



Audit Quality Measurement Model

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ABSTRACT

The purpose of the present study is to investigate the factors affecting audit quality. For this purpose, the concepts of audit quality were extracted using the proposed conceptual model and the factors affecting audit quality including policy making, supervision and operations (including the categories of input, process and output), were identified by systematic approach. The dimensions of supreme council independence, financial reporting requirements, audit institutions size, industry auditor, audit fees, corporate governance system, stockbrokers or non-stockholders, thought-based auditing, formulating various industry guidelines, auditors' perceptions of governance, the use of information technology, and the establishment of a professional supervisory body constitute the conceptual model of audit quality. After identifying and designing the primary model, a questionnaire was developed and distributed among the audit firm's partners. The audit quality measurement model was designed using Structural Equation Modeling and the research hypotheses were identified. According to the results of the research, the audit quality has a moderate positive and significant relationship with the policy making factors in the audit profession and a strong positive and significant relationship with the audit operations. Also in terms of the operational factors, the audit quality has a strong positive significant relationship with the input, and a strong positive significant relationship with processes, and a moderate significant positive relationship with the output; finally, the audit quality has a moderately positive and significant relationship supervisory factors.

Keywords:

Audit quality, corporate governance and internal controls, Audit fee, Supervisory body, Policy making.



1. Introduction

The developments over the last decade, especially in the field of regulations, have influenced the audit profession. From relying solely on dispersed and discretionary regulations in 2002, auditing has now become a highly regulated profession by the government and independent legislators. An examination of these developments can show many issues about the motivation for regulation and, in addition, it can indicate the capacities (deficiencies) of regulation of audit quality. According to the legal developments over the past decade, we can expect that the existing legal environment have unintended consequences which, though difficult to predict, there are many indications to confirm them. Audit Quality is at the heart of the International Auditing and Assurance Standards Board (IAASB)'s work as the global auditing standard setter. Therefore, the IAASB released its Invitation to Comment, Enhancing Audit Quality in the Public Interest: A Focus on Professional Scepticism, Quality Control and Group Audits (the ITC). This ITC highlights the board's discussions in these three topic areas and indicates potential standardsetting activities that could enhance audit quality. The IAASB released a companion document, Overview of the ITC, which summarises the key areas the IAASB is exploring and the direction it may take. The IAASB's Framework for Audit Quality, issued in 2014, explains the important role of auditors and their firms – as well as other stakeholders – in audit quality, and the contextual factors that affect it. It is an important reference document for this consultation. The ITC on Enhancing Audit Quality is targeted at: Firms, Regulators and audit oversight bodies, National auditing standard setters, Public sector organisations, Professional accountancy, organisations, Others with an interest in the technical aspects of our standards, The Overview of the ITC is targeted at: Financial statement users, Preparers, Audit committees, Organisations representing these group.

Framework for Audit Quality

In February 2014, the International Auditing and Assurance Standards Board (IAASB) issued its publication, [A Framework for Audit Quality: Key Elements That Create an Environment for Audit Quality \(Framework\)](#), which describes in a holistic manner the different elements that create the environment which maximises the likelihood that quality audits are performed on a consistent basis.

The responsibility for performing quality audits of financial statements rests primarily with auditors.

However, audit quality is best achieved in an environment where there is **support from, and appropriate interactions among, participants in the financial reporting supply chain.**

The objectives of the Framework include:

- Raising awareness of the key elements of audit quality
- Encouraging key stakeholders to explore ways to improve audit quality
- Facilitating greater dialogue between key stakeholders on the topic The Framework describes the **inputs, processes and outputs** factors that contribute to audit quality at the engagement, audit firm and national levels, for financial statement audits. The Framework also demonstrates the importance of appropriate **interactions** among stakeholders and the importance of various **contextual factors**.

The Framework applies to audits of all entities regardless of their size, nature and complexity. It also applies to all audit firms regardless of size. The Framework is non-authoritative. It is not a substitute for standards of quality control, nor does it establish additional standards or provide procedural requirements for the performance of audit engagements.

Inputs

Quality audits involve auditors:

- Exhibiting appropriate values, ethics and attitudes
- Being sufficiently knowledgeable, skilled and experienced and having sufficient time allocated to them to perform the audit work

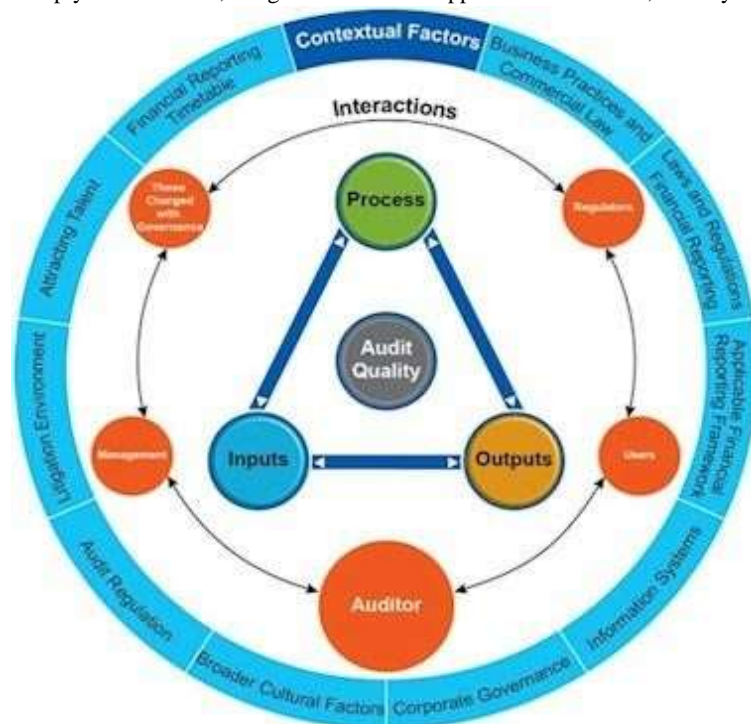
Outputs

Quality audits result in outputs that are useful and timely. They are described in relation to the entire financial reporting supply chain and include outputs from the auditor, the audit firm, the entity and the audit regulators. Outputs include reports and information that are formally prepared and presented by one party to another, as well as outputs that arise from the auditing process that are generally not visible to those outside the organisation being audited.

Process

Quality audits involve auditors applying a rigorous audit process and quality control procedures that

comply with laws, regulations and applicable and, directly or indirectly, audit quality. Such factors



standards.

