

# “Role of quality determinants of the internal audit function in corporate governance effectiveness. Senior management support as moderator: Evidence from Yemeni commercial banks”

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# ROLE OF QUALITY DETERMINANTS OF THE INTERNAL AUDIT FUNCTION IN CORPORATE GOVERNANCE EFFECTIVENESS. SENIOR MANAGEMENT SUPPORT AS MODERATOR: EVIDENCE FROM YEMENI COMMERCIAL BANKS

## Abstract

The purpose of this study was to determine if senior management support (SMSI) in Yemeni commercial banks mediates the association between internal audit function (IAF) quality characteristics and improved corporate governance effectiveness (CGE). Internal auditors, heads of internal audit, chairmen and participants in audit committees, CEOs, and financial management of Yemeni commercial banks were given a list of questions to answer. 158 full lists were obtained to evaluate after distributing the survey. For data analysis and hypothesis testing in this work, Smart PLS 3 was used. The study findings demonstrate a substantial relationship between CGE and IAF competence and due professional care (CPCI), IAF independence and objectivity (INOI), and IAF professional ethics (PEI). The outcomes of the study also demonstrate that there is no relationship between CGE and chief audit executive (CAE) Leadership Style (CLS). In terms of the moderate variable's influence, the findings revealed that SMSI positively changes the link between CLS, CPCI, and corporate governance effectiveness. SMSI, on the other hand, has no influence on the link between INOI, PEI, and the efficacy of corporate governance. The findings add to the knowledge on IAF factors affecting the efficacy of CG and the role of SMSI in changing this relationship in developing countries such as Yemen.

**Keywords** internal audit, corporate governance, Yemen, commercial banks, performance

**JEL Classification** G38, M48, L25, G21

## INTRODUCTION

Due to the expansion of global trade, the size of commercial projects, and the emergence of multinational corporations, the separation of ownership and management has become crucial because many investors lack the time or expertise to manage the facility and ensure a return on their investment. Owners and investors are no longer able to manage their businesses independently. Because they are entrusting management of the facility to experts to ensure that the facility's goals are achieved effectively and efficiently, the facility's owners and investors choose employees with administrative expertise to handle the administration and day-to-day operations (CIPE, 2003). Corporate governance (CG) was developed to maintain a balance between a wide range of actors and the use of instruments for managing financial wealth, whether for shareholders or other parties with an interest in

the facility's capital (Tabara & Ungureanu, 2012). This is because there are individuals managing businesses and others who are responsible for assuming their risks.

CG requires the support of various accounting activities despite its importance. So, according to Gramling et al. (2004), IAF is one of the fundamental foundations of CG. Internal audit has traditionally had a substantial influence on CG at many organizations since the early 1940s (Moeller, 2004), and this function's nature has changed through time (Lin et al., 2011). It also currently has a distinct position in terms of enhancing the effectiveness of CG (Carcello et al., 2005a; Gramling et al., 2004; Karagiorgos et al., 2010). Additionally, it now has more relevance than ever before. Due to the close connection between the IAF and CG, each organization must have a strong IAF in order to be successful (Carcello et al., 2005b; Hazaea et al., 2021). Based on the influence relationship between the IAF and CG, several scholars have claimed that the IAF is best suited to assist and succeed CG and Control Processes (Kontogeorgis, 2018). IA quality is accountable for preventing fraud and profit manipulation, but it also helps CG by fostering confidence in the proper management of business risks and the efficiency of internal financial reporting controls (Al Matari & Mgamal, 2019; Arena & Azzone, 2009; Arum, 2015; Lin et al., 2011).

IAF must possess a few characteristics that boost its effectiveness in order to carry out its vital function in CG advancement. Proficiency and appropriate professional care are the most important elements affecting the effectiveness of the IAF (Drogalas et al., 2015; Endaya & Hanefah, 2016; Madawaki et al., 2022; Oussii & Boulila Taktak, 2018). The leadership style of CAE is also discussed (Dal Mas & Barac, 2018; Hoos et al., 2015; Lenz, 2013), as well as impartiality and objectivity (Alzeban & Gwilliam, 2014; Dellai & Omri, 2016); professional ethics for internal auditors (D'Onza et al., 2015; Eulerich et al., 2015); etc. The importance of IAF as a CG mechanism is emphasized in recent scientific literature, particularly in developed countries, but the issue of IAF's impact in developing nations has received very little attention (Ahmad et al., 2009; Alzeban & Gwilliam, 2014; Mihret & Yismaw, 2007; Sakour & Laila, 2015). Soh and Martinov-Bennie (2011), Ahmad et al. (2009), Arena & Azzone (2007), Barac & Van Staden (2009), Sarens et al. (2012), and many other scholars have emphasized the need for additional research on the role of the IAF, particularly in non-Western contexts like developing countries.

