The Effects of Organization Size on Internal Control Informatization on Principal–Agent Relationships among Certified Auditing Firms in Beijing

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Abstract

This study examines the moderating roles of organizational size and principal–agent relationships in the impact of internal control on audit quality, using auditing firms in Beijing as a case study. It also evaluates the influence of internal control, informatization, and audit quality on overall audit performance. Three study objectives are proposed: 1) to examine how principal–agent relationships moderate the relationship between internal control and audit quality; 2) to investigate the moderating effect of organizational size on the relationship between informatization, quality of auditors, and internal control; 3) to evaluate the effects of internal control, quality of auditors, and informatization processes on audit quality in certified auditing. The sample comprises auditing firms registered in Beijing, with 40 firms selected through random sampling. A total of 534 valid questionnaires were collected online via the "Questionnaire Star" platform. The study adopts a quantitative analysis approach, utilizing SPSS and AMOS to perform Structural Equation Modeling and hierarchical regression analysis on the data, thereby validating the theoretical framework and hypotheses. The findings reveal that both organizational size and principal–agent relationships moderate the effect of internal control on audit quality, and they confirm the positive impact of auditor quality, informatization, and internal control on audit quality. The study suggests that auditing firms can enhance audit quality by providing additional training to improve the quality of auditors, selectively investing in informatization according to their specific circumstances, and improving agency relationships and internal control. These findings provide valuable empirical support and management recommendations for auditing firms aiming to enhance audit quality.

Keywords: organization size; informatization; quality of auditors; internal control; principal–agent relationship

Introduction

China officially implemented the new “Securities Law of the People's Republic of China” in March 2020. As the "guardians" of the capital market, the new law requires audit companies to assume greater responsibilities and strictly adhere to audit standards. In addition, with the modernization of informatization, auditing firms are forced to invest and use it to improve their internal auditing systems (Liu et al., 2024). As a result, information users demand high–quality supervision services in a booming capital market economy, and the accounting and auditing industries demand upgrading technology–competent internal auditors to cope with business transactions' rich informativeness (Cheong & Zurbruegg, 2016). Furthermore, significant financial fraud cases have occurred frequently in recent years despite regulatory bodies' strict regulation and close monitoring (Nie et al., 2024). Auditing firms and how they conduct audit control are critical in tackling these issues. Although recent research efforts have shown the important functions of auditors (Li et al., 2024), informatization (Liu et al., 2024; Zhou et al., 2024), internal control (Xia et al., 2024), the existing bodies of knowledge in the field of internal auditing lack an understanding and rigorous studies relating to the moderating role of auditing firm’s size and principal–agent relationship. This gap offers the direction for this study. Accordingly, the research objective is to conceptualize and validate a framework that studies the moderating roles of organizational size and principal–agent relationship in leveraging internal control to influence audit quality, focusing on the internal auditing firms in Beijing, China.

In particular, this study, rooted in economies of scale, principal–agency theory, and systems management theory, has significant theoretical and practical implications for auditing. Using these integrated theories leads to a conceptual model that fills a vital literature void between the quality of auditors, informatization, and audit quality. While information technology modernization is significant in uplifting the performance of auditing clients (Liu et al., 2024), it is still a tremendous challenge for auditing firms in their practices of corporate governance and internal control systems when client firms become more complex and more extensive (Li et al., 2024). As noted by Liu et al. (2024) and Li et al. (2024), the complex dynamics of auditing firms involving the use of informatization and internal control systems are still relatively unresolved, and this complexity is

amplified further when either client size and the auditing firm's size becomes more significant. To this end, this study offers integrating theories to explain how a firm's size and principal–agency relationships can be treated as vital moderators that can systematically be employed to leverage the functions of both informatization and quality of auditors so that audit quality can be improved to meet requirements. The study raises three interrelated objectives, which are presented in the next section.

Objectives

1. To examine how the principal–agent relationship moderates the relationship between internal control and audit quality in certified auditing firms in Beijing.

2. To investigate the moderating effect of organizational size on the relationship between informatization, quality of auditors, and internal control.

3. To evaluate the effects of internal control, quality of auditors, and informatization processes on audit quality in certified auditing firms in Beijing.

Literature Review

Underpinning Theories

Three interrelated theories are used in this study: the principal–agent theory for addressing the first objective, the economic size theory for the second objective, and the system management theory for addressing the third objective. Together, three theories are integrated to guide the conceptual development of the study. The significance of economies of scale theory is particularly evident in auditing firms. As firms grow, they achieve operational efficiencies that allow them to spread fixed costs over a more extensive base, thereby reducing the per–unit cost associated with internal controls and compliance (Shleifer & Vishny, 1997). This concept is especially relevant in larger firms, which can leverage their size to invest in advanced technologies and robust internal control systems. China's audit firms are also developing rapidly, and many audit firms are becoming larger and more powerful.

Additionally, the principal–agent theory aims to understand and resolve the complex dynamics between auditing firms and their clients, especially as firms expand in size and complexity. Principal–agency theory emphasizes the potential conflicts of interest that arise when auditors, acting as agents, provide objective assessments of their client's financial statements (Behbahaninia, 2024).