Interactions

Each stakeholder plays an important role supporting high-quality financial reporting and the way in which they interact may affect audit quality. Increased interaction is promoted.

Contextual Factors

Collectively, the contextual factors have the potential to impact the nature and quality of financial reporting

2. Problem Statement

Over the past decades, criticism by prominent auditing associations about the importance of credible and quality financial reporting have been increased following the global financial crisis and other turbulent events in the international economy. These associations also addressed the role and importance of the audit services quality in a new and innovative way, and considered the quality of the financial reporting and the audit process subjected to achieving the audit process quality and in general, the accuracy of the cycles as one of the factors affecting the supply chain of financial reporting. Audit quality is a measure based on the different people's tastes and perspectives on a variety of variables. Hence, the society seeks to know

include amongst others, laws and regulations and corporate governance.

The Framework can be depicted as follows:

“whether audit services are of required quality” and “what are the dimensions of criteria for evaluating audit quality?”

Although audit quality is no longer a new concept in the field of auditing, there is still no single universal definition that individuals can reach unanimously to date.

The International Association of Auditing and Assurance Standards (2011) defines audit quality as follows: "Audit quality can be viewed as a triangular system with inputs, outputs, and process factors at three angles." According to this definition, the audit quality can be influenced by resources such as the auditor's skill and experience, ethical values, and the approval process that an audit team has adopted; it is also clear that a rigorous legal environment and good

corporate governance can positively correlate with audit quality.

International Auditing and Assurance Standards Board (IAASB, 2014) Framework on Independent Audit Quality includes inputs, processes, outputs, and interactions between corporate governance bodies, management, auditors, users, legislators and contextual factors (rules and financial reporting regulations, business practices, business law, financial reporting frameworks, information systems, corporate governance, cultural factors, auditing laws, legal environments, talent acquisition, financial reporting timelines, and cultural factors). The Public Company Accounting Oversight Board (PCAOB, 2013) framework is also similar to this framework.

Although several attempts have been made to define audit quality so far, none of them have led to the definition accepted by professional associations and the community of accountants or recognized by the international community. Because audit quality is a one-dimensional, and at the same time a complex and multi-faceted concept in essence, and many factors, both directly and indirectly, affect audit quality. However, for some factors that may have a direct impact on audit quality may be important. However, this view is only sufficient to address the question of whether auditing quality can be achieved in a broader context.

Perceptions of the audit conceptual quality and the actual audit quality are different concepts. Although it is important to consider the actual audit quality rather than the perception of the actual audit quality, it is not easy to measure the actual audit quality because the actual audit quality is invisible and can only be observed after the audit. For instance, Palmerus uses legal claims against auditors to measure the actual audit quality. Schoer (2000) reported measuring the actual audit quality report of non-compliance with accepted accounting standards in audited financial statements (Mai Da o et al., 2018).

Audit quality generally has three aspects of input, output and environmental factors. Inputs affecting audit quality include auditing standards, individual characteristics (such as ability, experience, ethical values, and auditor's thinking), right methodology of audit processes, effectiveness of tools, and adequate techniques. Outputs affecting audit quality are audit reporting and meeting community needs. Therefore, according to the research done and issues affecting the audit quality, this question is raised that which of the following models can be considered as an effective factor

for measuring the audit quality? And when all audit quality models are measured from a different perspective and with different variables, how can we determine which model is optimal and appropriate? Therefore, the researcher seeks to identify the factors affecting the audit quality in firms listed in the Iranian Association of Certified Public Accountants based on the literature.

Audit quality is undoubtedly one of the most important areas of accounting and auditing research that is evaluated both academically and professionally. The strong dependence of the auditing profession on academy requires mutual consultation and the integrity of the profession with the university. This indicates that the auditing profession requires academic research and utilizing the research in accounting and auditing. Therefore, it is necessary for the researcher to establish a continuum and a turning chain between the research on audit quality and linking the assumptions of audit quality research together in order to take a fundamental step in the country's audit field.

3. Research Background

Many research have been done regarding the audit quality inside and outside the country that some of them have been addressed in this research.

Research conducted by Conerberger and Pliszc (2019) emphasizes the importance of prior ideas on auditor-client compatibility. According to their findings, high compatibility between the client and the auditor is generally characterized by high efficiency in the audit process, and in other words, the audit effort effectively affects the audit quality. According to their findings, the highest compatibility ensures the best outcome for the audit process. However, from an earlier perspective, auditor-client compatibility is known for the market members such as investors, client companies as well as market auditors. According to their model, poorly adapted auditors can improve auditing with a more specific compatibility. So, if the independent auditor's audit plays a relatively moderate role, auditors with poorer compatibility have stronger incentives to exert effort and are expected to produce higher audit quality as well as audit added value.

In a study conducted by Abdia et al. (2019), the important inputs for auditing and analyzing the determinants of audit quality based on PCAOB indices and its benefits are examined. According to their research results, the composition of the audit team is the most important factor in the audit quality. Their

findings also indicate that the division of labor between audit staff, audit executives and audit partners, and the interaction between the audit team and senior audit executives, expands the empirical relationship between them and improves audit quality. They also found that auditors allocate most of their time to submit audit files to PCAOB inspectors, which indicates an increase in audit quality because the items evaluated by PCAOB inspectors shows the audit quality improvement.

Research conducted by Eric Raply et al. (2019) has addressed the impact of disclosing significant audit issues and auditors confidence in investors' decisions based on PCAOB requirements. According to their findings, one of the key issues in improving the audit quality is the auditors' requirement to report important audit issues that have been required recently by the Public Accounting Oversight Board. In their research, they concluded that the need to report important audit issues causes investors to respond to reported information, thus providing a proper report and the impact of the information contained therein makes auditors more sensitive to reporting and as a result, they provide better quality audits.

Mai Da o et al. (2018) investigated the impact of reporting weaknesses in internal controls following the implementation of PCAOB requirements on audit quality. Using accruals anomaly and the probability of identifying material weaknesses in internal control, they found that if auditors had to report weaknesses in internal controls, they had to perform a better quality audit to be able to report weaknesses in internal controls. This causes companies to be sensitive to this issue and to respond to the establishment of appropriate internal controls, which reduces abnormal accruals and improves the quality of financial reporting.