Yemen is an intriguing case study that emphasizes the need of assessing the role of IAF quality components in boosting CG, especially in the banking business, which is more concerned with CG than other commercial sectors. Yemen is a developing country. The main goals of this study are to assess the impacts of CAE leadership style, IAF independence and objectivity, IAF competence and appropriate professional care, IAF independence and objectivity, IAF professional ethics, and SMSI on CGE as well as to identify whether or not SMSI will have a stronger impact. This research used a technique based on agency theory. The CG's IAF is a vital control mechanism to address issues about information asymmetry and challenges with conflicts of interest between managers and agents, according to agency theory (Al-Matari et al., 2021; Goodwin-Stewart & Kent, 2006; Sarens & Abdolmohammadi, 2011). According to agency theory, internal audit reflects the interests of shareholders as well as a wide spectrum of IA users, such as the BOD, the AC, and organizations (Peurseem & Pumphrey, 2005).

Supporters of the agency hypothesis contend that top management funds the IAF to ensure the board that the internal control procedure and risk management strategy are effective. According to considerations from agency theory, the IAF's ability to maintain and assess an efficient internal control system may be enhanced by specific traits of internal audit staff (Oussii & Boulila Taktak, 2018). Because of this, internal auditors must carry out their responsibilities professionally in order to successfully contribute to lowering agency issues and safeguarding shareholder interests (Al-Matari et al., 2014; Endaya & Hanefah, 2013). As well as other knowledge and skills, this calls for the holding of the required academic and professional credentials. The relationship between CGE and IAF quality standards is thus positive.

# 1. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

IA personnel proficiency is vital in improving the IAF's quality. "Internal auditors must possess the knowledge, skills, and other competencies needed to perform their responsibilities. The internal audit activity collectively must possess or obtain the knowledge, skills, and other competencies needed to perform its responsibilities", according to the International Standards on Internal Auditing (ISPPIA), Attributes Standard No. 1210 (IIA, 2017). External auditors must assess internal auditors' technical expertise when deciding if the IAF's work is suitable for auditing, under ISA 610. Thus, IAF performance is evaluated based on internal auditor competence (Abbass & Aleqab, 2013).

Furthermore, internal auditors' professional competency was emphasized by the Basel accord, either individually or collectively, to the effectiveness of the Bank's IAF, as stated in Principle Three of the IAF Principles: "Professional competence, including the knowledge and experience of each internal auditor and of internal auditors collectively, is essential to the effectiveness of the bank's IAF" (BCBS, 2012). Besides, prior studies have highlighted the importance of internal auditors' competence and professional care in improving the IAF's quality, with internal auditors possessing professional certificates, training, education, qualification, experience, and knowledge of the internal audit process. Internal auditors' professional expertise ensures that the IAF adheres to the IIA' standards (Alzeban, 2015; Sarens & Abdolmohammadi, 2011). In addition, there was a significant delay in conducting the external audit, when the internal auditors had professional certificates and extensive expertise (Pizzini et al., 2015). Furthermore, professional expertise improves the contribution of internal audits to CG improvement (Vadasi et al., 2020; Sarens et al., 2012). Moreover, an implements internal auditors' suggestions (Alzeban & Sawan, 2015; Arena & Azzone, 2009). Internal auditors' professional expertise also contributes to identifying material internal control flaws (Lin et al., 2011). Furthermore, internal auditors' competency can improve the internal audit team's effectiveness and their work recognition

within the organization (Arena & Azzone, 2009). As a result, it is clear that the IAF's professionalism and competency influence CGE, and the following supposition is made:

Many professional organizations and standard-setters have frequently emphasized the importance of the IAF's independence and neutrality during the past many years, notwithstanding its functional affiliation with top management (Al-Matari, 2022; Dellai & Omri, 2016). Independence is defined as "freedom from conditions and circumstances that threaten the ability of the internal audit activity or chief audit executive to carry out internal audit responsibilities in an impartial manner", objectivity is "an unbiased mental pattern that authorizes internal auditors to perform internal audit tasks in such a way that they believe in the integrity and quality of their work without reproach" (Moeller, 2015). The internal audit executive needs unrestricted and direct access to the board of directors and senior management to achieve the degree of independence required for the efficient completion of the internal audit activity's tasks. To be objective, internal auditors must also make independent decisions about audit matters without deferring to the views of others (Moeller, 2015).

The success of the IAF depends on its capacity for objectivity and independence (Alzeban & Gwilliam, 2014; A. Cohen & Sayag, 2010; D'Onza et al., 2015). The independence and objectivity of the IAF grow along with its effectiveness (D'Onza et al., 2015; Dellai & Omri, 2016). The reputation of internal auditors and their profession among important constituencies could also be harmed by any posture that undermines these attributes (Anderson, 2009). IA won't be able to deliver crucial information to BOD and AC if the IAF lacks independence and neutrality, which would lower the IAF's quality (Chambers & Odar, 2015; Christopher et al., 2009).

IA must uphold the greatest standards of honesty, integrity, and ethics when performing their job (Alias et al., 2019). This raises the question of whether internal audit processes are guided by ethical, honest, and impartial standards (Alias et al., 2019; Everett & Tremblay, 2014). The IIA Code of Ethics emphasizes the importance of objectivity, honesty, confidentiality, and competence. These

rules were developed to encourage moral conduct and foster a moral culture within the IA profession. The importance of IA performing their work honestly, diligently, and responsibly, as well as refraining from any illegal activity or dishonorable conduct in the internal audit profession or the business, is highlighted in the Ethics Code, for instance. The document states that internal auditors have a responsibility to not use information obtained through their work for personal gain at the expense of the organization's legal and ethical goals, as well as to support legitimate corporate goals and uphold industry ethical standards (IIA, 2009).