Larger firms, with their extensive client bases and more intricate organizational structures, are particularly vulnerable to these conflicts. The study suggests that by adopting robust governance frameworks and internal controls, larger firms can mitigate these risks, thereby maintaining auditor independence and enhancing the credibility of audit outcomes. Understanding how organizational size influences the integrity and reliability of audits is essential for sustaining stakeholder trust and confidence in financial reporting.

Furthermore, systems management theory also plays a crucial role in this research. As auditing firms expand, their operations become more complex and require more sophisticated and adaptable internal control systems. The study emphasizes that larger firms must continuously refine these systems to maintain operational consistency and compliance across all levels of the organization (Libby & Frederick, 1990). This theoretical perspective is particularly relevant in modern auditing, where firms must navigate a complex web of regulatory requirements, technological advancements, and market dynamics. The research underscores the importance of robust internal control systems in managing these complexities, ensuring that larger firms can maintain high audit quality standards and operational efficiency.

Hypotheses Development

Auditors possess a unique blend of specialized knowledge and skills that enables them to delve deeply into the business operations and internal control environment of the entities they audit. This deep expertise allows auditors to develop a more holistic and nuanced understanding of the organization's processes, equipping them to identify deficiencies and weaknesses in internal controls with greater precision and insight (Ghosh & Moon, 2005). By thoroughly understanding the intricacies of a client's business processes and the structure of their internal control system, auditors can evaluate the effectiveness of these controls with a higher degree of accuracy, allowing them to spot potential risks and issues that might otherwise go unnoticed. Accordingly, the first hypothesis is assumed:

H1: The quality of auditors is positively related to the internal control of auditing firms.

Auditors are more inclined to follow social norms than to comply with regulations or company policies. Experienced auditors can deliver higher–quality audits and more accurate audit judgments (Li et al., 2024). Yan (2022) verified the conclusion of this study: the quality of auditors is positively correlated with the internal control of audit companies because their professional ability and ethical standards directly affect their understanding and implementation of internal control. High–quality

auditors usually have a more rigorous working attitude, deeper professional knowledge, and more importantly communication skills, which enable them to more effectively evaluate and improve the internal control level of audit companies, to improve the audit quality and customer trust. Corresponding, this study posits the third hypothesis as follows.

H2: Informatization is positively related to the internal control of auditing firms.

There is a positive correlation between informatization and internal control of auditing firms informatization systems can improve the efficiency and accuracy of internal control (Yan, 2022). Through informatization technology, auditing firms can achieve automated data processing, monitoring, and reporting, reducing the possibility of human error and manipulation and enhancing the integrity and reliability of data. In addition, informatization systems also provide more powerful audit tracking functions, making it easier for auditors to supervise and audit the implementation of internal controls, thereby improving the efficiency and accuracy of auditing (Zhou et al., 2024). Thus, the fourth hypothesis is posited.

H3: The quality of auditors is positively related to the audit quality of auditing firms.

This assumption indicates a positive correlation between auditors' and auditing firms' audit quality. DeFond & Zhang (2014) validated the conclusions of this study. The quality of auditors is positively correlated with the audit quality of auditing firms because high-quality auditors usually possess profound professional knowledge, solid audit skills, and good judgment, which can more accurately identify potential risks and errors and conduct effective audit procedures. Bibler et al. (2023) experimentally proved that innovative thinking significantly improves auditors' ability to develop effective fraud procedures. Furthermore, this effect is amplified when auditors generate client insights because this intervention target increases creativity and cognitive flexibility, further improving the quality of auditors (Li et al., 2024). As a result, this study proposes the fourth hypothesis as follows:

H4: Informatization is positively related to the audit quality of auditing firms.

Han (2021) validated the conclusions of this study. Through informatization systems, auditors can obtain and analyze large amounts of data more quickly, reducing manual data processing time and potential errors. At the same time, informatization systems provide more robust data analysis and audit tracking functions, allowing auditors to have a more comprehensive understanding of the

audited entity's business and internal control environment and more effectively identify potential risks and issues. Informatization systems also enhance the efficiency and traceability of auditing, allowing auditors to more easily track every step and decision in the auditing process, thereby improving the quality and reliability of auditing. Correspondingly, this study proposes H5 as follows:

H5: Organizational size moderates the relationship between informatization and internal control of auditing firms.

The moderating effect of organizational size on the relationship between the quality of auditors and the effectiveness of internal control manifests in several key areas, including resource allocation, auditor independence, organizational complexity, governance mechanisms, and the specific control needs of the firm (Chin & Chi, 2009). Due to their greater size, larger firms tend to operate with higher levels of complexity and more extensive control requirements, making the quality of auditors a crucial factor in ensuring the effectiveness of internal controls (Chen et al., 2022). The significant role that the quality of auditors plays in such firms is not just a matter of technical proficiency but also reflects the ability of these large firms to attract and retain top-tier auditing professionals. These high-quality auditors, in turn, are better equipped to address the multifaceted challenges of larger and more complex organizational structures (Whitworth & Lambert, 2014). Based on these understandings, H6 is posited as follows:

H6: Organizational size moderates the relationship between auditors' quality and auditing firms' internal control.

