

Presenting a Model for Effective Internal Audit and its Impact on Good Governance in Iran's Public Sector Using Grounded Theory

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ABSTRACT

This research aims to present an effective internal audit model and its impact on good governance in Iran's public sector. The present study is an applied research applying mixed (qualitative and quantitative) methods. The statistical population of the qualitative section included all Iranian experts, academic professors, managers, and audit experts. The data were collected through semi-structured interviews and analyzed using the Strauss and Corbin coding method. In the second stage, regarding the assumed standard sample, the research sample was determined by applying the Cochran formula, and 183 experts and connoisseurs were selected through the Convenience judgmental Sampling method. The results revealed that the experts agreed upon key dimensions and components for auditing activity using the data-based method, which included 104 indicators, 14 components, and 5 dimensions. According to the results, internal auditing plays a significant role in increasing the internal control system, improving the risk management process, and the regulatory agencies and people's satisfaction, and promoting the executive managers' and employees' accountability against the public. Internal auditors can play a prominent role in establishing and promoting good governance indicators in the public sector, but implementing this requires reforms in the current internal audit oversight system.

Keywords: Internal audit, good governance, public sector, grounded theory

1. Introduction

In contemporary public sector governance, the role of internal auditing has evolved from a narrow compliance-focused activity into a strategic mechanism for enhancing transparency, accountability, and organizational

performance. Internal audit is no longer confined to verifying adherence to rules; it is now recognized as a cornerstone of effective governance, providing assurance on the integrity of financial reporting, the robustness of internal controls, and the soundness of risk management practices. Scholars argue that internal auditing's value lies in its

potential to create and safeguard public value, thereby strengthening good governance systems in public organizations (Bryson *et al.*, 2014; Cordery & Hay, 2019; De Jong *et al.*, 2017). Within this broader paradigm, the development of conceptual models that clarify the pathways through which internal audit contributes to good governance has become essential, especially in complex and dynamic public sectors such as that of Iran.

The significance of internal audit in fostering public trust and legitimacy is grounded in its role as an independent and objective assurance function. Internal auditors provide critical evaluations of internal control systems, ensuring that resources are used effectively, operations are conducted efficiently, and risks are appropriately managed (Douglas & Raudla, 2015; Hay *et al.*, 2016). In developing countries, where governance challenges are compounded by limited institutional capacity and resource constraints, the effectiveness of internal auditing becomes even more pivotal. Research highlights that without effective internal auditing, public organizations risk operational confusion, misallocation of resources, and diminished public confidence (Babajani *et al.*, 2013; Mashayekhi & Yazdanian, 2018). These risks underscore the urgency of reforming and professionalizing internal audit functions to align them with international standards and best practices.

A growing body of literature has examined the transformation of public administration paradigms and its implications for internal auditing. The shift from traditional public administration toward models such as new public management, public value governance, and good governance reflects a reorientation from process compliance to results-based accountability and citizen-centric service delivery (Pollitt & Bouckaert, 2011; Salarzei & Ebrahimpour, 2012; Van der Wal *et al.*, 2013). This paradigmatic evolution emphasizes transparency, accountability, responsiveness, and participatory governance—principles that internal audit can help operationalize by embedding robust oversight mechanisms within public institutions (Bryson *et al.*, 2014; Mayuree, 2018). In the Iranian public sector, however, the institutionalization of such paradigms has been uneven, with internal audit often constrained by limited independence, inadequate resources, and insufficient integration into strategic decision-making processes (Babajani *et al.*, 2013). Addressing these systemic barriers is crucial for internal audit to fulfill its governance-enhancing role.