Observing the principles of the Code of Ethics is crucial to assuring the trustworthiness of internal auditors' evaluations, so establishing a foundation for trust in their judgment and contributing to the organization's value creation (D'Onza et al., 2015; IIA, 2009). Moeller (2008) also recommended the following IIA Standards, which stress honesty, impartiality, secrecy, and efficiency, to enhance an organization's IAF. However, Eulerich and colleagues (2015) found that ethical, professional internal auditors perform better for their firms.

The role of the chief audit executive (CAE) is crucial in attracting and cultivating talent, improving internal audit effectiveness, and delivering value to the organization (Hoos et al., 2015). A vital characteristic of the CAE is the leadership style (Burnaby et al., 2007). To define a leader's style, terms like "transformational," "transactional," and "laissez-faire" are widely employed (Bass, 1999). Moreover, it creates clear objectives and targets, and outlines the monetary and non-monetary rewards for achieving them (Hargis et al., 2011; Jing & Avery, 2008).

The results of an empirical study by Dal Mas and Barac (2018) show that the CAE leadership style has a big impact on how successful the IAF is. Lenz (2013) asserts that the effectiveness of IA procedures is significantly impacted by the chief audit officer's leadership style. Furthermore, charismatic leadership provokes emotional reactions, inspires vision, and motivates followers to achieve shared objectives via collective action, according to Erasmus and Coetzee (2018).

The support of high management is necessary for the IAF to function efficiently (Ahmad et al., 2009). SMSI

is essential and crucial for creating and activating the IAF and making it possible for the internal auditors to do their duties (Alzeban & Gwilliam, 2014; Dellai & Omri, 2016). A successful IA requires SMSI to recruit, train, and retain knowledgeable and experienced staff members as well as establish relationships with outside auditors (Alzeban & Gwilliam, 2014). According to Cohen and Sayag (2010), all three elements of an effective IAF have a strong relationship with senior management support. Internal audit relies greatly on its ability to communicate with higher management about its resources and reporting routes. According to the sources mentioned by Soh and Martinov-Bennie (2011). According to Endaya and Hanefah (2016), the support of top management for the IAF moderates the association between the internal auditor's expertise and the quality of the audit, making it essential for the success of internal audits. Ahmad et al. discovered that the execution of recommendations from internal audits was significantly impacted by the availability of adequate administrative support for the IAF, including appropriate personnel and financial resources (2009).

When there is little administrative support, auditing is seen as an inconsequential aspect of senior management's agenda, and this creates a negative attitude among the parties being audited (Mihret & Yismaw, 2007). Furthermore, the IAF loses its impartiality and independence if management does not support it. Without management assistance, it is impossible to hire qualified staff and to promote the careers of internal auditors (Dellai & Omri, 2016). Endaya and Hanefah (2016) also discovered that SMSI has a limited influence on this relationship whereas the qualifications of IA have a significant impact. On the other hand, the results of the study by Madawaki et al. (2022) revealed the importance of SMSI as a moderate variable in the relationship between the caliber of the IAF and the caliber of the financial reporting. Based on the foregoing, the following hypotheses are put forward:

- H1: Competence and due professional care of IAF have a significant positive effect on CGE.*
- H2: Independence and objectivity of IAF have a significant positive effect on CGE.*
- H3: Professional ethics of IAF has a significant positive effect on CGE.*

*H4: CAE leadership style has a significant positive effect on CGE.*

*H5a: The association between competency and proper professional care of IAF and CGE is moderated by SMSI for IAF.*

*H5b: The degree of independence and impartiality between IAF and CGE is moderated by SMSI for IAF.*

*H5c: The link between the professional ethics of the IAF and CGE is moderated by SMSI for IAF.*

*H5d: The correlation between the CAE leadership style and CGE is moderated by SMSI for the IAF.*

## 2. METHODOLOGY

### 2.1. Sample

This study involved 16 commercial banks in Yemen, 11 of which were regular banks and 5 were Islamic banks. The research sample consists of the heads and staff of IA, the chairmen and members of AC, CE, and financial, just like in earlier studies of a similar nature (Jachi & Yona, 2019; Oussii & Boulila Taktak, 2018; Vadasi et al., 2020). Moreover, 219 questionnaires were distributed; 174 were returned, 45 were not returned, and 16 were ruled ineligible for analysis. Utilizing the complete number of valid surveys produced a response rate of 158 percent (72 percent). For this investigation, a sample size of  $n = 158$  was deemed appropriate. Men make up the majority of responses (135 out of 158) and 85.4% of all responses. The average age of the respondents is between 31 and 40 for 57 of the total respondents, or 36% of the total respondents. With 40 participants, the 41-50 age group comes in second with 25.5 percent of the total. The statistics show that the lowest participation percentages were among those between the ages of 51 and 60 and those above 60, with 22 and 3 participants, or 14% and 3%, respectively. Only seven of the 158 responders to the survey had more than one year of experience, while the majority (57) had more than 15 years. Also used to evaluate the variables and test the research hypotheses was Smart PLS-SEM 3.3.3.