Organizational size can regulate the relationship between audit quality and internal control in auditing firms. Wang et al. (2023) validated the conclusions of this study. Larger firms typically have more complex business structures and resources and implement stricter and more comprehensive internal control measures to ensure the accuracy and completeness of auditing. In this case, the strength and effectiveness of internal control have a more direct impact on improving audit quality, thus showing a positive correlation. Smaller auditing firms have simpler business models and fewer resources, adopting more straightforward and basic internal control measures. In this case, the impact of internal control on audit quality is relatively small, and audit quality relies more on auditors' personal qualities and skills (Li 2022). Thus, this study posits H7 as follows:

H7: Internal control is positively related to the audit quality of auditing firms.

Safdar et al. (2019) studied how changes in China's legal and regulatory frameworks affected the relationship between client economic importance, internal control, and audit quality, which infers a moderating role of the principal–agency relationship in this study. Behbahaninia (2024) also states that when the regulatory system (including social and governmental systems) is effective, the audit and accounting system's oversight is heightened, which is also reflected in Lennox and Wu (2022), that the internal system's quality is improved. Accordingly, this study further posits that the audit quality will be improved, as shown in the following hypothesis, H8.

H8: The principal–agent relationship moderates the relationship between internal control and audit quality of auditing firms.

The quality of auditors significantly influences the overall audit quality of auditing firms. High–quality auditors are generally more experienced, possess better professional knowledge, and are more adept at identifying and mitigating risks during the audit process. However, the relationship between auditor and audit quality is not always direct. Internal control mechanisms within auditing firms serve as a mediating factor that can enhance or weaken this relationship (Chen et al., 2020). Internal control systems ensure that the skills and expertise of high–quality auditors are effectively utilized, ultimately leading to improved audit outcomes. Internal control systems act as an intermediary, ensuring auditors' competencies and knowledge are applied within a structured and regulated framework, enhancing audit reliability and performance. Internal control systems help structure audit tasks, monitor compliance, and provide a standardized framework that guides auditors in their work, ensuring that the potential benefits of having high–quality auditors are fully realized (Behbahaninia, 2024). Based on the above understanding, this study proposes the following hypothesis H9:

H9: Internal control mediates the relationship between the quality of auditors and the audit quality of auditing firms.

Internal control systems ensure that the benefits brought by informatization are realized by addressing the risks and challenges posed by new technologies, ultimately improving audit quality (Zheng et al., 2023). Auditing processes have undergone fundamental changes with the rapid development of informatization in audit firms. In contrast, the audit quality of auditing firms involves the evaluation of the accuracy and completeness of the audited entity's financial reports. Internal control impacts audit quality by influencing the quality of auditors (Chen & Chen, 2024). Reasonable

internal control can provide more reliable audit evidence and data, enabling auditors to more accurately assess the financial condition of the audited entity and adopt appropriate audit procedures. Meanwhile, internal control can reduce audit risks and uncertainties, improving audit quality. Correspondingly, H10 is posited as follows:

H10: Internal control mediates the relationship between informatization and the audit quality of auditing firms.

The role of internal controls as a mediating variable between the quality of auditors, IT implementation, and audit quality is a critical area of research, particularly as organizations increasingly rely on technology and sophisticated audit practices. High quality of auditors and effective IT implementation are generally seen as drivers of better audit quality. When strong internal controls are in place, the positive impact of high-quality auditors is further amplified, as these controls provide a robust framework for auditors to assess risks and ensure accurate financial reporting. Furthermore, Han et al. (2023) argue Han et al. (2023) assert that incorporating IT systems into auditing processes enhances the reliability of internal controls and improves audit quality that integrating IT systems into auditing processes enhances the reliability of internal controls, leading to improved audit quality. Effective IT systems enable auditors to better navigate and analyze complex financial data, reinforcing the internal control environment and subsequently enhancing overall audit outcomes. (Li et al., 2024)

Conceptual Framework

The ten hypotheses are integrated into the conceptual model shown in Figure 1 and address the three research questions to the study's research objectives. First, with the continuing occurrence of fraudulent accounting and auditing c H3 ina has imposed a strict internal control regulatory framework (Ji et al., 2018), making internal control a significant mediator. This study takes the individual auditor's effort and quality (Shan et al., 2019) and the increasing significance of informatization (Liu et al., 2024) and considers that internal control plays a critical mediation effect, as shown in Figure 1, to impact audit quality. Internal control is rooted in systems management theory. Furthermore, as explained in the hypothetical section and the literature reviews, the organizational size of auditing firms and principal-agent relationships are also considered vital moderators.

