demonstrated that all constructs—causal conditions, core phenomenon, strategies, contextual factors, intervening variables, and outcomes—are statistically significant and have good reliability and convergent validity. In particular, the causal conditions (i.e., board structure, internal auditor characteristics, and board committees) showed a strong and significant direct effect on the core phenomenon, which in this study referred to environmental and performance-related drivers of internal control quality. The standardized path coefficient between causal conditions and the core phenomenon was 0.588, with a substantial effect size (0.528), supporting the assertion that governance architecture and audit capability are central to internal control function.

The strategic dimension, consisting of external auditing, procedural documentation, and organizational elements, emerged as a significant mediator in several relationships, especially between the core phenomenon and outcomes. The strongest direct path was from strategies to outcomes (0.662), with a large effect size of 0.780, indicating that when strategic mechanisms are implemented effectively, they have a profound impact on the quality of internal controls. The same strategic elements also mediated the indirect effects of causal, contextual, and

intervening conditions, further highlighting their central role. Additionally, the core phenomenon (environmental and performance factors) had a significant direct effect on strategy (0.545), suggesting that contextual awareness and institutional functionality directly influence how organizations design and implement control-related strategies.

The results are strongly aligned with previous literature that emphasizes the importance of internal governance mechanisms. For example, board independence, audit committee activity, and professional expertise are repeatedly identified as critical enablers of internal control effectiveness [4, 7, 18]. These findings reinforce the work of [1], who found a strong link between board oversight and financial accountability in public institutions. Similarly, the role of internal auditors as independent monitors and advisors to executive leadership is substantiated in this study, in line with the perspectives of [17] who argue that internal audit quality directly influences both reporting accuracy and compliance integrity.

The significant relationship between core phenomenon and strategies aligns with the assertions of [3] and [2], who emphasize that internal control strategies must evolve in response to organizational context and operational complexity. These results also support [14], who demonstrated that performance factors, such as human resource competence and operational efficiency, must be integrated into the formulation of internal control strategies. Moreover, this study's findings indicate that successful internal control systems require not just structural mechanisms but also adaptive capabilities that respond to environmental risks and organizational feedback loops, a conclusion echoed by [11] in their study on non-financial firms in emerging markets.

Information technology integration emerged as both a contextual and enabling factor in the model, affecting strategy and outcome variables significantly. This confirms the findings of [8], who argue that technology is not only a medium for financial system automation but also a mechanism for enhancing internal transparency and audit traceability. Studies by [10] and [9] similarly affirm that local governments using integrated financial information systems report higher accuracy and timeliness in financial reporting. Moreover, [13] emphasized that digitalization is most effective when paired with skilled human resources—a relationship that this study reinforces through the demonstrated significance of human competence and performance as components of the core phenomenon.

The study also finds that contextual factors—such as managerial decisions, ownership structure, and organizational size—significantly impact strategies, confirming a moderate effect size of 0.244. These results support the argument by [6] and [15], who found that organizational form and local governance systems shape the trajectory of internal control implementation. Notably, organizations with concentrated ownership or strong public oversight bodies are more likely to demonstrate effective control procedures, consistent with findings by [5] and [19]. This underlines the necessity of adapting control frameworks to suit organizational realities rather than adopting a one-size-fits-all model.

Among the intervening variables, economic and political factors—such as resource constraints, regulatory volatility, and political interference—were shown to have a statistically significant, though weak, direct effect on strategic elements (effect size 0.058). However, when mediated through strategy, their indirect effects on outcomes became stronger and more meaningful. This pattern suggests that while macro-level factors may not independently determine internal control quality, they influence how strategies are designed and executed. These findings echo the concerns of [12] and [16], who note that external risks and regulatory uncertainty often force organizations to adopt adaptive internal control approaches. The importance of such mediation also aligns with [21], who identifies accountability and transparency as key levers in counteracting the negative impact of external constraints.

The analysis of outcomes—namely, organizational productivity, financial and non-financial information quality, customer satisfaction, risk reduction, and asset protection—demonstrates that internal controls exert a multifaceted influence on organizational performance. This aligns with previous studies that argue effective internal controls enhance organizational credibility, stakeholder trust, and public legitimacy [2, 4]. Specifically, the significant impact of strategies on outcomes corroborates the findings of [9] and [14], who show that alignment between procedural controls and organizational strategy leads to better financial stewardship. The broader implication is that quality internal controls are not merely mechanisms of compliance but are strategic assets that contribute to institutional resilience and continuous improvement.

The model also confirmed several indirect effects, particularly from causal to outcome constructs via the mediating role of strategies and core phenomena. The total indirect effect from causal conditions through core phenomenon and strategies to outcomes was both statistically significant and conceptually substantial (standardized coefficient 0.212). This layered influence pattern substantiates the findings of [3] and [1], who advocate for a systems-thinking approach to internal control analysis. These results emphasize that upstream variables such as governance design and auditor competence set the foundation upon which responsive strategies and performance systems can be built.

Limitations

This study has several limitations that must be acknowledged. First, the cross-sectional nature of data collection limits the ability to draw causal inferences over time. While the structural model provides a comprehensive understanding of the relationships among constructs, longitudinal studies would be more effective in capturing temporal dynamics and evolving control maturity. Second, the study focused primarily on public and semi-public sector entities, which may limit the generalizability of findings to private firms or nonprofit institutions with different structural characteristics. Third, although the sample was drawn from diverse organizations, the reliance on self-reported data may introduce response biases or social desirability effects. Finally, the study did not explicitly differentiate control maturity levels across organizations, which could be a significant moderator in the observed relationships.

Suggestions for Future Research

Future research should consider adopting a longitudinal research design to examine the long-term effects of internal control implementation and reform. Comparative studies across sectors—public, private, and nonprofit—would also provide richer insights into contextual variations in internal control effectiveness. Additionally, future studies could incorporate moderating variables such as organizational culture, leadership styles, or risk management philosophy to explore how these elements shape the effectiveness of control strategies. Investigating digital maturity and cybersecurity integration within internal control frameworks would also be valuable given the increasing reliance on technology in financial systems. Finally, more in-depth qualitative research could provide contextual nuance to complement the quantitative findings presented here.

Suggestions for Practice

Practitioners should focus on strengthening board oversight, audit committee function, and internal auditor independence to reinforce governance-based control mechanisms. Human resource training programs must be institutionalized to develop internal control literacy among staff at all organizational levels. The integration of information technology should be pursued not merely as a compliance tool but as a strategic enabler of control quality. Organizations must also invest in developing flexible, scalable control systems that can respond to regulatory shifts and operational risks. Furthermore, control effectiveness should be regularly evaluated through

self-assessments, external audits, and stakeholder feedback to ensure continuous learning and adaptation. Ultimately, embedding internal controls within a broader culture of accountability and transparency will be key to achieving long-term institutional integrity and financial reliability.

Authors' Contributions

Authors equally contributed to this article.

Ethical Considerations

All procedures performed in this study were under the ethical standards.

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Conflict of Interest

The authors report no conflict of interest.

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