University of Economics in Katowice

Journal of Economics and Management

e-ISSN 2719-9975 ISSN 1732-1948 Vol. 46 • 2024

sciendo

Mawih Kareem Al Ani ✉

https://orcid.org/0000-0002-3288-175X

Accounting Department
Dhofar University, Salalah, Oman
mawih@fdu.edu.om

H Gin Chong

https://orcid.org/0000-0003-3119-4867

Finance and MIS
Prairie View A&M University
Prairie View, Texas, USA
hgchong@pvamu.edu

Omar Ikbal Tawfik

https://orcid.org/0000-0003-0904-2373

Accounting Department
Dhofar University, Salalah, Oman
otawfik@du.edu.om

Who should select the external auditor in emerging economies? Role of institutional ownership and family ownership

Accepted by Editor Ewa Ziemba | Received: January 28, 2024 | Revised: June 10, 2024; July 23, 2024; August 15, 2024 | Accepted: August 18, 2024 | Published: September 16, 2024.

Abstract

Aim/purpose – This study reports the demand for Big 4 audits among institutional and family owners, the two dominant ownerships in the GCC countries. We conducted this in-depth study to gain an understanding of the type of firms, family-owned or institutional-owned firms that lead to choosing audit firms.

Design/methodology/approach – This study employed a quantitative cross-country study by selecting a sample based on secondary data extracted from the Capital IQ data--set from a panel of 1827 non-financial firms listed on the stock exchanges of the Gulf Cooperation Council (GCC) countries from 2010 to 2018. The hypothesized effects of institutional ownership (IO) and family ownership (FO) on the selection of external auditors in these countries were examined using logit, probit, and heteroskedastic probit analysis.

Cite as: Al Ani, M. K., Chong, G. H, & Tawfik, I. O. (2024). Who should select the external auditor in emerging economies? Role of institutional ownership and family ownership. *Journal of Economics & Management*, *46*, 300-330. https://doi.org/10.22367/jem.2024.46.12

Findings – The study finds that institutional investors play a crucial role in influencing firms' choice of auditors in the GCC. Family-owned firms tend to hire non-Big 4 firms when the owners actively monitor the firms' financial transactions. In addition, the study finds that both domestic and foreign institutional investors have a significant positive effect on auditor selection, with domestic institutional investors having priority. These findings support the efforts of market authorities in the GCC to highlight the critical role of IO over FO in improving audit quality.
Research implications/limitations – The results are highly relevant for shareholders, executives, institutional investors, regulators, and academics. They help them improve the growth of capital and audit markets by developing best practices, thereby helping achieve an optimal framework for auditor choice that matches higher audit quality. This study focuses on only two types of ownership structures (institution and family) despite the many options because of the extensive debates and discussions on the association between the studied ownership types and auditor choice.
Originality/value/contribution – Study highlighted the role of institutional investors in GCC countries as one of the most attractive emerging economies in the Middle East. Since no research has been conducted on the role of institutional and family investors in selecting external auditors in GCC countries, this study has made a significant contribution to the accounting and auditing literature. It mitigates the gap in the literature on emerging markets. The findings can provide policymakers with guidelines for including institutional investors and FO in GCC countries to ensure high-quality audits.

Keywords: institutional ownership (IO), family ownership (FO), auditor choice, Gulf Cooperation Council, emerging economies.
JEL Classification: G23, G32, D10, M42.

1. Introduction

Institutional investors play a crucial role in the capital market, market trends, and corporate governance in developed and emerging economies (Davis & García-Cestona, 2023). They have significant influences on the firms' stock prices (Huyghebaert & Van Hulle, 2004), CEOs' pension plans (Mo et al., 2019), financial stability, and firms' long-term economic, development, and sustainability growth (Krišto et al., 2014).

Dong et al. (2022) find that institutional investors tend to rely on high audit quality to avoid the probability of misstatements and thus are willing to pay higher audit fees. Sulimany et al. (2024) found a positive and significant association between institutional-owned firms (IO) and a high level of audit quality.

However, a family-owned (FO) firm is a business unit with two or more family members involved. The majority of ownership or control lies within a family, or the majority of decision-making rights are in the possession of the natural person(s) who established the firm (Andersson et al., 2018). Members of

the family tend to monitor the firm's financial affairs and internal control closely, publish a higher quality of financial information (Cascino et al., 2010; Jadoon et al., 2021), and hire auditors who would assure members of the firm of its control system and quality of the financial report (Lei & Song, 2011). However, there is a lack of concerted results on correlations between institutional-owned and family-owned firms on their auditors' choice, particularly in emerging economies.