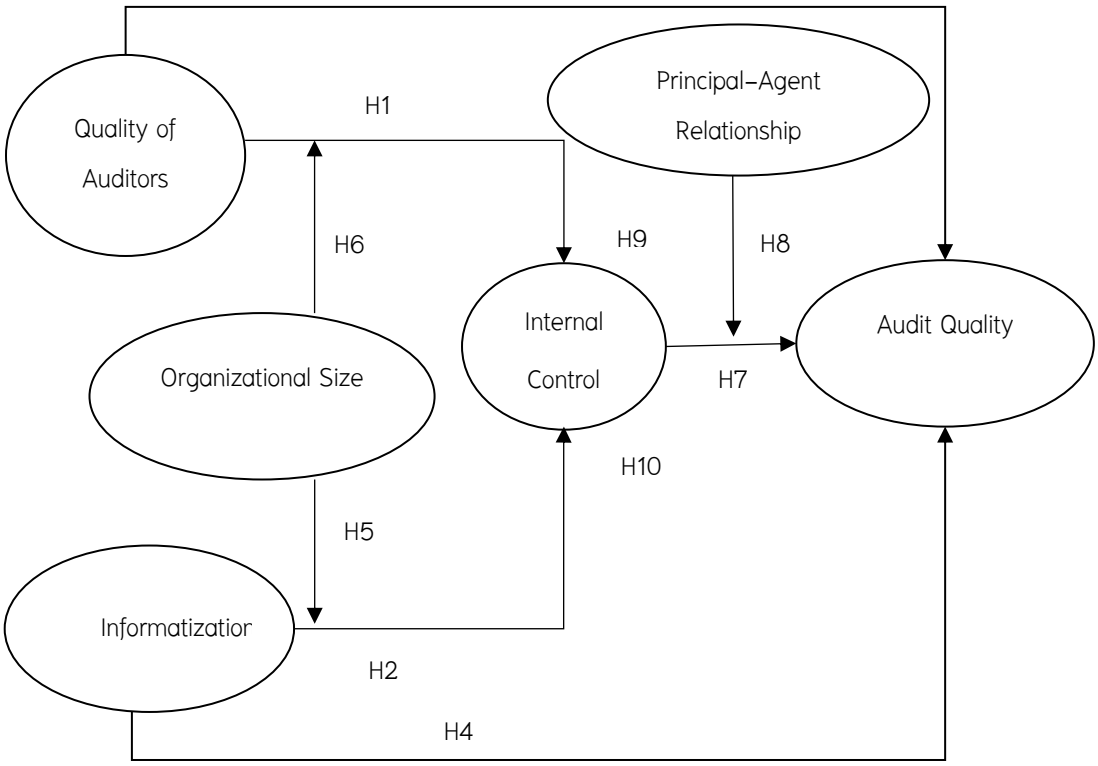

Figure 1 Conceptual Model

Methodology

1. Population and Sample

According to the Chinese Institute of Certified Public Accountants (CICPA), approximately 90,000 professionals are in auditing roles within Beijing. Using Cochran's (1977) formula for sample size calculation, a minimum of 382 respondents is needed to achieve a 95% confidence level with a 5% margin of error. These 40 audit firms are registered in Beijing, ranging from small to super large, and can to some extent represent audit firms in Beijing. The survey was distributed online, with 15 to 20 questionnaires allocated per firm, resulting in a total distribution of 600 questionnaires. 534 valid responses were collected, yielding a response rate of 89.0%.

2. Measurements

The study adapts some of the well–validated measurements and constructs some of the constructs that are unique to this study. The measurements were derived using literature reviews and consultation with the subject experts (certified auditors). They were subjected to Item–Objective Congruence (IOC) assessments of certified auditors and professors in auditing and quantitative

methods. Minor revisions on grammar are made, and forward–backward translations from English to Chinese and back to English ensure consistency in the meaning of the measurements. Organization size is operationalized using the classification system in China, namely < 10 million Yuan being designated as a micro auditing firm, 10 million – 100 million as small, 100 million – 1000 million as medium, 1000 million – 3000 million as large, and ≥ 3,000 million as super large. Based on the recommendations given by Ji et al. (2018) and Chen & Chen (2024), this study operationalized internal control into five dimensions: internal governance, risk assessment, control activities, informatization and communication, and internal supervision. Informatization consists of the following dimensions: IT infrastructure, data management, informatization security, and personnel training and management. Quality of auditors, adapted by Li et al. (2024), has the following dimensions: workability, professional ethics, teamwork ability, and innovation ability. The principal–agent relationships are unitary; sampled items are, for instance, the principal–agent relationship remains independent and unaffected by the principal. Audit quality is also unitary, adapted from DeFond and Zhang (2014) and Francis (2011).

3. Data Analysis

The study employed the structural equation modeling (SEM) method to test the hypotheses and address the three research objectives. Before the SEM analysis, measurements were subjected to the constructs' reliability and convergent and discriminant validity. The SEM path analyses offer the evidence for justifying the hypotheses for addressing the three objectives, using absolute and relative fit criteria of the following: Goodness–of–fit index (GFI), Comparative fit index (CFI), adjusted goodness–of–fit index (AGFI), and root mean square error of approximation (RMSEA).

Research results

The statistical results show that in the survey sample, 230 males accounted for 43.1%, and 304 females accounted for 56.9%. For the job survey, junior staff was 177, accounting for 33.1%; intermediate staff was 228, accounting for 42.7%; senior staff was 62, accounting for 11.6%; salaried partner was 58, accounting for 10.9%; and equity partner was 9, accounting for 1.7%.

Table 2 evidences the reliability of the Constructs, with Cronbach's Alpha passing the 0.80 threshold (Hair et al., 2010).