### 2.2. Measurements

The study's variables are the dependent variable, which is represented by CGE, and the independent factors, which are the IAF's competence and proper professional care, independence and objectivity, professional ethics, and CAE leadership style. Seven items were chosen in accordance with prior research to assess the IAF's professionalism and competency (Kabuye et al., 2017). There are ten factors that can be used to evaluate the IAF's impartiality and independence (Omri 2016; Drogalas et al., 2015; Habib & Jiang 2015). Eight criteria from BCBS (2012), D'Onza et al. (2015), and Eulerich et al. (2015) were also used to evaluate the IAF's professional ethics. The CAE leadership style is assessed using an additional 15 criteria (Dal Mas & Barac, 2018). Four more characteristics were discovered to have been used as stand-ins for corporate governance effectiveness. On a Likert scale of 1 to 5, where 1 denotes a strong disagreement and 5 denotes a strong agreement, all research aspects were scored. This scale was chosen because, according to Dawes (2008) and Krosnick and Fabrigar (1997), it is the best at generating higher mean scores, maintaining the validity of the measuring procedure, and being the most pertinent.

## 3. RESULTS

The hypotheses and variables were checked and evaluated using PLS-SEM 3.3.3. The items' reliability, discriminant validity, and convergent validity have all been verified for each of these research factors. The route coefficients, R2 values, and Q2 values have also been computed. The strength and direction of the intervariable correlations are described by the path coefficients. The R2 value also shows the proportion of the dependent variable's variance that is accounted for by the independent variables. Q2 may also be used to assess the model's capacity for prediction. According to Hair Jr et al. (2016), indicators with external loadings between 40 and 70 percent must be taken out of the measure if doing so causes the average variance extracted (AVE) or coefficient of determination (CR) to rise above a specific limit. 47 parts were kept in the model while six were removed. The outcomes of the study of the structural model and the measurement model are presented in the following sections.

### 3.1. Model for measurement

According to Joseph F. Hair et al. (2014), bigger outer loading factors suggest greater dependability. As demonstrated in Table 1, sex-related items out of a total of 53 were eliminated from the current study because to low outer loading. Furthermore, Cronbach's alpha and composite dependability are two further metrics of data consistency that enable more precise estimates of data consistency. The amount to which each item on a certain (sub)scale measures the same variable is referred to as internal consistency reliability (Sun et al., 2007). The findings of this analysis show that the parts exhibit a high level of internal consistency (Ringle et al., 2017). Chin (1998a) suggested that each latent structure's AVE should be more than 0.50 to achieve satisfactory convergent validity. Table 1 also shows that the IAF's professional ethics AVE test scores were 0.481, which is below the necessary threshold (0.5). The AVE value should be more than 0.5, although 0.4 will do, according to Chin (1998b) and Fornell and Larcker (1981). Because the convergence validity of the notion is still valid if the AVE is less than 0.5 and the composite reliability (CR) is more than 0.6, according to Fornell and Larcker (1981). An overview of the measuring model can be found in Table 1.

To determine how closely the variable measures, relate to one another, discriminative validity was also considered. Assessing how much one particular research variable varies from other variables is the goal of discriminant validity (Madawaki et al., 2022). According to Fornell and Larcker (1981), a given variable's square root of AVE should be higher than the correlations between its latent components in order to have adequate discriminant validity. Since the AVE values for each set of constructs were greater than their squared correlations, it was determined that the data had discriminant validity. The test's discriminant validity may be understood by looking at Table 2's listing of all AVEs above the necessary number. However, it seems that the measurement model is reliable and valid based on the data that has been presented. As a result, we draw the conclusion that additional studies can make use of the measuring technique that was used in this inquiry.

**Table 1.** Test of convergent validity, reliability, and loadings Cronbach's Alpha

Variables	Items	loading	Cronbach's alpha	CR	AVE
CG Effectiveness (CGE)	CGE.1	0.898	0.865	0.908	0.713
	CGE.2	0.868			
	CGE.3	0.780			
	CGE.4	0.827			
CAE Leadership Style (CLS)	CLS.1	0.735	0.931	0.940	0.528
	CLS.10	0.684			
	CLS.11	0.735			
	CLS.12	0.701			
	CLS.13	0.792			
	CLS.14	0.743			
	CLS.15	0.775			
	CLS.2	0.75			
	CLS.3	0.693			
	CLS.4	0.693			
	CLS.5	0.756			
	CLS.6	0.733			
	CLS.7	0.663			
CLS.8	0.708				
Competence and due professional care of IAF (CPCI)	CPCI.1	0.796	0.906	0.926	0.642
	CPCI.2	0.704			
	CPCI.3	0.844			
	CPCI.4	0.737			
	CPCI.5	0.827			
	CPCI.6	0.826			
	CPCI.7	0.859			
Independence and Objectivity of the IAF (INOI)	INOI.1	0.667	0.832	0.874	0.500
	INOI.10	0.64			
	INOI.2	0.662			
	INOI.3	0.755			
	INOI.6	0.763			
	INOI.7	0.748			
	INOI.9	0.701			
Professional Ethics of IAF (PEI)	PEI.1	0.748	0.844	0.88	0.481
	PEI.2	0.617			
	PEI.3	0.704			
	PEI.4	0.562			
	PEI.6	0.691			
	PEI.7	0.73			
	PEI.8	0.696			
	PEI.9	0.777			
	PEI.5	0.696			
Senior Management Support for IAF (SMSI)	SMSI.1	0.778	0.902	0.922	0.63
	SMSI.2	0.687			
	SMSI.3	0.839			
	SMSI.4	0.729			
	SMSI.5	0.813			
	SMSI.6	0.826			
	SMSI.7	0.867			