Extant literature on the choice of auditors amongst institutional entities and family-owned entities is from the West; little do we know about these among emerging economies due to a lack of accessibility of data from this region. According to Al-Janadi (2021) and Martinez-Garcia et al. (2022), there is a growing trend of increasing institutional ownership (IO) in GCC companies, which poses a challenge to the family ownership (FO) model and may affect the demand for Big 4 audit firms. In order to respond to the shift towards IO, most firms have started to increase the percentage of IO, as firms widely accept institutional investors. Despite the importance of institutional and FO for GCC companies, their various effects have not been carefully studied in the area of auditor selection. However, to our knowledge, the relationship between IO and FO audit quality has not yet been investigated. The present study aims to fill this gap by examining the relationship between IO and FO and auditor selection in GCC countries.

There are some motivations beyond increasing IO in GCC countries. First, as all GCC countries try to move away from an oil and gas economy, they found that institutional investment might be a good option to increase economic diversification. Second, GCC countries have introduced their own corporate governance codes to enhance the social and regulatory environments; this is to attract more investors by encouraging transparency, protecting the investors, and voluntary disclosure (Sartawi, 2018). Third, the GCC capital market is a new market for most investors. Therefore, investors prefer to invest their funds through institutional investors rather than individual investors to receive more protection. Four, some prior studies (e.g., Alam & Masoom, 2016; Alshammary, 2014; Guizani & Abdalkrim, 2022) asserted that the players inside GCC capital markets (including institutional investors, which accounted for around 18% of the total ownership during the period of this study) have a positive effect on GDP in these countries. Finally, most of the prior studies have examined the impact of ownership structures on audit quality in GCC countries individually, for example, in Oman (Al Lawati & Sanad, 2023), in Saudi Arabia (Fallatah et al., 2021).

However, only some studies have collectively examined ownership structures' impact on audit quality in GCC countries. For instance, Guizani and Abdalkrim (2021) and Guizani and Abdalkrim (2022) examined the role of board independence in determining the relationship between firm ownership and auditor choice.

This study reports the demand for Big 4 audits among institutional and family owners. This study examined two ownership structures in the GCC countries: institutional and family, as the companies are mainly controlled by the state or families, the ownership structure is highly concentrated, and pyramid structures are common in the region. However, Martinez-Garcia et al. (2022) pointed out that much emphasis is placed on the institutional structure in line with the vision of these countries to attract more investment by introducing investor protection regulations and increasing the transparency of financial reports (due to missing data, this study did not examine the state ownership structure. In addition, in some countries such as Oman, the state ownership is a part of IO). We conducted this in-depth study to gain an understanding of the type of firms, that is FO and IO firms, that lead to choosing the audit firms.

Our study is uniquely focused on the Gulf Cooperation Council (GCC) countries, which comprise six countries – Saudi Arabia, Kuwait, the United Arab Emirates, Qatar, Bahrain, and Oman. This focus is due to the increasing volume and range of institutional investments in GCC over the past few decades and reductions in international trade barriers. For example, all GCC countries are members of the Greater Arab Free Trade Area (GAFTA) and of the World Trade Organization (WTO), which allows the internationalization of GCC firms (Siriopoulos et al., 2021). In GCC countries, family-owned businesses remain the key players in economic growth, and collectively generate approximately 80% of the GCC's gross domestic product (GDP) outside the energy sector (Aljaaidi, 2013). For survival and growth, these family-owned businesses need constant flows of external finance. Stakeholders, in particular lenders, will lend support provided firms have chosen Big 4 for their assurance services due to Big 4's reputations, branding, and resources in ensuring the auditees comply with the governance policies and reliability of its internal control systems (Corten et al., 2018).

The remainder of this paper is structured as follows. The second section reviews the previous literature and develops our hypotheses. The third section addresses the empirical method. The fourth section presents the empirical findings, and section five discusses the results. The final section summarizes the closing remarks.