Central to strengthening internal audit is the development of human capital and professional competence among

auditors. The effectiveness of internal audit depends not only on structural and procedural reforms but also on the skills, ethical orientation, and organizational commitment of auditors themselves (Djogo, 2023; Rialdy *et al.*, 2023). Studies demonstrate that professionalization fosters ethical conduct, reduces role conflict, and enhances the quality of audit judgments, thereby reinforcing internal audit's contribution to accountability and transparency (Khanam, 2024; Nurmawanti *et al.*, 2024). Yet, in many public sector contexts, recruitment practices remain politically influenced and fail to prioritize merit and professional qualifications, leading to competence gaps and compromised audit independence (En-nejjari *et al.*, 2024; Molaei, 2024). Reforming these practices by institutionalizing merit-based selection, continuous training, and performance evaluation frameworks is imperative to enhancing audit effectiveness.

Technological advancements are also reshaping internal auditing, offering new tools for data-driven risk assessment, fraud detection, and performance monitoring. Innovations such as artificial intelligence and blockchain are enabling more comprehensive and real-time audits, which can significantly strengthen oversight in complex public sector environments (Farhadi Touski & Doustian, 2025; Zhang & Sabarina, 2022). AI-powered anomaly detection, for example, can enhance auditors' ability to identify irregularities in vast datasets, while blockchain can improve data integrity and traceability in financial transactions. These technologies can mitigate information asymmetries and bolster the credibility of audit reports, thereby contributing to better governance outcomes (Ismail *et al.*, 2025; Volodina *et al.*, 2023). However, realizing these benefits requires substantial investment in technological infrastructure and the digital upskilling of internal audit personnel, which remain significant challenges in many developing countries.

Furthermore, the organizational environment profoundly influences internal auditors' willingness to report irregularities and their overall mindset toward accountability. Research indicates that supportive organizational cultures that value transparency and protect whistleblowers foster more proactive and independent audit practices (Molaei, 2024). Conversely, environments characterized by fear of retaliation or managerial dominance can suppress auditors' critical judgments, undermining audit effectiveness and governance quality (Msindwana & Ngwakwe, 2022). Strengthening the institutional independence of internal audit units—through direct reporting lines to audit committees rather than executive management—is therefore a key reform priority to ensure

objective oversight (Asadzadeh & Nikbakht, 2024; Bamari et al., 2024). This structural autonomy enables auditors to challenge management practices without fear of reprisal, enhancing the integrity and impact of their work.

The conceptualization of public value provides a useful lens for understanding internal audit's contribution to good governance. Public value theory posits that public organizations should be judged not only by their adherence to rules but by their capacity to create value for society through effective, ethical, and responsive governance (Bryson et al., 2014; De Jong et al., 2017). Internal auditing contributes to public value by assuring stakeholders that public resources are managed responsibly and that institutions are accountable for their performance. Supreme audit institutions worldwide have leveraged public value frameworks to demonstrate the societal relevance of their work and to justify their resource allocations (Cordery & Hay, 2017, 2019; Hay et al., 2016). Embedding similar frameworks within internal audit practices in Iran could help align audit objectives with broader societal goals and strengthen public trust in government institutions.

Empirical studies further affirm that effective internal auditing is associated with enhanced financial accountability and improved organizational performance in public institutions (Khanam, 2024; Msindwana & Ngwakwe, 2022). Internal audits that go beyond mere compliance checking to assess operational efficiency, risk management, and strategic alignment can provide actionable insights that drive organizational improvement (Douglas & Raudla, 2015; Gustavson, 2014). Such comprehensive audits can also serve as early warning systems, identifying systemic weaknesses before they escalate into crises. In this way, internal auditing functions as a critical governance lever, fostering a culture of accountability and continuous improvement within public sector entities (Salarzahi & Ebrahimpour, 2012; Van der Wal et al., 2013). Yet, achieving this transformative potential requires overcoming entrenched institutional inertia, resistance to change, and political interference that often hinder audit reforms in the Iranian context (Babajani et al., 2013; Mashayekhi & Yazdanian, 2018).