In a study using audit market analysis, Kordachia and Wolti (2018) examined the structural features of audit quality and audit pricing in the US audit market. In this study, using modeling of the audit quality structural characteristics, they surveyed audit pricing and the audit market in 138 areas between 2004 and 2016. Their research shows a positive (negative) relationship between audit focus and audit quality (audit pricing). However, there has been less improvement in audit quality in large markets, with institutions having a larger number of clients even when the focus is low. Given the pricing of audit services, more focus leads to the competitive costs improvement (lower audit costs) because of the

economy scale improvement. However, this is only when the audit markets are small. When markets are large and centralized, the greater focus of the audit market is associated with higher audit costs (monopoly). This shows that trade is between economies of scale and market domination.

Fong, Raman, and Zoo (2017) looked at the effects of PCAOB surveillance indices in countries outside the US and evaluated 55 countries in their research. In their research, they examined the impact of PCAOB standards and indicators on improving the audit quality in other countries, and according to their results, the use of the PCAOB International Audit Program will improve the audit quality in these countries.

Choi et al. (2010) examined the relationship between audit firm size, audit quality, and audit fees with a large sample of audit firms from 2000 to 2005. According to the results of their research, the audit firm size is positively correlated with audit quality, because the larger audit firm is less financially dependent on a particular auditor, and therefore better able to resist the pressures of the auditor in terms of issuing biased reporting. By examining the relationship between audit firm size and audit report quality in China, Lai et al. (2008) found a significant relationship between audit firm size and reports quality.

Mohammad Rezaei and Yaghoob Nejad (2017) criticized the theory and method of previous internal researches based on the theory of audit firm size between 2006 and 2015. According to their findings, the audit organization lacks most of the characteristics of a large auditor according to the audit firm size theory. Also, criticism of the research methodology indicates that the problem of auditors' endogenous selection is not controlled by Iranian researchers. The endogenous variable is a variable that is affected at least by one other variable in the designed model or pattern. When the independent variable is endogenous, it presents major statistical problems in model estimation. Their research address the research theoretical problem in this field in Iran, and proposes two contradictory theories of "audit fee pressure" and "public auditor and auditee".

Investigating the factors affecting the audit quality in audit firms of the member of the Iranian Association of Certified Public Accountants has been addressed in Alavi et al. (2015). This study showed a significant positive relationship between the variables of audit

quality including the number of certified auditors employed, the number of professional staff and the age of the audit firm with audit quality control score, and the significant negative relationship between the variables of the number of partners and the number of audit firm's work with audit quality control score. Also, according to their findings, there is no significant

relationship between audit firm's annual earnings and audit quality control score.(T. Husain2020)

Table 1: The results of this study are outlined in through several stages

Research Name, Years	Proxies	Indicators
International Research		
De Angelo, 1981b Watts & Zimmerman, 1981	Audit firm size Independence Competence	Big 8 Independent auditor Auditor technical expertise
Chung & Lindsay, 1988	Fee audit	Total asset or sales, number of subsidiaries, the inventory level
De Fond & Jiambalvo, 1993 Beth et al., 2008 Manita & Elommal, 2010	The size of audit firms The quality of audit report	Big 6 Big 5 Independence level of the auditor in the opinion formulation on the accounts, and respect for the ethic rules
Bedard et al., 2010	Measurable Inputs to and Outputs audit quality	Inputs: Engagement level indicator i.e. audit and training hours, personnel assignment, fee audit and partner tenure, individual auditor industry specialization and tailoring of audit tests to reflect client risk; Firm-level indicators i.e. industry specialization, tenure, independence, size, compensation plans Outputs: enforcement releases detailing individual acts, accuracy of audit opinion, accounting and auditing, litigation and related costs, peer review results, internal inspection results, inspection activities and report results
Francis, 2004; 2011	Audit results	Audit reports and financial statements
Martin, 2013	Audit quality indicators	Audit firms, audit committees, creditors and investor, audit regulators, and preparers' management
Svanström, 2013	Discretionary accruals	NAS Ratio, Ln_tenure, Big-4, Ln_TA, ROA, Solvency, Extraowners, Subsidiary, EMP1-9, EMP10-49, Region1 and Region2
DeFond et al., 2013	Audit quality proxies	Absolute discretionary accruals, signed discretionary accruals, restatement, going concern opinion, and audit fees
Gunny & Zhang, 2013	Client-specific measures of audit quality	Abnormal current accruals, the propensity to restate, and the auditor's propensity to issue a going concern opinion
Knechel et al., 2013	Input - Process - Outcomes - Context	Knowledge of a client, industry experience, audit committee oversight, compliance with auditing standards, audit firm ethics, economic independence of the auditor, rotation of audit partners, and audit inspection
DeFond and Zhang, 2014	Commonly used audit quality models	GCs, DACs, Big N, and Audit Fee
He et al., 2014	Audit quality and analysts' information properties	Share, Leader, Sharecl, Mostcl, Size, MB, and Surp
Donovan et al., 2014	Audit quality level demanded absent regulation	Audit market share, the auditor's largest double-digit market share of the SIC industry code, market share calculated based on sales, the number of each client
Qi et al., 2015	Audit production (level of assurance)	Audit firm-specific, audit client-specific, and engagement auditor-specific effects on audit quality
Brown et al., 2016	Audit quality indicators	Technical knowledge, confidence, working condition and workload, multitasking, firm quality control and review, management communications,

Research Name, Years	Proxies	Indicators
International Research		
		reliance on work of outside non-specialists Audit professional, audit process, gender, experience, firm size <i>International Journal of Finance and Managerial Accounting / 7</i>
Christensen et al., 2016	Audit quality framework	Input auditor: (fees, auditor characteristics, firm size); investor (well-trained auditors, auditor change, fees, auditor characteristics, skeptical auditors, firm size) Process auditor: (wellplanned audit, timeliness and consultations); investor (well-planned audit) Output and opinion auditor: (accurate financial statements, restatements, F/S quality, accruals and audit opinion); investor (restatement, poor disclosures, F/S quality, and audit opinion) Output and opinion auditor: PCAOB deficiencies, review/inspection results); investor (review/inspection results)
Raak and Thürheimer, 2016	Input - Output	Input: client characteristics and contextual factors (discretionary accruals and earnings characteristics) Output: internal quality review reports, waived misstatements, the size of required adjustments to be made by the client, and inspection reports to audit firms by oversight bodies (PCAOB
He et al., 2018	The accuracy of individual information and general analysis	Big N, Share, Leader, Sharecl, Mostcl, Analysis, MB, PostSOX, Size , Surp, and USA
Rajgopal et al., 2018	output-based proxies, inputbased proxies, and other proxies	DA, AbsDa, Total Accruals, Rstmt, SmlProfit, SmlBeat, GC, Big N, Audit fee ratio, audit fee city ratio, tenure, new client, top 20 city, auditor Firm Diff, city specialist, and industry specialist.
Sarhan et al., 2019	company and country level approach Indonesian's Research	Big 4, LNFE.