2. Literature review

Consistent with the role of high-quality audits in reducing information asymmetry, the demand for high-quality audits arises from the need for independent external monitoring on behalf of shareholders and other stakeholders who have a direct interest in the company's performance (Kusumaningtyas et al., 2019). The demand for branded audit quality is evidenced universally for several reasons, such as improving the quality of financial reporting, protecting the reputational capital of shareholders (Alexeyeva, 2023) and investments in firms with more diverse ownerships (Karkacıer & Ertaş, 2017). However, branded audit quality is required when auditors and specific stakeholders demand it (Alhababsah & Yekini, 2021).

2.1. Institutional ownership and auditor choice

Institutional investors influence firms' corporate and investment decisions, including choosing an external auditor and ensuring firms invest in assurance services for monitoring the internal control systems, financial compliance, and reliability of firms' financial reporting. Institutional investors are sensitive to any undesirable results that may impact their investment decisions and results. Kim et al. (2019) found an adverse relationship between a firm's level of information asymmetry and investment returns. If the level of information asymmetry is high, returns on investments are at a higher risk. With this, Kim et al. (2019) established that international institutional investors tend to invest in larger markets with well-organized firms, instituted with active investors' protection requirements, robust accounting and disclosure standards, and high audit quality. Belcredi et al. (2017) concluded that institutional investors do not have incentives to invest in companies with more concentrated ownership structures, as they found a negative correlation with concentrated ownership structures. They pinpointed that institutional investors in Italy prefer to rely on shareholder control mechanisms to monitor concentrated ownership structures, such as managerial ownership. Guizani and Abdalkrim (2021), and Ananda et al. (2022) disclosed that IO is one of the ownership structures that affect audit quality as they have the power to exercise control over managers. Rahman et al. (2023) observed that agency conflicts lead to demand for quality audits because agency theory posits that the principal (stakeholder) and the agent (manager) have their own self-interest agenda, which leads to information asymmetry between them

and creates an amoral hazard problem. Principals and agents could reduce the moral hazard by aligning their interests by hiring a reliable external auditor to provide an independent and reliable audit report. The audit report should reveal significant financial and non-financial issues that may implicate a firm's going concern, compromises in the internal control system, and reporting mechanism (Delaney, 2009). Fan and Wong (2002) indicated that a firm with amoral hazards between owners and outsiders is likely to recruit a high-quality audit firm as a mechanism to ward off conflicts, reduce agency costs with the owners (Han et al., 2013) to constrain managerial opportunism and to induce firms making decisions to maximize shareholder wealth.

The discussions indicate that institutional investors are more likely to recruit a high-quality audit firm in exchange for the credibility and reliability of the financial statements. Based on this, we hypothesized that a close relationship exists between firms that have large IO and tend to use Big 4 auditors as proxies for their audit quality and reporting.

H1: A positive association exists between IO and the likelihood of recruiting a Big 4 auditor.

2.2. Family ownership and auditor choice

Hussain and Safdar (2018) defined FO as a small group of family members who control firm's shareholdings or bond holdings. Andreu et al. (2020) defined FO as the percentage owned by family members and by the degree of control of the management. Ho and Kang (2013) revealed that family owners are uniquely positioned to exert influence and monitor the firm's operations. Lei and Lam (2018) explored how family members make decisions on the firms' operations, including appointments of external auditors. Ho and Kang (2013) observed two distinct rationales for FO firms in their choice of auditors. First, it arises due to information asymmetry and conflicts of interest between managers and investors (Healy & Palepu, 2001). Both Carey et al. (2000) and Lei and Lam (2018) supported the notion that family firms tend to have a less severe agency problem between managers and owners and, thus, have a lower demand for high-quality auditors. Khan et al. (2015) concluded a similar scenario for listed Bangladeshi firms that are dominated by FOs that recruit auditors of lower quality and are willing to accept lower audit compensation. Second, family firms may have incentives to recruit high-quality auditors to increase the credibility of their financial statements and gain additional benefits such as a lower cost of capital (Fan

& Wong, 2005) and a projection on the reliability of their financial information. Ho and Kang (2013) stipulated that firms appoint Big 4 audit firms because these firms have relatively adequate resources and capabilities in providing quality assurance services and reports and for the auditors to vanguard their branding and reputations compared to their non-Big 4 counterparts. Meah and Hossain (2023) found that FO is less quality auditing friendly and allows foreign shareholding, corporate institutions, and director's ownership to have less effect on selecting quality auditors than non-family firms. The discussion indicates that family investors are more likely to recruit a non-Big 4 audit firm in exchange for the credibility and reliability of the financial statements. We developed the following hypothesis that family-owned firms tend to use services provided by non-Big 4 audit firms for cost savings. After all, they play vital managerial roles in monitoring the firm's daily operations and decision-making processes. In addition, the audit reports are for internal circulation among the family members, and no major external stakeholders may review and question the family-owned firms' control systems.