Ultimately, strengthening internal auditing to promote good governance in Iran's public sector necessitates an integrated reform agenda encompassing structural, human capital, technological, and cultural dimensions. Conceptual models such as those proposed by recent studies can guide this transformation by identifying the key components and pathways through which internal auditing influences

governance outcomes (Asadzadeh & Nikbakht, 2024; Bamari et al., 2024; Volodina et al., 2023). These models emphasize not only the technical aspects of audit practice but also the strategic positioning of internal audit as a partner in governance, contributing to policy formulation, performance management, and public accountability (Rialdy et al., 2023; Xanthopoulou, 2024). By integrating internal audit within broader governance frameworks and equipping it with the necessary autonomy, resources, and capabilities, public sector organizations can enhance their effectiveness, legitimacy, and public value creation. This study builds on these theoretical and empirical insights to present a comprehensive model of effective internal auditing and its impact on good governance in Iran's public sector, thereby addressing a critical gap in the current literature and practice.

2. Methods and Materials

The present study is an applied research applying mixed (qualitative and quantitative) methods. The statistical population of the qualitative section included all Iranian experts, academic professors, managers, and audit experts selected concerning the characteristics of deep awareness and specialized knowledge of the research topic. In the first stage, this study was conducted using the qualitative method and grounded theory. This theory has increasingly been accepted as the preferred qualitative approach in accounting research. In the first stage, data is collected through semi-structured interviews and analyzed using the Strauss and Corbin coding method.

The research statistical population consists of two groups. Firstly, several public sector auditing and accounting experts were selected using the purposeful snowball method. The data is collected through semi-structured interviews and analyzed using the Strauss and Corbin coding method. Secondly, the 183 experts were selected as the research sample based on the Cochran formula and the assumed standard sample presented by Cohen (1969) and Krejcie and Morgan (1970) through the Convenience judgmental Sampling method.

In the quantitative section, the statistical population consists of four groups: the first group was the universities' finance experts (including financial managers, administrative and financial deputies, financial experts, and universities' independent auditors). The second group included auditors working in the audit organization. The third group included accountants and experts of the Ministry of Economic Affairs and Finance, and the fourth group

included other professionals such as members of the Institute of Internal Auditors and independent auditors. Whereas this research has a vast and unlimited statistical population, 118 samples were obtained at a permissible %5 error level. They were selected through on-campus visits to some state universities. The 150 questionnaires were distributed with the help of these universities' financial departments. Finally, 105 completed questionnaires were received from the universities, which has a 70% response rate. Furthermore, 25 and 40 questionnaires were distributed to the financial department of the Ministry of Economic Affairs and Finance and the audit organization. Then, 19 and 26 completed questionnaires were received from them, respectively, and their response rate was 76% and 65%, respectively.

200 questionnaires were sent through the Institute of Internal Auditors to the experts, and 43 cases were completed and received, with a receipt rate of 21.5%. Finally, 193 questionnaires were collected from the statistical population. The questionnaires were collected from the sample outside Tehran electronically, and they were collected electronically in person inside Tehran city.

The first part of the questionnaire included demographic questions (including sex, age, education and major, work experience, and field of activity), and in the second part, each of the components and codes collected from the interviews and the grounded theory was examined through 18 statements applying a five-point Likert scale.

The questionnaire was revised in several stages to assess its validity, using the opinions of experts and academic professors. Further, its reliability was examined using Cronbach's alpha. Regarding the obtained results (%917), it can be said that the statements stated in the questionnaire correspond to the research objectives. Given that it is greater than 0.7, the reliability of the questionnaire is confirmed. In this research, the statistical one-sample t-test was applied to examine the statements and to answer the research questions. SPSS software version 20 was also used to perform the aforesaid statistical tests. The value of the Goodman coefficient was also 0.852 which is greater than 0.7, so the questionnaire reliability is also confirmed based on this

criterion. In addition, the validity of the questionnaire designed by three academic professors and 2 internal audit experts has been confirmed for the questions' comprehensiveness and the classification method. AMOS software and confirmatory factor analysis techniques were used to examine the validity of the questionnaire.