Table 2 Reliability and Validity Analysis

Constructs	Dimension	Cronbach's Alpha	AVE	CR
Internal Control (IC)	Internal Governance	0.860	0.68	0.86
	Risk Assessment	0.890	0.67	0.89
	Control Activities	0.794	0.58	0.80
	Informatization and Communication	0.812	0.59	0.81
	Internal Supervision	0.859	0.61	0.86
Informatization (IN)	IT Infrastructure	0.91	0.72	0.91
	Data Management	0.868	0.69	0.87
	Informatization Security	0.861	0.63	0.87
	Training and Management	0.852	0.60	0.85
Quality of Auditors (QA)	Work Ability	0.893	0.68	0.89
	Professional Ethics	0.888	0.66	0.89
	Teamwork Ability	0.884	0.67	0.89
	Innovation	0.882	0.65	0.88
Principal–Agent Relationship (PAR)		0.891	0.68	0.89
Audit Quality (AQ)		0.925	0.71	0.93

Furthermore, according to Fornell and Larcker's (1981) criterion, discriminant validity is established as evidenced by the square root of the Total Variance Extracted (TVE) exceeding the cross–correlations, as shown in Table 3.

Table 3 Discriminant Validity Analysis

Constructs	TVE	QA	IN	IC	PAR	AQ
QA	0.819	0.819				
IN	0.812	0.358**	0.812			
IC	0.794	0.484**	0.501**	0.794		
PAR	0.825	0.031	0.070	0.241**	0.825	
AQ	0.843	0.481**	0.471**	0.546**	0.210**	0.843

Note: * p<0.05 ** p<0.01 *** p<0.001

Research Objective 1: To examine how the principal–agent relationship moderates the relationship between internal control and audit quality in certified auditing firms in Beijing. Table 4 shows the evidence supporting the moderating role of the principal–agent relationship on the nexus between internal control and audit quality of the auditing firms.

Table 4 Hypothesis H8 Supported

	M7		M8		M9	
	β	t	β	t	β	t
Constant	0.459	1.779	0.21	0.756	0.041	0.147
IC	0.774***	15.05	0.746***	14.123	0.756***	14.593
PAR			0.083**	2.222	0.094**	2.577
IC×PAR					0.141***	4.839
R Square	0.299		0.305		0.335	
Adjusted R Square	0.297		0.302		0.331	
F	F (1,532) =226.524, p=0.000		F (2,531) =116.569, p=0.000		F (3,530) =88.798, p=0.000	
F Change	226.524		4.937		24.416	
R Square Change	0.299		0.006		0.029	

Note: * p<0.05 ** p<0.01 *** p<0.001

Specifically, the principal agent amplifies the function of internal control to exert a positive impact on audit quality, as shown in Figure 2.

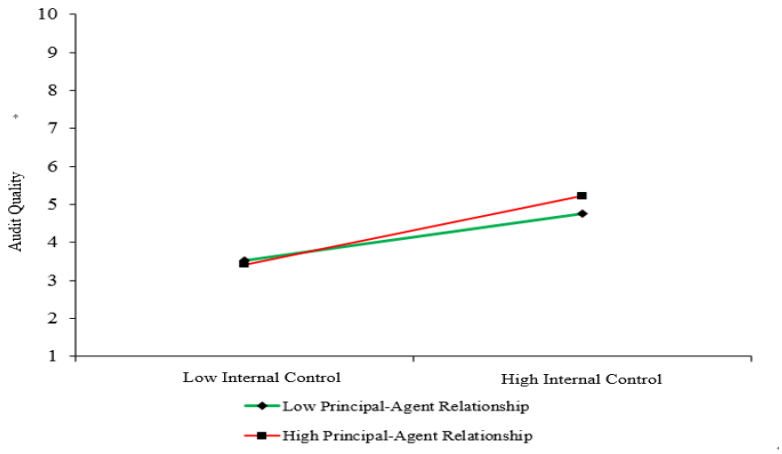

Figure 2 The Moderating Effect of the Principal–Agent Relationship on the Relationship Between Internal Control and Audit Quality

Research Objective 2: To investigate the moderating effect of organizational size on the relationship between informatization, quality of auditors, and internal control.

Tables 5 and 6 and Figures 2 and 3 provide evidence for addressing this research objective. Tables 5 and 6 support hypotheses H5 and H6 (the moderating role of auditing firms' organizational size).

Table 5 Hypothesis H5 Supported

	M4		M5		M6	
	β	t	β	t	β	t
Constant	2.471***	13.343	2.175***	10.387	2.201***	10.792
IN	0.502***	13.361	0.495***	13.24	0.478***	13.102
Size			0.111***	2.944	0.124***	3.358
IN×Size					0.166***	5.483
R Square	0.251		0.263		0.303	
Adjusted R Square	0.250		0.261		0.299	
F	F (1,532) =178.526, p=0.000		F (2,531) =94.882, p=0.000		F (3,530) =76.738, p=0.000	
F Change	178.526		8.666		30.064	
R Square Change	0.251		0.012		0.04	

Note: * p<0.05 ** p<0.01 *** p<0.001

Table 6 Hypothesis H6 Supported

	M1		M2		M3	
	β	t	β	t	β	t
Constant	2.667***	14.930	2.298***	11.097	2.226***	11.112
QA	0.464***	12.760	0.461***	12.788	0.471***	13.531
Size			0.130***	3.416	0.135***	3.667
QA×Size					0.186***	6.279
R Square	0.234		0.251		0.303	
Adjusted R Square	0.233		0.248		0.299	
F	F (1,532) =162.813, p=0.000		F (2,531) =88.873, p=0.000		F (3,530) =76.680, p=0.000	
F Change	162.813		11.667		39.430	
R Square Change	0.234		0.016		0.052	

Note: * p<0.05 ** p<0.01 *** p<0.001

Figure 3 shows that an auditing firm's size positively moderates the relationship between informatization and internal control.