4. Research objectives and questions:

The objectives of the present study are:

- providing a conceptual model of audit quality in the Iranian Association of Certified Public Accountants
- Identifying the factors affecting the Audit quality in Iranian Association of Certified Public Accountants
- Identifying the relationship between different factors in audit quality in the Iranian Association of Certified Public Accountants

Then, according to the stated research objectives, the research questions are as follows:

- 1) What model does the Iranian Association of Certified Public Accountants follow to measure audit quality?

5. The Conceptual Model

This section addresses the question that whether a final and comprehensive model can be presented of the factors affecting audit quality. In this regard, by reviewing the research background and interviewing experts in the audit profession, the identified factors were divided into three main categories of policy, operational and regulatory factors. The independent variables of this study are classified into six categories and the dependent variable is audit quality. Table 2 provides the sub-construct of each independent variables and then the research model is formulated:

6. Research hypotheses

Six main hypotheses and six sub-hypotheses are proposed for this research based on the obtained model:

Main hypotheses:

Hypothesis 1: there is a positive and significant relationship between policy makers in the audit profession and audit quality.

Theme analysis	Conceptual category	Theme
P1,P3,O1,Q2,Q3,Q4,B1,B3,B5	Supreme Council Independence	policy
P1,P2,P3,O2,Q1,Q2,Q4,B2,B4,B3,E2,E3	Financial reporting requirement	
P1,P2,P3,O1,O2,Q1,Q2,Q3,Q5,B2,B3,B4,B5,E1,E2	Financial transparency requirement	
P1,P3,Q2,Q3,Q4,B1,B4,B5,E2,E3	Partnership of audit firms with international audit firms	
P2,P3,O1,O2,Q1,Q2,Q3,Q4,T1,B3,B4	Academic syllabuses modification	
P1,P2,P3,O1,O2,Q1,Q2,Q4,Q5,B1,B3,B4,B5,E1,E2	Linking the audit industry with university	
P1,P3,O1,O2,Q1,Q2,Q4,Q5,B1,B4,B5,E1,E2,E3	Professional juvenility and career creation for young people	
P1,P2,P3,O1,O2,Q1,Q2,Q3,Q4,Q5	Mandatory provisions for better observance of the Code of	

- 2) What are the factors affecting the audit quality in Iran?
- 3) How is the relationship between the factors affecting the audit quality in the country?

Hypothesis 2: There is a positive and significant relationship between audit operational factors and audit quality.

Theme analysis	Conceptual category	Theme
	Professional Conduct	
P1,P2,P3,O1,O2,Q1,Q2,Q4,Q5,B1,B3,B4,B5 8 / Audit Quality Measurement Model T1,T2,B1,B2,B4,E2,E3,E4	Elitism in auditing and elaborating elite maintenance conditions	
P1,O2,Q3,Q4,T1,T2,B2,B3,B4,E1,E2,E3	Audit firm size	Input
P1,P2,P3,O2,Q2,Q3,Q5,T23,B2,B3,B5,E1,E4	Auditor tenure	
P1,P2,P3,O2,Q1,Q2,Q4,Q5,T3,B2,B4,E1,E3,E4	Industry auditor	
P1,P2,P3,O1,O2,Q1,Q2,Q3,Q5,B2,B3,B4,B5,E1,E2	Audit fee	
P1,P2,P3,O1,O2,Q1,Q2,Q3,Q4,Q5,B1,B2,B3,B4,B5,E1,E4	Governance mechanisms	
P1,P2,P3,O1,O2,Q1,Q2,Q3,Q4,T1,T3,B1,B2,B3,B4,B5,E1,E2	Operational Management of Audit Institutions in Controlled Oversight	
P1,P2,P3,O1,O2,Q1,Q2,Q3,Q4,T1,T3	Identification of the auditor client	
P1,P2,O1,O2,Q1,Q2,Q3,Q5,T1,T2,T3,B1,B2,B3,B4,B5,E1,E4	Thought-based audit	process
P1,P2,O1,O2,Q1,Q2,Q4,Q5,T1,T2,T3,B1,B2,B3,B4,B5,E1,E4	Increase auditors' knowledge skills	
P1,P2,O1,O2,Q1,Q2,Q3,Q4,Q5,T1,T2,T3,B1,B2,B3,B4,B5,E1,E4	Proper supervision of audit team	
P1,P2,O1,O2,Q1,Q2,Q3,Q4,Q5,T1,T2,T3,B1,B2,B3,B4,B5,E1,E4	Increase the skill level of fraud detection based audit	
P1,P2,O1,O2,Q1,Q2,Q3,Q5,T1,T2,T3,B1,B2,B3,B4,B5,E1,E2,E3,E4	Increase auditors' skills in laws and regulations and formulating various industry guidelines	
P1,P2,P3,O1,O2,Q1,Q2,Q3,Q5,T1,T2,T3,B1,B2,B3,B4,B5,E1,E2,E3,E4	Auditors' understanding of corporate governance and internal controls	
P1,P2,P3,O1,O2,Q1,Q2,Q3,Q5	Use of IT in auditing	
P1,P2,P3,O2,Q2,Q3,Q5,T23,B2,B3,B5,E1,E4	Improving auditing courses in various fields with industry approach	
P1,O2,Q3,T1,T3,B2,B5,E2,E3,E4	Practical and non-audit financial experience	
P1,P2,P3,O1,O2,Q1,Q2,Q3,Q4,Q5,T2,T3,B3,B5	Quality control before issuing audit report	
P1,P2,P3,O1,O2,Q1,Q2,Q3,Q4,Q5,T2,T3,B3,B5	Increase the skill level of the quality control team at the audit firm level before reporting	
Q1,Q3,Q5,B2,B4	Paying more attention to audit reports on specific items or future financial information	
P1,Q4,B5	Improving auditing courses with the approach of reporting internal controls and independent auditing	
P1,P3,O1,O2,Q4,Q5,B3	An independent supervisory body such as PCAOB	Regulatory Theme policy
P1,P3,O1,O2,Q2,Q4,Q5	Increasing the level of precision in the quality control group investigations	
P3,O2,Q1,Q4	Official report of audit institutions' Quality control weaknesses	
P3,O1,Q3,T1,T3,B5	Appropriate framework for reporting audit firms' error by staff	
P1,P3,O1,Q2,Q3,Q4,B1,B3,B5	Training special surveillance forces and efforts to protect them	
P3,O1,Q3,T3,B2	Periodic changes of regulatory forces	
P1,P2,P3,O2,Q1,Q2,Q4,Q5,T3,B2,B4,E1,E3,E4	Training industry-specific regulatory forces	
P1,P2,P3,O1,O2,Q1,Q2,Q3,Q5	Use of information technology and proper platform for instant monitoring	