In this research, first, the component of the internal auditor's effective supervision of good governance indicators was identified by examining theoretical foundations and interviewing the experts. Then, in the quantitative section, the identified components were analyzed and examined using the questionnaire tool and analyzing the received responses. Ultimately, a conceptual model of effective internal audit was presented to improve good governance indicators in the public sector.

3. Findings and Results

First, all interview data was converted into text files. The text files were evaluated and examined line by line to extract key concepts and sentences for open coding. The concepts extracted in the open coding stage were categorized into more general categories to do axial coding. Finally, in the selective coding stage, the theory was integrated and refined by determining the central category.

A few relevant quotes are given below to explain the extraction of concepts and categories from the interview data.

"I, as an expert, think that the current internal auditor selection process does not represent the professional independence of internal auditing since the selected internal auditor's being indebted to management is inevitable. Although this selection method is also a step forward, is this selection a professional process? When this issue is dealt with politically, it seems that the selection is also a political one, while the internal auditor's task and structure is a professional one. So, a political selection is never compatible with a professional task. Therefore, the internal auditor selection should be done professionally like other countries."

Table 1

Selective coding and extraction of dimensions affecting the internal audit effectiveness and supervision in Iran's public sector

Components	Dimensions
Responsibility for and accountability of duties	Accountability and financial reporting
Effective and reliable financial reporting	
Developing the appropriate strategies to make complete access to information	Process and Operations Assurance
Respecting the rules, regulations, and process implementation criteria	

Continuous and effective relations with the audit committee	Consulting Mechanisms and Processes
Audit independence	
A mechanism for proposed process improvements	
Internal control and risk management	Evaluating internal controls
Financial and operational supervision and rules and regulations	
Cooperation with regulatory agencies	
Development of internal audit activities	
Training the senior operational and financial managers	Relationship between Internal Audit Dimensions and Results Reporting
Creating and developing the infrastructure	
Preparation and compilation of guidance packages	
Total	14 components 5 dimensions

Table 2 represents the demographic information of the quantitative section respondents. Table (2) presents the respondents' descriptive statistics.

Table 2

Respondents' descriptive statistics

Characteristics		Frequency	Relative frequency
Sex	Female	77	%60.1
	Male	116	%39.9
Education	Bachelor of Arts and lower	91	%47.1
	Master of Arts	87	%45.1
	Doctorate	15	%7.8
Organizational post	Administrative and Financial Assistant	7	%3.6
	Financial manager	23	%11.9
	Independent auditor	39	%20.2
	Financial expert	124	%64.2
Scope of activity	University	105	%54.4
	Auditing organization	26	%13.5
	Ministry of Economic Affairs and Assets	19	%9.8
	Others (including members of the Institute of Auditors)	43	%22.3
Work experience	Less than 5 years	34	%18.1
	5-10 years	49	%25.4
	10-15 years	42	%21.8
	More than 15 years	67	%34.7

Table (3) presents the results of the Kaiser-Meyer-Olkin test as well as Bartlett's test of Sphericity. The significance

of the mentioned test indicates that there is sufficient correlation between the variables to perform the analysis.

Table 3

Kaiser-Meyer-Olkin test and Bartlett's test of Sphericity

0.882	Kaiser-Meyer-Olkin measure of sampling adequacy	
1992.138	Chi-square	
192	Degree of Freedom	Bartlett's test of Sphericity
0.000	significance	

Table 4
one-sample t-test for questionnaire's components

Dimension	Number of statements	Average	The probability value of the t-statistic	Test result
Accountability and financial reporting	5	4.032	0.0000	Significant
Process and Operations Assurance	7	3.91	0.0000	Significant
Consulting Mechanisms and Processes	5	3.83	0.0000	Significant
Evaluating internal controls	7	3.88	0.0000	Significant
Relationship between Internal Audit Dimensions and Results Reporting	9	3.94	0.0000	Significant
Total	5 dimensions	33	3.91	-

After determining the dimensions and components, the weight of each of the evaluation criteria should be determined. To do so, the significance of existing dimensions and components should be specified. The fuzzy analytic hierarchy process (AHP) method is used to evaluate the weight of the components. As shown in this research, 14 components were conceptualized as effective components of internal audit effectiveness and supervision in the public sector. In this stage, the selected components were provided to experts for pairwise comparison to determine the

importance of each component in comparison to other components based on verbal expression.