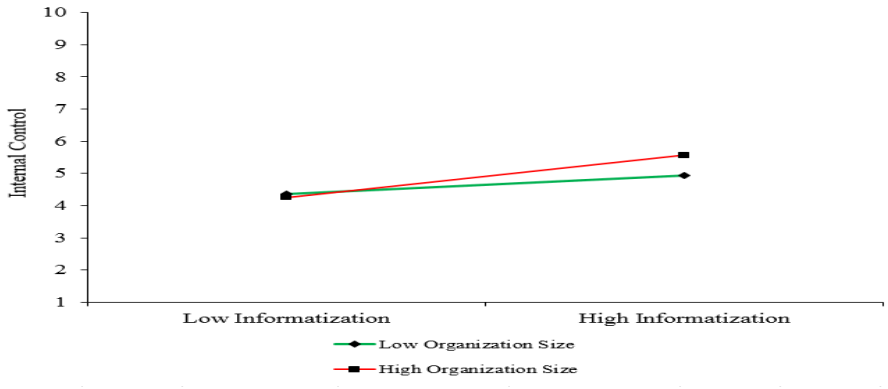

Figure 3 The Moderating Effect of Organizational Size on the Relationship Between Informatization and Internal Control

Figure 4 shows that an auditing firm's size positively moderates the relationship between the quality of auditors and internal control.

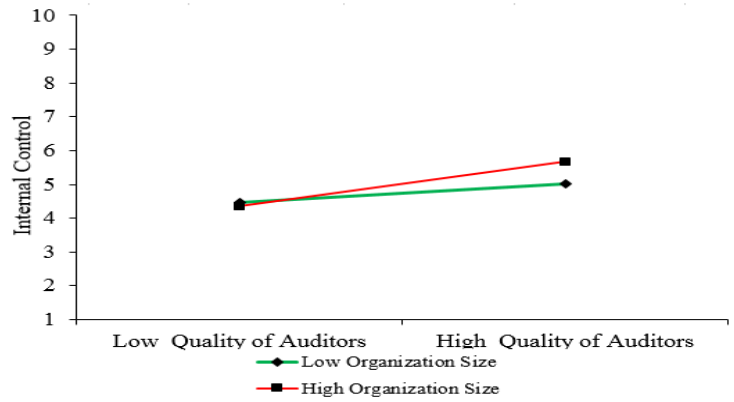

Figure 4 The Moderating Effect of Organization Size on the Relationship Between Quality of Auditors and Internal Control

Research Objective 3: To evaluate the effects of internal control, quality of auditors, and informatization processes on audit quality in certified auditing firms in Beijing.

The results for this objective are given in Tables 7, 8, and 9. While Table 7 supports the direct effects, testifying H1, H2, H3, H4, and H7, Tables 8 and 9 validate the mediating function of internal control delineated in hypotheses H9 and H10. The mediating effect of internal control is demonstrated by using the SEM's Bootstrapping procedure at 5,000 sample sizes.

Table 7 Hypotheses H1, H2, H3, H4, and H7 Supported

Path Relationship				Estimate	S.E.	C.R.	P
H1	IC	←–	QA	0.40	0.060	6.914	***
H2	IC	←–	IN	0.44	0.063	7.643	***
H3	AQ	←–	QA	0.28	0.087	4.966	***
H4	AQ	←–	IN	0.23	0.094	4.020	***
H7	AQ	←–	IC	0.32	0.101	4.733	***

Note: * p<0.05 ** p<0.01 *** p<0.001

Table 8 Hypothesis H9 Supported

Path	Effect	SE	t	p	LLCI	ULCI	%
QA – AQ Total Effect	0.67	0.54	12.33	0.00	0.56	0.78	–
QA –IC– AQ Direct Effect	0.38	0.57	6.53	0.00	0.26	0.49	56.7
QA – AQ Indirect Effect	0.29	0.04	–	–	0.25	0.37	43.3

Table 9 Hypothesis H10 Supported

Path	Effect	SE	t	p	LLCI	ULCI	%
IN – AQ Total Effect	0.65	0.52	12.65	0.00	0.55	0.75	–
IN – IC– AQ Direct Effect	0.38	0.54	7.12	0.00	0.28	0.49	58.5
IN – AQ Indirect Effect	0.27	0.03	–	–	0.20	0.34	41.5

The overall SEM is shown in Figure 5, with the fit index passing the threshold requirements.