**Table 2.** The AVE square root

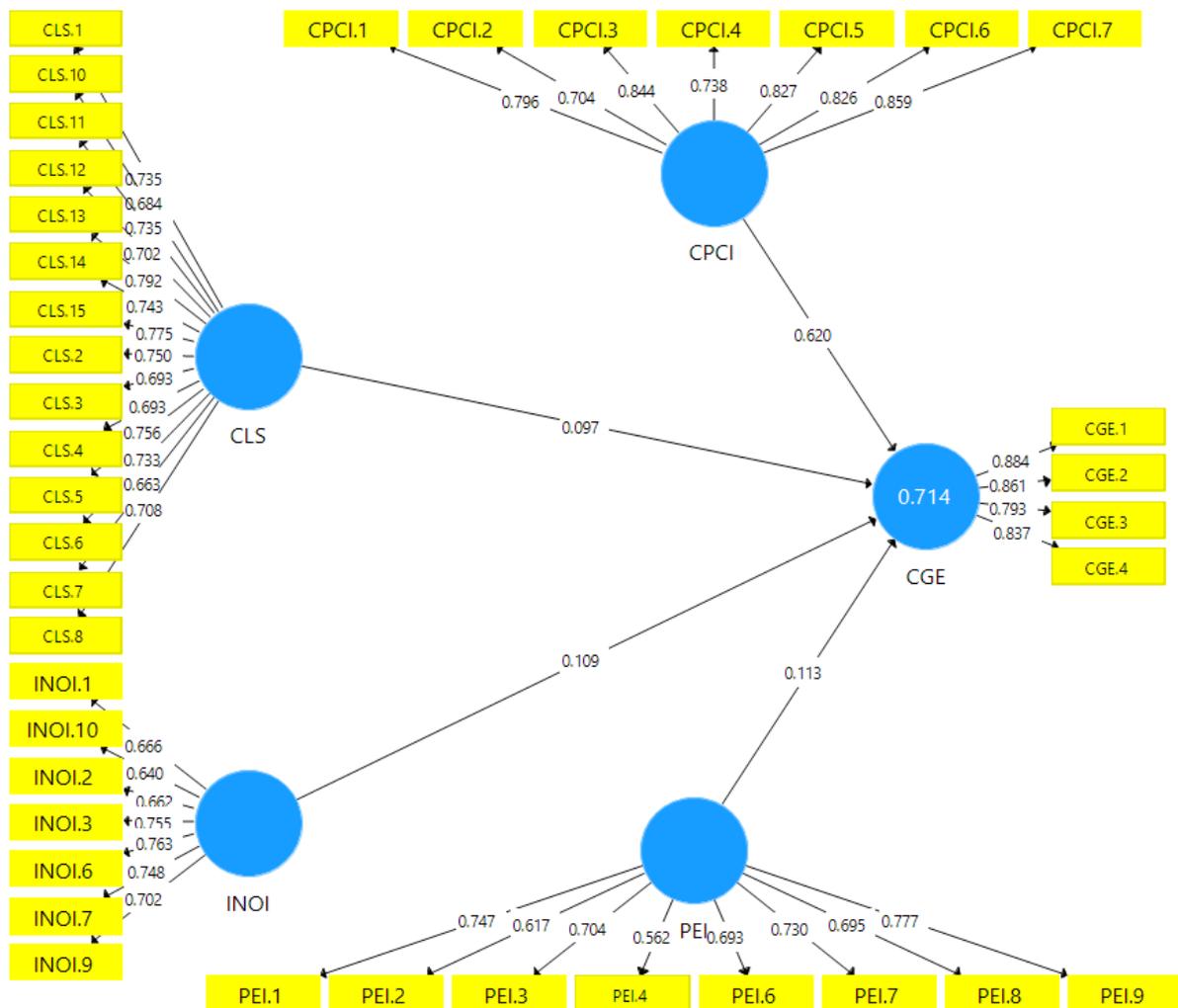
Variables	CGE	CLS	CPCI	INOI	PEI	SMSI
CGE	0.845	–	–	–	–	–
CLS	0.677	0.727	–	–	–	–
CPCI	0.721	0.677	0.811	–	–	–
INOI	0.648	0.762	0.643	0.787	–	–
PEI	0.603	0.667	0.583	0.576	0.694	–
SMSI	0.672	0.703	0.612	0.668	0.610	0.878

Note: CGE = corporate governance effectiveness; CLS = CAE Leadership Style; CPCI = competence and due professional care of IAF; PEI = Professional Ethics of IAF; SMSI = Senior Management Support for IAF.