The criteria weighting was used in this study. After collecting the questionnaires completed by the experts along with the pairwise comparison matrix, the initial data processing was performed using Excel software, and the coefficients of each pairwise comparison matrix were calculated using AHP analysis software, the results of which are presented in Table 5. The level of inconsistency in this study was obtained at 0.0382, which is lower than the acceptable level of 0.1 and is appropriate.

Table 5
Criteria Weighting

Dimensions	Components	Weight of component	Rank of component	Weight of dimensions	Rank of dimensions
Accountability and financial reporting	Responsibility for and accountability of duties (a1)	0.06517241	6	0.089582	4
	Effective and reliable financial reporting (a2)	0.02440971	10		
Process and Operations Assurance	Developing the appropriate strategies to make complete access to information (b1)	0.1206288	14	0.051454	5
	Respecting the rules, regulations, and process implementation criteria	0.3939107	8		
Consulting Mechanisms and Processes	Continuous and effective relations with the audit committee (C1)	0.04756106	7	0.0384861	1
	A mechanism for proposed process improvements (C2)	0.25287624	1		
	Audit independence (C3)	0.08442377	5		
Evaluating internal controls	Internal control and risk management (d1)	0.13313916	3	0.272673	2
	Financial and operational supervision and rules and regulations (d2)	0.01670686	12		
	Cooperation with regulatory agencies (d3)	0.10947738	4		
	Development of internal audit activities (d4)	0.01334915	13		
Relationship between Internal Audit Dimensions and Results Reporting	Training the senior operational and financial managers (e1)	0.15174449	2	0.20143	3
	Creating and developing the infrastructure	0.01995359	11		
	Preparation and compilation of guidance packages	0.02973223	9		
Total	-	1	-	1	-

According to Table (5), the components of the mechanism of proposed process improvements with a weight of 25%, training the senior executive and financial managers with a weight of 15%, and internal control and risk management with a weight of 13% were assigned the highest weight and were ranked first to third in priority, respectively. Further, the component of developing the appropriate strategies to make complete access to information with a weight of %1 was assigned the lowest weight and had the least significance and priority.

The weights of other components are presented in Table 5. Moreover, the weights of dimensions revealed that the

dimension of consulting mechanisms and processes with a weight of 38%, the dimension of evaluating the internal control with a weight of 27%, and the dimension of Relationship between internal audit dimensions and results reporting with a weight of 20% were assigned the highest weights, respectively, and were prioritized as the first to third dimensions in terms of significance. Furthermore, the dimensions of accountability with a weight of about 9%, and the dimensions of financial reporting and process and operations assurance with a weight of 5% were assigned the lowest weights and were prioritized as the fourth and fifth ones, respectively.

Table 6

Summary of the results of factor analysis on 33 statements

Factor number	Factor title	Factor value equity	Percentage of changes expressible by the factor	Number of statements of each factor
1	Consulting Mechanisms and Processes	7.629	42.382	5
2	Evaluating internal controls	1.839	10.215	7
3	Relationship between Internal Audit Dimensions and Results Reporting	1.376	7.643	5
4	Accountability and financial reporting	1.067	5.925	7
5	Process and Operations Assurance	0.53	2.962	9
total	Presenting an effective internal audit model in the public sector	12.441	69.127	33

Table 7

Summary of the results of the factor analysis on the 5 resulting factors

Factor	Factor title	Factor value equity	Expressible changes percentage	Number of statements of each factor
Final factor	Presenting an effective internal audit model in the public sector	2.500	66.064	6