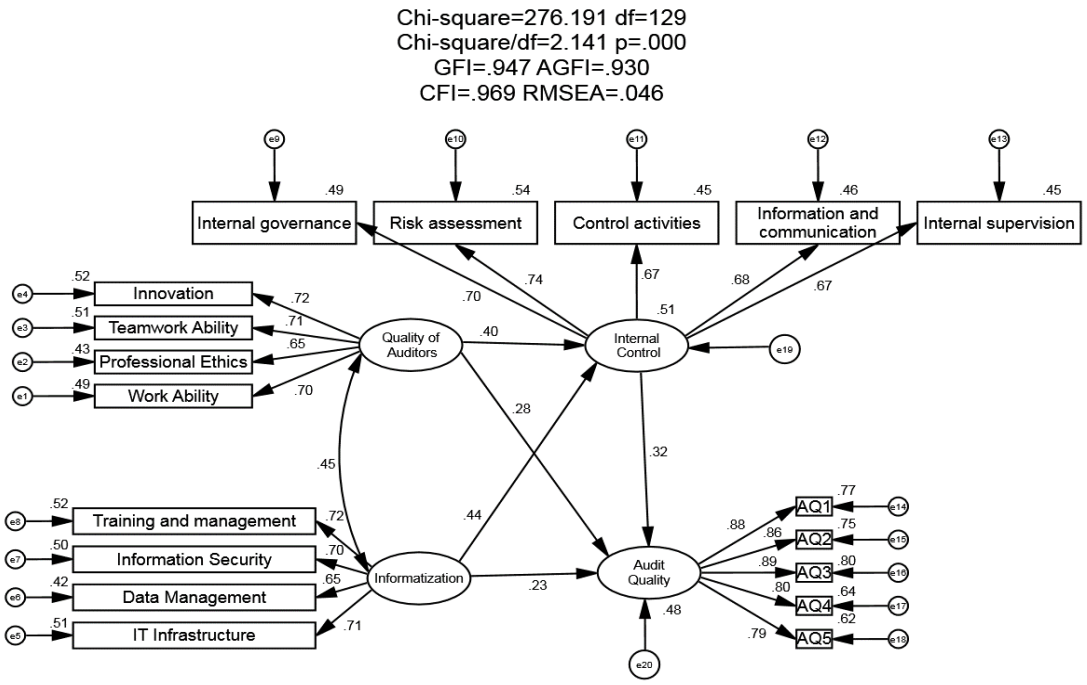

Figure 5 The Structural Equation Model

Discussions

Objective 1: To observe how the principal–agent relationship moderates the relationship between internal control and audit quality in certified auditing firms in Beijing.

The research reveals that the principal–agent relationship positively moderates the relationship between internal control and audit quality. The result aligns with Carcello and Nagy (2004), which states that a well–regulated principal–agent relationship is critical for maintaining the integrity of the audit and internal control system. In such cases, auditors can deliver accurate and reliable audit reports, which enhances internal control effectiveness and overall audit quality. Moreover, when the principal–agent relationship is solid and objective, auditors can rigorously perform their duties without interference from the principal. This relationship fosters trust and cooperation between auditors and clients, allowing for more effective evaluation of internal controls and improved audit outcomes. However, if the relationship is strained or compromised by conflicts of interest, auditors may face challenges obtaining the necessary information, leading to decreased audit quality.

These findings align with prior research, confirming that a strong, independent principal–agent relationship enhances the effectiveness of internal controls and audit quality. Conversely, when auditors face resistance or lack of cooperation from management, the audit process becomes more complicated, and additional procedures may be required to mitigate risks related to information asymmetry (Chen et al., 2022). This increases the time and cost of conducting audits, which could ultimately reduce audit efficiency and quality.

Objective 2: To investigate the moderating effect of organizational size on the relationship between informatization, quality of auditors, and internal control.

The findings indicate that the size of an auditing firm positively moderates the relationship between informatization, quality of auditors, and internal control. The findings align with those of Ditkaew and Suttipun (2023) and DeFond and Zhang (2014), who state that large firms are more capable of attracting highly qualified auditors than medium and small firms. These auditors typically possess extensive professional knowledge and skills, enabling them to quickly adapt to new auditing technologies (Ditkaew & Suttipun, 2023). Combining high auditor competence and advanced informatization systems allows large firms to reduce human error and improve operational efficiency through data automation and process standardization. For instance, DeFond and Zhang (2014) found

that high-quality auditors in large firms can better utilize informatization tools to identify potential risks in financial statements, thereby ensuring audit quality.

Objective 3: To evaluate the effects of internal control, quality of auditors, and informatization processes on audit quality in certified auditing firms in Beijing.

The results of this study show that internal control plays a significant mediator in the relationships between auditor quality, informatization, and audit quality, which aligns with Lennox and Wu (2022), arguing that technically proficient auditors are more accurate and more able to deliver quality audits when supported by robust internal control system. Furthermore, with the technologically advanced internal control system, Jeppesen (2007) concluded that informatization could enhance audit quality through better internal control system data access and analytics support.