### 3.2. Structural model

The structural model examines the study hypotheses and determines the link between the research variables using the PLS technique. The path coefficients indicate the strength and direction of the correlations, while the t-statistics and standard errors show the amount of the effect, when t-statistics, path coefficients, and R2,

Q2 values are formed. The R2 value showed how the independent variables contributed to the variation in the dependent variable. Variables connected to the dependent variables must be different in order for the suggested model to adequately explain the data. Q2 may be used to assess a model’s predictive ability by seeing if it can accurately anticipate data that wasn’t utilized to create its parameters.



**Figure 1.** Structural model with path coefficient (R<sup>2</sup>)

The proposed framework explains around 714 percent of the variation in the CGE, according to the R2 values determined from the study's conclusions. In other words, independent variables can explain about 71% of the variance in CGE, proving that the proposed framework offers a sufficient level of justification (Chin, 1998b). Figure 1 displays the R2 value. The Q2 values obtained from blindfolded results with an omission distance of 7 were also much higher than the zero and positive values suggested by Chin (1998b). As a result, the suggested model's explanatory power and predictive utility are both appropriate in this context. Table 3 lists the outcomes.

**Table 3.** Cross-validated construct redundancy

Variables	SSO	SSE	Q <sup>2</sup> (= 1 – SSE/SSO)
Corporate Governance Effectiveness	632.000	320.129	0.493

The study tested the importance of route coefficients using 2,000 bootstrapping procedures. The study applied the bootstrapping approach to empirically evaluate the expected connections for the path topology. The t-values and path coefficients for each association are displayed in Table 4. The link between IAF competency and due professional care and CGE is shown in the table to be positive and statistically significant ( $B = 0.620$ ;  $t = 8.634$ ;  $p 0.01$ ), indicating that if IAF competency and due professional care grew, CGE would follow; hence, H1 is true. The efficacy of corporate governance and the independence and objectivity of the IAF had a positive and statistically significant association ( $B = 0.109$ ;  $t = 1.677$ ;  $p 0.05$ ), indicating that if IAF independence and objectivity increased, so would CGE. Consequently, H2 is accepted. The association between IAF professional ethics and CGE is shown to be positive and statistically significant in the table ( $B = 0.113$ ;  $t = 1.648$ ;  $p 0.05$ ), suggesting that if IAF professional ethics improve, CGE will follow suit. Therefore, H3 is approved. The connection between CAE Leadership

Style and CGE was negative and showed no improvement if CAE Leadership Style improved ( $B = 0.097$ ;  $t = 1.108$ ;  $p 0.134$ ), although not being statistically significant. H4 was therefore ignored. The conclusions reached after testing the hypotheses are shown in Table 4.

An interaction effect between SMSI and the independent factors with regard to the dependent variable was discovered as part of the investigation into how SMSI acts as a moderator. To analyze the model, 2,000 bootstrapping procedures were employed. P-values and a significance threshold of 5% were used to determine the significance of the hypotheses (One-tail). It is anticipated that an increase in SMSI will lead to a better CGE for the IAF quality determinants, as shown in H5a-H5d. The null hypothesis H5a is accepted since the P-values for the interaction between CAE Leadership Style and SMSI are significant ( $B = -0.154$ , t-values = 1.969,  $p 0.025$ ). Additionally, the p-values of the interaction between SMSI and the IAF's professional skill and competence are favorable and statistically significant ( $B = 0.153$ , t-values = 2.228,  $p 0.013$ ; Table 2). This enhances SMSI's moderating role, which aims to strengthen the link between CGE competence and care and IAF competency and appropriate professional care. According to this study, a greater SMSI strengthens the link between professional care and IAF and CGE competency.

The p-value for the interaction effect of SMSI and IAF independence and objectivity on CGE ( $b = 0.041$ , t-values = 0.567,  $p 0.285$ ) is neither positive nor significant. In other words, the SMSI has no bearing on how the IAF and CGE operate in terms of their independence and impartiality. Additionally, the results of evaluating the moderating influence of SMSI on the relationship between the professional ethics of the IAF and CGE do not demonstrate a statistically significant positive connection with p-values of ( $b = 0.042$ , t-values = 1.254,  $p 0.105$ ). In other words, IAF professional ethics have less of an impact on CGE when

**Table 4.** Hypothesis testing using path coefficient

Hypotheses	Relations	Path coefficient	Std. error	T-value	P-Value	Decision
H1	CPCI → CGE	0.620	0.072	8.634	0.000	Supported
H2	INOI → CGE	0.109	0.065	1.677	0.047	Supported
H3	PEI → CGE	0.113	0.069	1.648	0.05	Supported
H4	CLS → CGE	0.097	0.087	1.108	0.134	Non-supported