Hypothesis 3: There is a significant positive relationship between audit regulatory factors and audit quality.

Hypothesis 4: There is a positive and significant relationship between policy makers in the audit profession and operational factors related to audit quality.

Hypothesis 5: There is a positive and significant relationship between policy making factors in the audit profession and supervisory factors related to audit quality.

Hypothesis 6: There is a positive and significant relationship between audit operational factors and supervisory factors related to audit quality.

Subsidiary Hypotheses:

Hypothesis 7: There is a positive and significant relationship between the operational factors of audit input and audit quality.

Hypothesis 8: There is a positive and significant relationship between operational factors of audit process and audit quality.

Hypothesis 9: There is a positive and significant relationship between the operational factors of audit output and audit quality.

Hypothesis 10: There is a positive and significant relationship between the operational factors of audit input and the audit process operational factors with the audit quality.

Hypothesis 11: There is a positive and significant relationship between audit inputs and audit outputs and audit quality.

Hypothesis 12: There is a positive and significant relationship between the operational factors of audit process factors and audit output and the audit quality.

7. Research Method

The present study is an applied research in terms of the purpose and a descriptive-analytical research in terms of the method. This study seeks to provide a model for measuring audit quality. In the theoretical section, the needed data to conduct the research were gathered by referring the books, journals, and internet sites and the questionnaire was used to collect data in the field stage. In the first step, the effective factors were identified by studying the theoretical foundations and confirmed by 22 experts. Then, the final items were distributed among 207 auditing partners of the Iranian Association of Certified Public Accountants, and 160 Likert questionnaires were received finally. The data were then analyzed through structural equation modeling. The minimum number of samples is obtained according to the Cochran formula:

$$n = \frac{NZ^2pq}{Nd^2 + Z^2pq}$$

$$n = \frac{920 \times 3.8416 \times 0.25}{920 \times 0.0036 + 3.8416 \times 0.25} = 207$$

8. Reliability and Validity

Composite reliability (CR) method was used to determine the constructs reliability. If the CR value for constructs is greater than 0.7, the reliability is more acceptable, and closer this value is to 1 for a construct, the greater its reliability.

Unlike Cronbach's alpha, the composite reliability, which implicitly assumes that each index has the same weight, relies on the actual factor loadings of each construct and provides a better criterion for reliability (Fornell and Larcker, 1981).

The formula for calculating the composite reliability is as follows:

$$CR = \frac{(\sum \lambda)^2}{(\sum \lambda)^2 + \sum \delta}$$

Where: CR: Combined reliability λ : extracted factor load for each marker in the form of confirmatory factor analysis; and δ : the variance is the standard error of the indices.

Table 3: Composite and Cronbach's Reliability

Variables	Combined reliability	Cronbach's alpha
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	coefficient CR (>CR >0.7)	reliability coefficient
policy	0.945813	0.932975
Inputs	0.936443	0.908970
Operational	0.924645	0.877609
processes	0.952545	0.937671
Outputs	0.932939	0.904244
Supervision	0.953604	0.943210

In Table 2-2, the Cronbach's alpha coefficients and the composite reliability of all variables in this study were greater than 0.7.

In addition to the questionnaire reliability, content validity and convergent validity were analyzed using PLS structural equation modeling. Convergent validity refers to the principle that the indices of each construct are moderately correlated with each other. According to Magner et al. (1996), convergence validity criterion is that the mean extracted variance (AVE) is greater than 0.4.

Table 4: Convergent validity

Variables	Average extracted variance (AVE)
policy	0.814050
Inputs	0.845990
Operational	0.886757
processes	0.800625
Outputs	0.876696
Supervision	0.803595

The model is at a very good level in terms of all three criteria mentioned above as can be seen.

9. Data Analysis Method

Structural Equation Modeling technique is a powerful multivariate analysis from the multivariate regression family and, more specifically, the development of "the general linear model to allow researchers to test a set of regression equations, simultaneously. Structural Equation Modeling is a common approach to test hypotheses about observed and latent variable relationships that is occasional named as the structural analysis of covariance, empirical causal models, structural equation modeling, or as a SEM in short (Homan, 2005, p. 1). Also according to Azar (2002), the multivariate analysis is one of the most powerful and appropriate analytical methods in the behavioral research. This is because such issues are multivariate and cannot be solved by by-variable methods (where an independent variable is considered with a dependent variable). "Covariance analysis structures" or "Structural Equations Modeling" is one of the most original methods of the complex data analysis and one of the new methods for examining cause and effect relationships to analyze the various variables that, in have simultaneous effects on variables a theory-based structure. This method can test the acceptability of

Table 5: Measurement Model values for research sub-constructs (Structural Validity)

Dimensions	Component marker	Components	Factor loading	t-value
Policy making	q1	Independence of the Supreme Council	.799	28/915
	q2	Financial reporting requirement	.824	30/625
	q3	Requires financial transparency	.840	330283
	q4	Modifying syllabuses according to the audit profession	.891	58/006
	q5	Linking the profession with the university	.883	49/881
	q6	Professional youth	.811	45/896
	q7	Audit elitism	.856	45/896
	q8	Establish an independent supervisory body	.859	42/620
	q9	Quality control working groups	.882	56/045

theoretical models in their own communities using correlation, non-experimental and experimental data. In addition to meet the coefficients of equations of linear estimate, LISREL Method is developed to fit models involving latent variables, measurement errors in each of the dependent and independent variables, mutual causality and interdependence.