Figure 1

Structural model of good governance components



Table 8

The relationship between good governance indexes and components of effective internal auditing

Row	Effective dimensions of internal auditing in the public sector	good governance indexes	Type of relationship
1	Consulting Mechanisms and Processes	government effectiveness	Direct
2	Evaluating internal controls	<i>political stability and absence of violence</i>	Direct
3	Relationship between Internal Audit Dimensions and Results Reporting	Increasing the managers' consulting and awareness and developing the infrastructure	Direct
4	Accountability and financial reporting	Accountability and effective and reliable reporting	Direct
5	Process and Operations Assurance	Respecting the rules and regulations and complete access to governance information and rules quality	Direct

Establishing an internal audit department in the public sector ensures audit independence, and the improvement of the continuous effective processes and relations with the

audit committee ultimately promotes good governance (the priority dimensions of internal auditor effectiveness).

Table 9

Student's t-test for the first hypothesis

Population mean- 3.91							
mean	Standard deviation	T statistic	Degree of freedom	Level of significance	Mean difference	Confidence interval %95	
						Lowest	Highest
4.032	1.6	4.8	192	0.000	0.773	0.454	1.09

The results of Table 9 show that the mean responses received for this hypothesis were 3.91, while the basic (population) mean was 4.032. As a result, it can be said with

99% confidence that the responses to this hypothesis were strongly favorable.

Table 10

Student's t-test for the second hypothesis

Population mean- 3.91							
mean	Standard deviation	T statistic	Degree of freedom	Level of significance	Mean difference	Confidence interval %95	
						Lowest	Highest
3.91	1.35	7.32	192	0.000	0.996	0.726	1.26

The results of Table 10 show with 99% confidence that the responses to this hypothesis were strongly favorable.

Table 11

Student's t-test for the third hypothesis

Population mean- 3.91							
mean	Standard deviation	T statistic	Degree of freedom	Level of significance	Mean difference	Confidence interval %95	
						Lowest	Highest
3.83	1.28	10.38	192	0.000	1.33	1.07	1.59

The results of Table 11 represent with 99% confidence that the responses to this hypothesis were strongly favorable.

Table 12

Student's t-test for the fourth hypothesis

Population mean- 3.91							
mean	Standard deviation	T statistic	Degree of freedom	Level of significance	Mean difference	Confidence interval %95	
						Lowest	Highest
3.88	1.49	5.91	192	0.000	0.882	%586	1.178

As the results represented in Table 12, it can be said with 99% confidence that the responses given to this hypothesis were strongly favorable.

Table 13

Student's t-test for the fifth hypothesis

Population mean- 3.91							
mean	Standard deviation	T statistic	Degree of freedom	Level of significance	Mean difference	Confidence interval %95	
						Lowest	Highest
3.94	1.76	5.03	192	0.000	0.89	%539	1.241

As the results represented in Table 13 represent, it can be said with 99% confidence that the responses given to this hypothesis were strongly favorable.

4. Discussion and Conclusion

The findings of this study, which sought to present a model of effective internal auditing and its impact on good governance in Iran's public sector, revealed that internal auditing can significantly enhance internal control systems, strengthen risk management processes, and improve the accountability and responsiveness of public sector organizations. The five identified dimensions—consulting mechanisms and processes, evaluating internal controls, the relationship between internal audit dimensions and results reporting, accountability and financial reporting, and process and operations assurance—collectively shape a comprehensive framework for embedding governance principles within public institutions. This aligns with prior scholarship emphasizing that internal audit effectiveness is a key driver of public sector organizational performance and legitimacy (Douglas & Raudla, 2015; Hay et al., 2016).