**Table 5.** Results of the moderator interaction model's hypothesis testing

Hypotheses	Variables	Beta	STDEV	T-value	P-Value	Decision
H5a	SMSI – CPCI	0.153	0.069	2.228	0.013	Supported
H5b	SMSI – INOI	0.041	0.073	0.567	0.285	Non-supported
H5c	SMSI – PEI	0.042	0.034	1.254	0.105	Non-supported
H5d	SMSI – CLS	-0.154	0.078	1.969	0.025	Supported

SMSI is strong. The inclusion of the interaction effects also results in a rise in the R<sup>2</sup>, from 0.714 to 0.829. The f<sup>2</sup> test was performed to determine if it was a good idea to include the interaction effect in the model. The R<sup>2</sup>s of the major impacts and the interaction model were calculated using the Cohen (1988) effect size formula, which reads as follows:  $f^2 = [(R^2 \text{ interaction model} \cdot R^2 \text{ direct model}) / (1 - R^2 \text{ of the direct model})]$ . The interaction model's f<sup>2</sup> is therefore equivalent to  $(0.829 \cdot 0.714) / (1 - 0.714) = 0.402$ . When the interaction for a f<sup>2</sup> is 0.35, 0.15, or 0.02, respectively, it is classified as big, moderate, and microscopic (Cohen, 1988). The interaction f<sup>2</sup> is important in the current inquiry. Table 5 presents a complete summary of the study's findings.

## 4. DISCUSSION

IAF professionalism and expertise have a significant and positive impact on CGE. The first research examined the effects of IAF professionalism and competence, objectivity and independence, professional ethics, CAE leadership style, and CGE. Yemeni commercial banks. According to research, the first factor – IAF competency and proper professional care – has a positive and significant impact on CGE. The results are consistent with the idea that enhanced CGE results from greater professionalism and competence. This discovery thus validates H1. This result supports the agency theory's presumption that IAF professionalism and competence within an organization may increase CG. The results of this study are in line with past studies linking CGE, professional skill, and care. Vadasi et al. (2020), for instance, claim that there is a positive correlation between the CG and internal auditing ability. The IAF aids in enhancing the CG in firms when internal auditors hold professional certifications and the IAF adheres to internal audit standards. In a similar vein, Oussii and Boulila Taktak (2018) found that internal control quality and IAF competency had

a sizable positive association. This conclusion, however, conflicts with that of Madawaki et al. (2022) investigation, which discovered a discrepancy between the effectiveness of internal auditing and the caliber of financial reports. Similar to this, Abbott et al. (2016) noted that the existence of both competency and independence can improve financial reporting monitoring, as opposed to only an IAF's competency. The results of this study thus support the idea that professionalism and competence will undoubtedly enhance CGE in the context of Yemeni commercial banks.

Because it shows that the second element, namely the independence and impartiality of IAF, has a positive and significant influence on CGE, the data is in favor of hypothesis H2. This finding corroborates the agency theory's assertion that the impartiality and independence of IAF inside an organization might raise the value of CG. In a previous study, conducted by Fadzil et al. (2005), it was demonstrated that there was a strong and positive correlation between the effectiveness of the internal control system and the objectivity of the internal auditor. These results confirm that conclusion. The findings of the study are in line with those of the Hazami-Ammar (2019) study, which highlighted the importance of the IAF's independence and objectivity and found a positive correlation between those qualities and the decision to start a self-investigation into fraud and violations. Additionally, D'Onza et al. (2015) discovered a strong and positive association between the IAF's objectivity, independence, and capacity to create value. In accordance with further studies, the impartiality and independence of the IAF are essential to the CG process because they improve internal auditors' capacity to alert the AC to issues and enable the CG to carry out its tasks more effectively (Scarborough et al., 1998; Chambers & Odar, 2015). The results of this study do not agree with those of Oussii & Boulila Taktak (2018), who found no connection between the independence of the IAF and the number of serious internal

control issues identified by the IAF. Additionally, according to Madawaki et al. (2022), there is no connection between the dependability of financial reporting and the independence of internal auditing institutions.

The final component of the study's findings, the IAF's professional ethics, shows a high and favorable correlation between the IAF's professional ethics and the efficacy of CG. *H3* is therefore recommended. This result is congruent with what was discovered in earlier research. According to Eulerich et al. (2015), the effectiveness and efficiency of CG as a whole are increased by internal auditors' adherence to the code of ethics and professional standards. The results of this study support those of an earlier study by Al-Yazidi et al. (2022), which found a positive connection between the effectiveness of corporate governance and the effectiveness of professional ethics. D'Onza et al. (2015) found a significant correlation between the IAF's capacity to provide value and auditors' adherence to the IIA Code of Ethics. However, a recent study (Jachi & Yona, 2019) found a favorable relationship between IAF ethics and transparency and accountability, which raises CG. Internal auditors are required by the Basel Committee on Banking Supervision (BCBS, 2012) to maintain the confidentiality of any information they get while doing their duties and abstain from using it for their own benefit or nefarious purposes. To increase the efficacy of corporate governance, internal auditors – especially the Chief Internal Auditor – must avoid conflicts of interest. The fourth component, CAE leadership style, has a negative and limited influence on the CGE, according to the data, hence hypothesis (*H4*) is not supported. This finding differs from that of Martino et al. (2021), who discovered a high and positive relationship between CAE leadership skills and IAF involvement in CG missions. This study disproves the idea that CAEs with good leadership abilities enable the IAF to advance from a supporting position to a crucial one in the development of CG processes. According to

the findings of a different survey (Burnaby et al., 2007), the capacity to lead is one of the most important skills a chief audit officer should have.