H2: A negative association exists between FO and the likelihood of recruiting a Big 4 auditor.

3. Research methods and procedure

To achieve the objectives of the present study, we conducted quantitative cross--country research on leading companies operating in GCC countries, including Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates. The methodological procedures started with sample selection, data collection, and definition of the study's variables, which are used to build the study's model.

3.1. Sample size and data collection

Table 1 presents the research sample comprising all listed non-financial firms in the GCC countries. Due to the significant similarities among these six countries regarding economy, political conditions, and social status, we analyze the data in one bulk. The study sample was collected from the Capital IQ from 2010 to 2018. All financial and banking firms were excluded from our sample because they have different characteristics and regulations. Furthermore, the study excluded some firms due to missing data and firms under liquidation. The final sample of country and firm observations is shown in Table 1.

Table 1. Sample distribution by country

Item	KSA	OMN	QAT	BAH	KUW	UAE	Total
Total listed firms (1)	171	107	43	42	173	147	683
Financial firms (2)	50	31	17	24	118	86	326
Non-financial firms 3 (1-2)	121	76	26	18	55	61	357
Firms with losses (4)	4	0	0	0	11	0	15
Firms with missing data (5)	39	10	12	9	35	34	139
Number of firms with complete data 6 (3-4-5)	78	66	14	9	9	27	203
Number of observations (9 years)	702	594	126	81	81	243	1827

Note: KSA= Kingdom of Saudi Arabia, OMN = Oman, QAT = Qatar, BAH = Bahrain, KUW = Kuwait, UAE = United Arab Emirates.

Source: Based on data from the Capital IQ database, after: Al Ani (2020).

3.2. Variables of the study

Table 2 shows the variables of the study. Auditor choice: Audit quality is very difficult to observe, and this study uses the audit firm's size or reputation as a measure of audit quality, as described by DeAngelo (1981). Big audit firms are perceived to have these two characteristics, and this work consequently uses the Big N audit firms as a measure for high-quality auditors. In line with previous literature, the Big 4 audit firms are classified herein as an indicator variable equivalent to one if a client uses a Big 4 audit firm and zero otherwise (Gu, 2021). For auditor choice, there are several measures: Big 4 versus non-Big 4 (Han et al., 2013; Sulimany, 2024), size of audit fees (Ho & Kang, 2013; Harymawan et al., 2021; Rahman et al., 2023), issuance of modified audit reports (Abid et al., 2018) and audit litigation (DeFond & Zhang, 2014; Agus & Ghozali, 2019). Firms select their auditors based on the reputations and branding of the auditors. DeFond and Zhang (2014), Ho and Kang (2013), and Rahman et al. (2023) stipulated that agency costs and the extent of information asymmetry lead to auditees determining the choice of auditors. On top of this, those auditees who need constant demand for monitoring their financial affairs and control systems tend to choose Big 4 or high-quality local audit firms (Francis et al., 2004) based on the audit firms' reputations and branding (Suhardi et al., 2024). The study measures institutional investors controlling IO firms based on the proportion of stocks (Kim et al., 2019) and FO firms by the percentage of stocks held by family members (Ho & Kang, 2013).

This study draws on the existing literature to identify and control various firm characteristics that may influence the auditor's choices (Ferreira & Matos, 2008; Francis et al., 1999; Guedhami et al., 2014). Precisely, this work controls for firm size (*S*), age (*A*), risk (*R*), profitability (ROA), and complexity (COMP). These five variables were used in prior studies to measure the size and complexity of a firm, and these features affect the level of effort that an auditor channels into producing a desired level of audit quality. Specifically, firm size (*Size*) is defined as the log of year-end total assets in thousands of the currency of each GCC country. Given the differences in the GCC currencies, this study takes the natural log of tangible assets.