10. Research findings

The overall research model was designed in PLS Smart software environment. In this model, there are one dependent variable (audit quality) and six independent variables, including policy, operational, (input, process, output) monitoring. The latent variables are shown as circles and the explicit variables are shown as rectangles. Relationships between latent variables and explicit variables are called factor loadings. Structural equations are also relationships between latent and observed variables and are used to test hypotheses. These coefficients are called path coefficients. For testing the significance of the independent variable relationship with the dependent variable, value-t is used and at 95% confidence level the value-t must be outside the range of -1.96 to 1.96 to be considered significant.

In the Structural Equation Model, we show how the latent variables relate to each other. The researcher develops a structural equation model to show specific relationships between latent variables and illustrates it by drawing arrows (Qasemi, 2009: 225). In fact, we use this model to investigate the research hypotheses. In the present study, after validating the measurement models and calculations of structural and diagnostic validity, we can test the relationships between the research structures at this stage. For this purpose, the model is implemented in LISREL software. Charts 2 and 3 show the research model with standard and significant coefficients.

Dimensions	Component marker	Components	Factor loading	t-value
Supervision	q10	Official quality control weaknesses report	.850	41/945
	q11	Proper bedding to report errors	.853	45/733
	q12	Training special supervisory forces	.851	39/546
	q13	Use of information technology	.868	45/850
	q14	Training industry-specific regulatory forces	.881	52/502
Operational Processes	q15	Perform thought-based audit	.879	50/500
	q16	Proper supervision of the audit team	.913	68/686
	q17	Training and enhancing auditors' knowledge of laws and regulations and formulating industry guidelines	.909	64/383
	q18	Use of IT in auditing	.898	54/422
	q19	Existence of practical and non-audit financial performance	.875	47/203
Operational - Inputs	q20	Audit firm size	.883	60/210
	q21	Audit fee	.893	64/627
	q22	Industry auditor	.877	50/565
	q23	Governing mechanisms	.873	49/223
Operations - Outputs	q24	Performing quality control before submitting a report	.899	50/722
	q25	Increasing the skill level of the quality control group at the enterprise level	.915	63/601
	q26	Improving auditing courses with the approach of reporting internal controls and independent auditing	.875	47/770

Table 6: Fit indices of general research model

Variables	Shared values	$\overline{R^2}$
policy	0.714050
Operational	0.786757	0.949068
Inputs	0.803595	0.601716
processes	0.800625	0.790929
Outputs	0.776696	0.789260
Supervision	0.745990	0.758641

According to the above values, the mean of shared values is 0.69

Since there is a latent first-order endogenous variable in this model, the $\overline{R^2}$ is equal to: 0.76 So the GOF index is:

$$GOF = \sqrt{0.69 + 0.76} = 0.624$$

Considering the three values of 0.01, 0.25 and 0.35 introduced as low, medium and strong values for GOF

(Wetzels et al., 2009). Finding a value of 0.724 for this criterion indicates a good fit to the overall research model.

According to Ringel (2013) proposed value of $GOF > 0.35$ means the model quality reaches 97% of the covariance.

11. Hypotheses Testing

For the last two decades, Structural Equation Modeling has been a common research tool in management, medical, and social sciences. Considering the material presented in this section, SMART-PLS will investigate whether or not these factors are influenced by the factors mentioned below, and then, factor measurement indices and factor determination coefficients will be examined.

The data obtained from the field research were executed in SMART-PLS software and the following results were obtained.

Table 7: Regression coefficients and their significance level

Hypothesis	Path coefficient (B)	(T-VALUE)	Results
1. Policy factors affect the audit quality.	0/898	8/699	Confirmed
2. Operational factors affect the audit quality.	0/661	2/916	Confirmed
3. supervision factors affect the audit quality	0/669	8/689	Confirmed
4. There is a significant positive relationship between policy making factors in accounting and auditing profession and operational factors related to accounting quality.	0/001	2/061	Confirmed
5. There is a significant positive relationship between policy makers in accounting and auditing and supervision related to accounting quality.	0/861	6/860	Confirmed
6. There is a significant positive relationship between supervision in the auditing profession and operational factors related to accounting quality.	0/666	8/181	Confirmed
7. There is a significant positive relationship between operational factors in the audit profession and input factors related to audit quality.	0/669	6/828	Confirmed
8. There is a significant positive relationship between operational factors in the audit profession and process factors related to audit quality.	0/908	10/888	Confirmed
9. There is a significant positive relationship between operational factors in audit profession and output factors related to audit quality.	0/668	6/688	Confirmed
10. There is a significant positive relationship between the input factors in the audit profession and the process factors related to audit quality.	0/666	6/866	Confirmed
11. There is a significant positive relationship between process factors in audit profession and output factors related to audit quality.	0/266	2/988	Confirmed
12. There is a significant positive relationship between input factors in the audit profession and output factors related to audit quality.	0/690	9/996	Confirmed