Using a moderator effect model, this study examined the potential moderating effects of SMSI on the relationships between IAF independence and objectivity, IAF professional ethics, IAF independence and objectivity, CAE Leadership Style, and CGE in Yemeni commercial banks. These results led the current study to formulate (*H5a-H5d*) linked to moderation effects hypotheses. The *H5a* and *H5d* hypotheses are well supported by the results of the moderating effects model. SMSI, IAF professionalism, competence, and adequate care (*H5a*), as well as CAE Leadership Style (*H5a*), have a very positive and significant moderating effect. Therefore, any rise in SMSI will also result in an improvement in the effectiveness of IAF and CAE Leadership Style in terms of CGE competency and appropriate professional care. According to the moderator effect model, we looked at how SMSI affected the relationships between IAF independence and objectivity, IAF professional ethics, CAE leadership style, and CGE in Yemeni commercial banks. These results led the current investigation to suggest (*H5a-H5d*) connected to moderating effects. The *H5a* and *H5d* hypotheses are highly supported by the results of the moderation effects model. The moderator effect is positive and significant for SMSI, IAF competence and professional care (*H5a*), and CAE Leadership Style (*H5d*). Any improvement in SMSI will therefore have a positive impact on CGE by increasing the effectiveness of IAF and CAE leadership capability and the required professional care. The results refute hypotheses *H5b* and *H5c*, which predicted SMSI would have a moderating impact on the associations between IAF's competence and the provision of adequate professional care, CAE Leadership Style, and CGE. Due to the IAF and CAE Leadership Style's professionalism and competency, an increase in SMSI will not have a favorable effect on CGE.

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## CONCLUSION

This study's major goal is to look at how IAF quality and CGE in emerging economies are related to one another. Using data from Yemen, it was determined how the CGE related to four IAF traits (competence and appropriate professional care, independence and objectivity, professional ethics, and CAE

leadership style). Investigated was SMSI's effect on the moderating relationship. The elements affecting a bank's IAF quality are thought to have an effect on the CGE. The empirical findings demonstrate a substantial and positive relationship between CGE in Yemeni commercial banks and the elements influencing IAF quality. The findings indicate a statistically significant positive relationship between CGE and IAF professionalism, independence, and objectivity. The recent study has shown how important IAF's impartiality, neutrality, and professionalism are to advancing CGE.

The findings of this study provide a number of important contributions. This study contributes to the body of research supporting the relationship between effective corporate governance and high-quality IAF. It highlights the significance of IAF traits and how they may improve corporate governance. This study demonstrates that CGE is likely to improve with professional internal auditors who are familiar with on-premises transaction systems, have a lot of professional experience, and receive regular training, especially when it comes to the proficiency and proper professional care of IAF. According to the study's findings, internal auditors are better able to improve CGE if they have freedom in reporting, access to all departments, enough independence to carry out their duties and responsibilities, and channels of communication with the audit committee or the board of directors. This is related to the independence and objectivity of IAF. Additionally, it was shown that CGE is more likely to improve when internal auditors are real, authentic, and transparent, respect the privacy of the information they get, avoid engaging in conflicts of interest, and have the capacity to spot unethical activity when it occurs. According to the study's findings, SMSI will also boost the IAF's professionalism and competency as well as the CAE leadership style's contribution to CGE.

The findings of this study are critical for policymakers like the Central Bank of Yemen because they highlight how important it is for internal auditors to possess the required professional credentials and certifications, as well as how important it is to continuously train them and give them the necessary training in bank transaction systems. The internal auditors must furthermore have access to all bank divisions and staff, be given enough independence and reporting flexibility, and be required to regularly meet with the bank's audit committee. Additionally, it is crucial to encourage and support internal auditors in their attempts to conduct business ethically, protect the privacy of customer information, and disclose any potentially unethical activity within the bank. The corporate governance framework is strengthened as a result. This study has significant limitations that should be taken into account when interpreting the findings. First off, the fact that this study ignored Yemen's other economic sectors in favor of focusing just on the banking industry forces the remaining academics to examine other sectors in their subsequent studies. Second, information for this investigation was gathered via a questionnaire. Because respondents could get bored or be unwilling to finish a survey if they think it will take too long, this technique may have problems, such as low response rates and the possibility of bias. Some respondents may provide incorrect information in an effort to emphasize the IAF's success in their organizations. As a result, it would be highly advantageous to use a different data collection technique in future investigations. Finally, IAF may incorporate other elements that are not part of the model but that might assist businesses increase their effectiveness and efficiency in corporate governance. Future research may thus take into account additional IAF traits that might enhance CGE.

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