A critical result is the prominence of consulting mechanisms and processes, which received the highest weight among the dimensions. This suggests that internal auditing's role has moved beyond compliance to becoming a strategic advisory function. This result corresponds with the view that internal auditors should act as trusted advisors to management, providing insights that enhance decision-

making and policy formulation (Bryson j et al., 2014; De Jong et al., 2017). Studies confirm that when auditors engage in consultative activities, they facilitate managerial awareness, improve operational strategies, and strengthen governance systems (Rialdy et al., 2023; Xanthopoulou, 2024). In the Iranian public sector, this shift is particularly significant because it addresses the historical perception of auditors as mere compliance enforcers rather than value-adding partners (Babajani et al., 2013).

Equally notable is the high weighting assigned to evaluating internal controls. This finding underscores that robust control assessments are foundational to public sector accountability, helping to prevent corruption, detect inefficiencies, and ensure compliance with laws and regulations. Previous studies have similarly highlighted that strong internal control evaluation mechanisms are associated with improved financial stewardship and reduced governance risks (Khanam, 2024; Msindwana & Ngwakwe, 2022). Furthermore, strengthening internal control functions enhances public trust by signaling that government institutions safeguard public resources effectively (Douglas & Raudla, 2015; Gustavson, 2014). In the Iranian context, where weak internal controls have historically contributed to financial mismanagement, the prioritization of this dimension represents a step toward aligning audit practices with global governance standards.

The relationship between internal audit dimensions and results reporting also emerged as a crucial dimension. This reflects a growing recognition that audit outcomes must be

effectively communicated to influence organizational behavior and policy. Prior research shows that transparent and timely reporting of audit results enhances accountability and supports evidence-based decision-making (Cordery & Hay, 2017, 2019; Hay et al., 2016). By fostering systematic feedback loops between audits and managerial action, reporting mechanisms can transform audit findings into tangible governance improvements (En-nejjari et al., 2024; Volodina et al., 2023). The finding resonates with the assertion that internal audit effectiveness depends not only on technical competence but also on the organization's receptiveness to audit information (Molaei, 2024). This is especially pertinent in Iran's public sector, where audit reports have often been underutilized due to weak follow-up mechanisms.

The dimension of accountability and financial reporting, though ranked lower in weight, remains integral to ensuring transparency and reducing information asymmetries between government entities and citizens. The study's results confirm that internal auditing significantly enhances the reliability of financial reports and fosters ethical conduct, thereby supporting governance objectives (Salarzei & Ebrahimpour, 2012; Van der Wal et al., 2013). This is consistent with evidence that accurate and transparent financial reporting reduces opportunities for fraud and mismanagement while strengthening public confidence in governmental institutions (Douglas & Raudla, 2015; Hay et al., 2016). Furthermore, financial accountability represents a foundational principle of good governance as articulated in public management reform frameworks (Pollitt & Bouckaert, 2011). As such, the emphasis on this dimension reflects the broader shift in public sector auditing from control-centric approaches toward performance- and value-oriented paradigms (Bryson et al., 2014; Mayuree, 2018).

Process and operations assurance, although weighted lowest, plays a complementary role in institutionalizing governance practices by verifying compliance with operational procedures and ensuring process integrity. This function mitigates operational risks and aligns day-to-day activities with organizational objectives. Prior studies emphasize that neglecting operational audits can allow systemic inefficiencies to persist undetected, undermining governance outcomes (Babajani et al., 2013; Mashayekhi & Yazdani, 2018). Conversely, integrating operational assurance within broader audit frameworks ensures that governance reforms are implemented effectively at the operational level (Douglas & Raudla, 2015; Gustavson, 2014). While its lower weighting suggests that respondents

prioritize strategic over operational audits, its inclusion underscores that good governance requires both strategic oversight and operational compliance.

Another important finding concerns the enabling factors for internal audit effectiveness. The study revealed that professional competence, training of senior financial managers, and mechanisms for process improvements are the most influential components. This supports extensive literature asserting that human capital quality directly determines internal audit performance (Djogo, 2023; Nurmawanti et al., 2024; Rialdy et al., 2023). Effective auditors require technical skills, ethical commitment, and independence to challenge managerial practices without fear of reprisal (Asadzadeh & Nikbakht, 2024; Molaei, 2024). Where political appointments and resource constraints undermine these conditions, audit quality suffers, as has often been observed in Iran's public sector (Babajani et al., 2013). Therefore, developing comprehensive training frameworks and merit-based recruitment systems is vital to strengthen auditors' capacity to enhance governance.