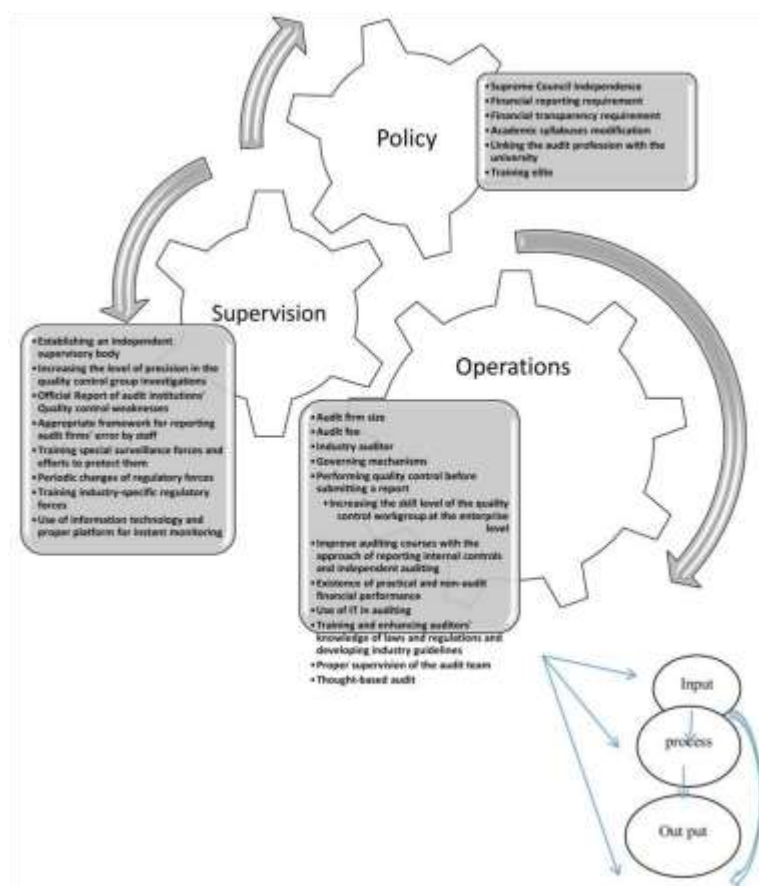


Figure 1. Final model of auditing quality measurement

12. Conclusions and Suggestions

The present study aimed to provide an audit quality measurement model using structural equation modeling. For this purpose, the research has identified the factors affecting the audit quality and has introduced the model of auditing quality measurement using structural equation modeling. The results of the research show that policy making in the audit profession will have a high effect on the audit quality. The appointment of an Independent High Council to select qualified people in the Association of Certified Public Accountants and able to influence in the government for the benefit of the Association of Certified Public Accountants, may provide requirements for financial transparency and reporting. On the other hand, policymakers in the audit profession can enhance the auditing industry's relationship with the university, build productive interactions, and effectively communicate by synchronizing syllabuses with the profession. Policymakers in the auditing profession should seek elitism and rejuvenation in the profession because of the current status of the profession and the low audit fee, it is possible for the auditee to exit because of low income. Considering that the majority of the constituent community is made up of senior accountants, special attention may need to be paid to rejuvenation. From the audit operation perspective, it is necessary that the staff of the corporations move toward thought-based

auditing rather than routine audits. The audit profession is a critical professional that requires familiarity with the up-to-date issues and techniques. The prerequisite of the audit quality improvement is to supervise auditing tasks, and utilize information technology more quickly and train industry auditors, and ultimately increase the audit quality work and publish more quality reports or increase the level of corporate income. Although most international corporations derive their income from other areas of financial services and earn more than reassurance services, their audit fees are high. The rationality of audit fees makes institutions more sensitive to auditing, preventing the departure of strong auditing forces, increases institutional-level elitism, focuses on training, and so on that in addition to policymaking level, these issues should also be addressed at the institution operations level. The absence of an independent oversight body, either from the government or from the public body, is one of the major problems in today's public accountant community that has led to poor audit quality. In most countries in the world, such as the United States, Britain, and China, the overseer body is public and operate under the oversight of the Stock Exchange or the Ministry of Economy. The establishment of an overseer body will give greater attention to the audit profession and prevent the publication of audit reports and the completion of poor quality audit records. On the other hand, increasing the quality and

software knowledge and skills of the Association of Certified Public Accountants will also prevent the audit quality reports, and these will all serve as monitoring tools for audit firms to improve the audit quality work. If auditing firms are aware of the quality weaknesses of audit reports, such as the audit quality records published annually by the US Audit Quality Control Center, firms can better understand audit quality weaknesses and provide audits efforts with more accurate records in accordance with auditing standards.

Focusing on the audit quality in different dimensions, the present research addresses the issue from the policy point of view and suggested that the policy maker synchronize the syllabuses with the audit profession. It is also necessary to appoint individuals to the Supreme Council who have the power to lobby with government agencies in order to convince the authorities of the financial transparency required to conduct quality audits so that the auditing profession in the community can be more highlighted and also, the responsiveness is institutionalized in society. Practical application of the research findings and the model presented will help the community to take a more effective step towards enhancing the auditing profession, financial transparency, financial reporting and the fight against corruption. Undoubtedly, the proposed model can be used by the Tehran Stock Exchange, Ministry of Economic Affairs and Finance and the Association of Certified Public Accountants and this model can be used to measure the audit quality and increase the audit quality in the country.

From the operational perspective, the Association of Certified Public Accountants is expected to support auditors and audit firms on audit fees, as according to the research findings at domestic and foreign level, the fees have a significant impact on the good quality. Institutions cannot spend enough time on audit work or employ professional staff to perform audit operations as long as audit fees are low; so the audit fee needs to be structured and systematic. The institutions are also required to try to continue professional education, and the community can also train and introduce industryspecific auditors to enhance the audit quality. Most companies in today's world report lack of time to perform audit quality control after publication, which leaves auditors unaware of any potential issues, so there is a need to provide a mechanism to standardize audit quality at institutional level prior to issuing audit reports and make the necessary controls by the Association of Certified Public Accountants such as sudden visits.

If the Association of Certified Public Accountants seeks to designate industry-specific auditors, industryspecific working groups can be set up, as well as industry quality control audit groups to assess the audit quality that can result in the audit quality improvement.

The establishment of an overseer body can greatly contribute to the audit quality and enhance the transparency of financial reporting. The Association of Certified Public Accountants, which operates under the supervision of the Ministry of Economy and Finance, is therefore suggested to have constructive interactions with the government to select the supervisory body and its executive form.

Several research has been conducted, in the area of audit quality, mainly regarding the relationships between audit quality and financial reporting, audit fees, audit report clauses, and so on. However, little research has been done on the dimensions that affect audit quality. It is therefore recommended to conduct research in the area of international financial reporting and audit quality. Also, given the widespread changes that occur in information technology, it is suggested to perform research in the field of information technology and audit quality. The capital market requires a major evolution in electronic financial reporting, and this will not be the case until momentary auditing is established, so the qualitative aspects of auditing and financial reporting should be considered after transformation. Since that audit records have been kept on paper for many years and audits are still in paper form, future research is recommended to address the factors affecting audit technology and quality and determine the reasons for the lack of up-to-date auditors and records based on IT.