According to Audousset-Coulier et al. (2016), age is one of the determinants of audit quality. They concluded that older companies hire high-quality audit firms. Younger firms face many threats which create many types of risk. In terms of auditing, this study expects younger (older) companies to hire auditors of lower (higher) quality.

Moreover, Table 2 presents the control variables. This study controls for risk or *Leverage* (R). *Risk* is measured as the ratio of year-end debts to equity. As described by Kim et al. (2019) and Abadi et al. (2019), leverage has a positive association with audit quality. Firms with more (less) leverage or risk are incentivized to recruit a high (low) quality auditor to ensure the credibility of financial statements. Ye (2020) found that complexity affects the audit process differently.

Table 2. Summary of the variables and measurements

Variables	Abbreviation	Measurement	Reference
Independent variables			
Institutional ownership	IO	percentage of shares (end-of-year) held by institutional investors	Kim et al. (2019)
Family ownership	FO	percentage of shares (end-of-year) held by family investors	Ho and Kang (2013)
Dependent variable			
Auditor choice	BIG 4 (non-big 4)	1 if Big 4 audit firm or 0 if non-Big 4 audit firm	Nizam et al. (2021); Gu (2021)
Control variables			
Size	S	Total Assets of the firm (Algorithm of total assets)	
Leverage(Risk)	R	Debts/Equity	
Age	A	Number of Years since the establishment of the firm (Algorithm of age)	
Complexity	COMP	Natural logarithm of inventory and receivables/ total assets	
Return on assets	ROA	Net Income/Total assets	

3.3. Model specification

This study constructs the following models for assessing the effect of IO and FO on auditor choice (Big 4-auditor firms):

$$\text{BIG } 4_{it} = \alpha_{it} + \beta 1\text{IO}_{it} + \beta 2\text{FO}_{it} + \beta 3\text{S}_{it} + \beta 4\text{AGE}_{it} + \beta 5\text{R}_{it} + + \beta 6\text{COMP}_{it} + + \beta 7\text{ROA}_{it} + \epsilon_{it} \quad (1)$$

This work has also considered the following elements to account for any unaccountable variables and constraints:

α_{it} = Constant,

β = Beta,

ε_{it} = Error term,

i^{th} = Firm,

t^{th} = Period.

Using STATA 16, a classification logit regression model is applied here to assess the effect of IO and FO on auditor choice (Big 4 auditor firms) across countries and all the 1827 firm-year observations. The classification logit regression model helps identify changes or variations in the values of any variables, including dependent (auditor choice) or independent (IO and FO) variables because of control variables (size, risk, age, profitability, and complexity). The dependent variable is a linear function of the independent variables, and these features will reveal the extent of interplays between the three variables. Logit regression and probit regression are used to predict the probability that an observation falls into one of two categories of a dichotomous dependent variable (Big 4 audit firm and non-Big 4 audit firm) based on the independent variables used in the study. Logit and probit models are members of the Generalized Linear Models (GLM) family. They are commonly used to predict the categorical dependent variable based on a number of covariates or independent variables using the link functions – logit and probit respectively. Logit and probit regressions do not determine deviations but model the relationship between the dependent and independent or control variables. Both models have been addressed in the literature and are used for the same purpose (Jose et al., 2020).

Klieštik et al. (2015) pointed out that Logit regression is characterized by predicting the probability of the event occurring or not. The calculated is equal to either 1 or 0. To establish and satisfy this condition, it is necessary to perform logit transformation within logistic regression. This logit transformation is based on the "ratio of chances and hopes." Probit regression is an alternative to logit regression. The main difference is that it assumes a normal distribution of random variables (independent variables in the model) as the difference lies in the fact that the logistic function has harder "fat tails."

4. Research findings

4.1. Descriptive statistics

Table 3 shows the descriptive analysis of the study variables for the GCC countries included in the study sample. It provides the mean, minimum, and maximum values, and the standard deviation of the dependent, independent, and control variables.

Table 3. Descriptive statistics

Variables	Mini	Max	Mean	Std. D
	Stat	Stat	Stat	Stat
IO	0	6.99	0.227	0.593
FO	0	0.73	0.092	0.154
BIG 4	0	1	0.764	0.408
S	1.355	4.18	2.653	0.650
A	0.21	1.72	1.262	0.297
R	11.617	27.87	0.426	8.074
ROA	0.00	0.18	0.090	0.055
COMP	–1.06	3.45	0.670	0.486

Note: IO = Institutional ownership, FO = Family ownership, BIG 4 = Auditor Choice, S = Size, R = Risk, A = Age, COMP = Complexity, ROA = Return on Assets.