New Knowledge

The study offers critical new knowledge to the existing bodies of knowledge in the field of internal auditing from numerous angles. First, the principal-agent theory, being testified on the positive moderating role of the principle-agent relationship in this study, offers, as shown in Figure 6, the systematic and stimulating effect of internal control on audit quality through regulatory frameworks. The regulatory principal-agent relationship should provide an effective measure to rectify many fraud cases that have continued to plague the companies (Nie et al., 2024). Second, economic size has also been shown to exert a positive moderation effect on the nexus between audit quality, informatization, and internal control, which brings to the attention that auditing firms should continue to invest in expanding the size, as the size can represent quality auditing professionalism and diversity of knowledge to benefit audit quality. The new knowledge structure is given in Figure 6.

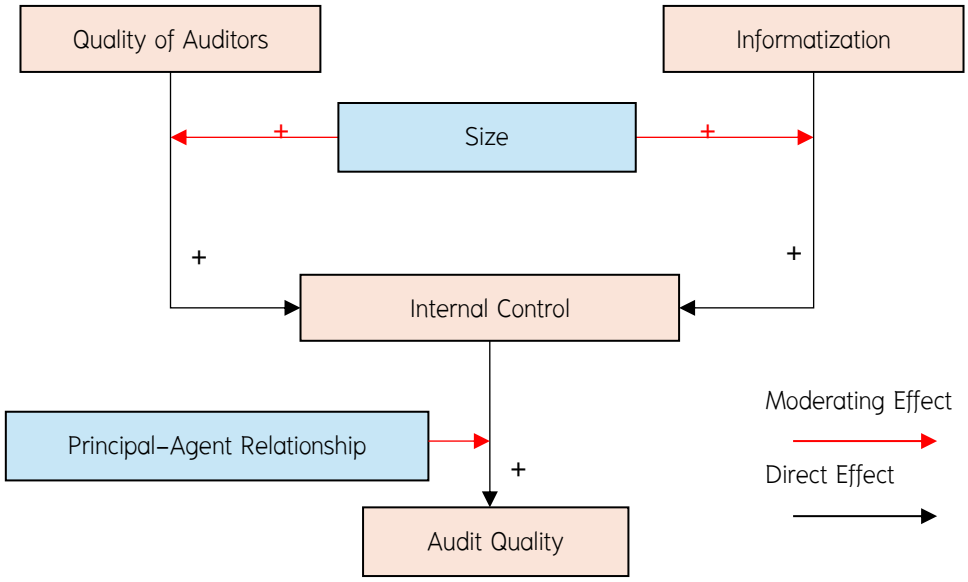

Figure 6 New Knowledge

Conclusion

Realizing the continuing increase in fraud cases in accounting and auditing (Nie et al., 2024), this study sets forth three objectives that aim to fill not only the gap theoretically but also the results that can offer practitioners essential insights. Using the theories of the principal agency, management control systems, and economic size, the study conceptualizes that the principal–agent relationship and the auditing firm's size are two critical moderators. The results of the SEM support the study's theoretical concepts. Furthermore, using the SPSS Process plugin bootstrapping 5000, the study validates the mediating role of internal control. Thus, informatization tools, particularly audit software, help auditors manage complex data more effectively and complete audit work quickly; the role of internal control should not be neglected.

Suggestions

1. Suggestions for Auditing Firms in Beijing

Auditing firms in Beijing should focus on strengthening their principal–agent relationships to enhance the impact of internal control on audit quality, as this relationship plays a crucial moderating role. They should leverage their organizational size by investing in advanced informatization technologies and ensuring robust internal controls, particularly beneficial for larger firms. Smaller firms may need to scale up or form alliances to gain similar advantages. The quality of auditors is paramount, so continuous professional development and training are essential to maintain high audit

standards. Moreover, firms should invest in informatization to improve audit accuracy and efficiency while ensuring that these technologies do not compromise audit independence. A strong emphasis on effective internal controls is necessary, as these controls mediate the relationship between the quality of auditors, informatization, and audit quality, thus serving as a foundation for improved audit outcomes.

2. Suggestions for Future Research

Although the research process of this study strives to be rigorous, it still has some limitations. First, due to the limitations of manpower, material resources, and time, this study mainly targets auditing firms in Beijing and does not involve other countries and regions; the objects of this study are auditing firms in Beijing, and the representativeness and comprehensiveness of the research sample are insufficient. Second, although studies have shown that internal control significantly impacts audit quality, many details still need to be studied in depth. For example, do different dimensions of internal control (corporate culture, manager cultural background) have the same impact on audit quality? How do different types of internal control deficiencies impact audit quality? Discussing these issues can further improve our understanding of the relationship between internal control and audit quality. Third, the audit industry is constantly changing with the development of informatization technology. Future research can focus on the impact of informatization technology on audit work methods, audit methods, and audit quality. For example, how are new technologies such as artificial intelligence and extensive data analysis applied to audit practice? What are the requirements of these technologies for the quality of auditors? Future research can explore the extent to which different quality characteristics of auditors (emotional state, job satisfaction) affect audit quality and how to improve the quality level of auditors through training and education, thereby improving audit quality. Fourth, the regulatory effect of the principal–agent relationship on audit quality is a research direction worthy of attention. Future research can further explore the impact of different principal–agent relationships on internal control and audit quality and how to establish an excellent principal–agent relationship to achieve a win–win situation. While reducing agency costs, information synchronization can be achieved to enrich audit and agency theory and practice further.

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