References

- 1) Hasas Yegane, Y, Azin Far, K (2010), "relationship between Audit Quality and Audit firm size", *Accounting and Auditing Reviews*, Volume 17, No 61 pp. 85 to 98. 4 –
- 2) Hasas Yegane, Y, Jafari ali. "The Audit quality, Literature review", *Journal of Stock Exchange*, Sixty-Six, September 2007, pp. 38-45.
- 3) Hasas Yegane, Y, Ghamzade Ledari, M (2012), "Comprehensive evaluation of Audit Quality in Iran: Research Opportunities ". 10th Iranian Accounting National Conference, June 2012-6
- 4) Sepasi, S, Rajabzadeh, A, Rezayat, M (2016),

- “Designing Social Audit Model Using Structural Equation Modeling”, *Audit Knowledge*, Vol.16 No. 65, Winter, pp. 97-120
- 5) Alavi, M, Ghorbani, B, Rostami, W (2015), “Investigating the factors affecting audit quality in the Audit Institutions of the Iranian Association of Certified Public Accountants”, *Auditing Knowledge*, Vol. 15. No. 60 of 2015., pp. 47-70
 - 6) Mohammad Rezaie, F, Yaghoub Nejad, A (2017), “Audit Firm Size and Audit Quality: Theoretical Criticism, Critique of Research Methodology and Suggestion”, *Financial Accounting and Auditing Research*, Vol. 9, No 36, pp 31-60
 - 7) Mashayekhi, B, Mehrani, K, Rahmani, A, Madahi, A (2013), “Formulation of Audit Quality Model”, *Quarterly Journal of Stock Exchange*, Vol, 6, No 23, pp, 103-137.
 - 8) Mohammad Rezaei, F, Mehrabanpour, MR (2016), “Auditor Report Type and Number of Audits: The Effect of Ranking of Trusted Audit Institutions”, *Accounting and Auditing Management Knowledge*. Volume 5, Issue 17, 6577.
 - 9) Nikbakht, MR, Mahmoudi Khoshroo, O (2017), “investigating the Factors Affecting the Audit quality in Iran with regard to the Indicators of Public Company Accounting Audit Board (PCAOB)”, *Accounting and Auditing Reviews*, Vol 3, No 24, pp 441-462.
 - 10) Valmali, Kh (2012), *Qualitative Research from Theory to Practice*, Science Publishing, Tehran, First Edition.
 - 11) T. Husain (2020), Mapping Evolution of Audit Quality Measurement, *EJBMR, European Journal of Business and Management Research* Vol. 5, No. 3, May 2020
 - 12) Hashi, A, Mazaheri Fard, K (2013), “examining the relationship between audit firm size and audit quality”, *Accounting and Auditing Research*, No. 17. Spring, pp. 1-26.
 - 13) Alastair Lawrence, Miguel Minutti-Meza, and Ping Zhang. (2011), “Can Big 4 versus Non-Big 4 Differences in Audit-Quality Proxies Be Attributed to Client Characteristics?”, *The Accounting Review*, 86 (1), 259.
 - 14) Adam Esplin Karim Jamal Shyam Sunder (2018), “Demand for and Assessment of Audit Quality in Private Companies” *Journal of Accounting, finance and business studies*, Volume54, Vol.35, No1 ,pp,1-22
 - 15) Bing, J., Huang, C.X., Li, A. & Zhu, X. (2014). "Audit Quality Research Report", Australian National Centre for Audit and Assurance Research", Hanna Neumann Building #21. Canberra ACT 0200 Australia.
 - 16) Chuntao Li, Frank MSong, Sonid MLWong(2007). "Audit Firm Size and Perception of Audit Quality: Evidences from a competitive Audit market in china"; 1-17.
 - 17) Constantinos, C. Clive, L.(2008)."Audit effort and earnings management", *Journal of Accounting and Economics* Vol,1 No,45 ; pp.116–138.
 - 18) Chen, Y. Hsu, J. (2010). “Auditor Size, Auditor Quality, and Auditor Fee Premiums: Further Evidence from the Public Accounting Profession. SSRN Working Paper Series 126-148.
 - 19) David Castillo-Merino.,osep Garcia-Blandon, Monica Martinez-Blasco (2019), “Auditor Independence, Current and Future NAS Fees and Audit Quality: Were European Regulators Right?”, *European Accounting Review (Forthcoming)*, 48 Pages Posted: 4 Feb 2019 Last revised: 21 Feb 2019.
 - 20) DeAngelo, L. (1981). "Auditor size and auditor quality". *Journal of Accounting & Economic* (December): 183-199. S.
 - 21) Davidson. R. A. and D. Neu. (1993). "A Note on Association between Audit Firm Size and Audit Quality". *Contemporary Accounting Research*. Vol . 9. No . 2: 479- 488.17.
 - 22) DeAngelo, L. (1981). "Auditor size and auditor quality". *Journal of Accounting & Economic* (December): 183-199.
 - 23) DeFond, M., and J. Jiambalvo, (1994). "Debt covenant violations and manipulations of accruals". *Journal of Accounting and Economics*, 17 (1-2): 145-176.
 - 24) Fung, S.Y.K., Raman, K.K. & Zhu, X. (2017), “Does the PCAOB international inspection program improve audit quality for non-US-listed foreign clients?”, *Journal of Accounting and Economics*, 64(1), 15-36.
 - 25) Henock Louis (2005). "Acquirers Abnormal Returns, Audit Firm Size and the Small Auditor

- Clientele Effect", *Journal of accounting and economics*, 2005 .18-52
- 26) Jeff P. B, Inder K. K, K. K. Raman.(2010). "Do the Big 4 and the Second-tier firms provide audits of similar quality?". *J. Account. Public Policy*, 29 (2010) 330–352.
- 27) Jere, R, Francis. Michael, D, Y. (2009). "Big 4 Office Size and Audit Quality". *The Accounting Review*, 84 (5), 1521 (2009); 85-123
- 28) Jong. H, Ch.Jeong, B.K.V. Chansong, k.Yoonseok, Z.(2009). "Audit Office Size, Audit Quality and Audit Pricing. Auditing", *A Journal of Practice and Theory*. May 2010, Vol. 29, No. 1, pp. 73-97..
- 29) Mohamed Samy Eldeeb· Mohamed A. Hegazy (2019), "The Impact of Auditor Industry Specialization on the Retention and Growth of Audit Clients", *Journal of Ain-Shams University, Accounting though Journal Ain-Shams University, Faculty of Commerce. Volume No.1, year 20, ISSN: 2356-8402*.
- 30) Murat, O (2018), "The Impact of Auditor Education Level on the Relationship Between Auditor Busyness and Audit Quality in Turkey Cogent Business and Management", Forthcoming Posted: 24 Sep 2018.
- 31) Robert Knechel. W (2016), "Audit Quality and Regulation International Journal of Auditing", *Int. J. Audit.* 20: 215–223