Technology adoption also emerged as a critical factor shaping the future of internal auditing. The findings indicate that leveraging artificial intelligence and digital analytics can significantly improve anomaly detection and risk assessment capabilities. This aligns with research suggesting that AI-driven tools can enhance auditors' capacity to analyze large datasets, identify irregular patterns, and produce timely insights (Farhadi Touski & Doustian, 2025; Ismail et al., 2025). Similarly, blockchain technology has been shown to enhance audit traceability and reduce opportunities for data manipulation, thereby bolstering financial integrity (Zhang & Sabarina, 2022). However, successful technology integration depends on organizational readiness, infrastructure investment, and digital literacy, which remain limited in many public institutions (Volodina et al., 2023). Overcoming these barriers is essential to align Iran's internal audit systems with global best practices.

Collectively, these findings confirm that internal auditing can act as a powerful lever for advancing good governance when embedded within supportive institutional, cultural, and technological environments. This conclusion aligns with the broader theoretical shift from traditional compliance auditing toward strategic, value-oriented public auditing (Bryson et al., 2014; De Jong et al., 2017). By functioning as both an oversight mechanism and a strategic partner, internal auditing can enhance government effectiveness, policy quality, and public trust (Cordery & Hay, 2019; Hay et al., 2016). The study's model thus provides a roadmap for

transforming internal audit units from procedural watchdogs into proactive agents of governance reform in Iran's public sector.

This study has several limitations that should be acknowledged. First, the sample was confined to Iranian public sector experts and auditors, which may limit the generalizability of findings to other national contexts with different governance structures and institutional cultures. Second, the use of self-reported questionnaires and interviews introduces the possibility of response biases, such as social desirability or overestimation of internal audit effectiveness. Third, the cross-sectional design captures perceptions at a single point in time and does not allow for causal inferences about the dynamic relationships between internal auditing and governance outcomes. Fourth, resource and access constraints restricted the inclusion of certain remote or underrepresented public sector units, which might have provided additional insights. Finally, the study relied on the fuzzy analytic hierarchy process to weight components, which, while rigorous, depends heavily on expert judgments that may be influenced by subjective preferences or institutional allegiances.

Future research could extend this study by adopting longitudinal designs to explore how reforms in internal auditing influence governance outcomes over time. Comparative studies across countries with varying institutional frameworks could provide cross-cultural validation of the proposed model and identify context-specific success factors. Future studies might also employ experimental or quasi-experimental methods to establish causal links between specific internal audit practices and governance indicators. Moreover, exploring the impact of emerging technologies such as artificial intelligence, blockchain, and data analytics on internal audit effectiveness in the public sector could offer valuable insights. Finally, qualitative studies examining organizational culture, resistance to change, and the political dynamics surrounding internal audit reforms could deepen understanding of the contextual barriers and enablers of audit-driven governance improvements.

In practice, public sector organizations should institutionalize internal audit independence by establishing direct reporting lines to audit committees rather than executive management. Investments in continuous professional development and merit-based recruitment systems are essential to enhance auditors' technical and ethical competence. Policymakers should allocate dedicated budgets to equip audit units with advanced digital tools and

build their data analytics capacity. Developing structured mechanisms for acting on audit findings—such as mandatory follow-up procedures and accountability frameworks—can ensure that audits drive real organizational change. Finally, fostering organizational cultures that value transparency, protect whistleblowers, and reward ethical behavior will be critical to sustaining the governance-enhancing impact of internal auditing.

Authors' Contributions

Authors contributed equally to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethics Considerations

In this research, ethical standards including obtaining informed consent, ensuring privacy and confidentiality were considered.

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