Table 3 indicates that for the GCC countries, the mean value of the dependent variable (Big 4) is (0.764) with a minimum of 0.00 and a maximum of 1.00. Thus, in all GCC countries, the firms prefer to audit their financial statements using the Big 4 audit firms.

Two independent variables were included in the model: IO and FO. The mean of IO is (0.227), which suggests that the number of institutional investors in GCC countries is increasing. The second independent variable is FO, with the mean (0.092) indicating that the listed firms in the capital markets of GCC countries have a low percentage of FO. However, those with high percentages might not be listed. Moreover, the mean of IO is greater than that of FO, indicating that IO is the preferable ownership structure in GCC countries. This finding suggests that IO, rather than FO, prefers to invest more in larger firms.

For the control variables, this study controls our model by using the following variables: size (S), age (A), risk (R), return on assets (ROA), and complexity (COMP). The GCC firm sizes have a mean value of 2.653, indicating that companies have adequate assets to sustain their growth and survival. The mean value of A is 1.262, indicating that the GCC firms are old enough to make the right

decision regarding recruiting their auditors. The third control variable is R. The mean of R is 0.246, an outcome suggesting that risk is low in this sample. We control for assets that require specific audit procedures (COMP) as measured by the natural logarithm of the inventory and receivables divided by the natural logarithm of total assets. The mean is 0.670, indicating that the firms have a high percentage of such assets. We control for the profitability, measured by ROA, as the mean of ROA is 9%, which is relatively low.

4.2. Goodness of model fit

It is essential to see the goodness of fit of the model predictions before further analyzing and interpreting the test results. Using the Hosmer–Lemeshow goodness-of-fit test, Table 4 summarizes the results of this test.

Table 4. Results of Hosmer–Lemeshow goodness-of-fit test

Test	Logit regression	Probit regression
Hosmer–Lemeshow	11.98 (0.1520)	13.42 (0.1054)

The logit regression model shows that the value of Hosme–Lemeshow is 11.98 (p-value 0.1520 > 0.05), which is significantly greater than 0.05. For probit regression, the value of Hosmer–Lemeshow is 13.142 (p-value 0.1054 > 0.05), which is also considerably greater than 0.05. These results indicate that the model fits and the empirical data conform to the model.

4.3. Splitting the data

The study splits the base data it into two datasets: training data and test data. The training dataset is used to train and the fitting model, while the test dataset is used to obtain an honest assessment of how well a model generalizes. The standard ratio of splitting data is 80:30, which means that 80% of the data are allocated for the training dataset, and 20% are allocated for the test dataset (Joseph, 2022). According to Kotu and Deshpande (2014), a portion of the data (the training set) is used for the development of the model, and a portion of the data (the test set) is reserved for testing the model that is being built. To split the data, we use Random subsampling, the most commonly used approach for data splitting. As indicated in Table 1, the base data is 1827 observations, and then the training data (0.8) equals 1462 observations, while the test data (0.2) equals 365 observations.

4.4. Logit and probit regression analysis

Logit and Probit regression models are used in which the dependent variable (Big 4 auditor) is a binary random variable that takes on only the zero value (non-Big 4 auditor) and one (Big 4 auditor). Regarding auditor selection, FO and IO choose between two alternatives: a Big 4 auditor or a non-Big 4 auditor. Table 5 presents the results of Logit and Probit regression models for the training data (0.8, 1461 observations).

Table 5. The results of logit and probit regression models

Variables	Logit Regression			Probit Regression			Heteroskedastic probit model		
	Coeff	SE	p-value	Coeff	SE	p-value	Coeff	SE	p-value
IO	0.261	0.008	0.002	0.154	0.0049	0.002	0.293	0.0019	0.001
FO	–0.874	0.404	0.031	–0.530	0.240	0.027	–0.188	0.100	0.003
S	0.960	0.100	0.000	0.607	0.056	0.000	0.742	0.091	0.000
A	–1.101	0.256	0.000	–0.572	0.144	0.000	–0.360	0.177	0.000
ROA	–0.854	1.577	0.004	–0.825	0.926	0.002	–0.640	1.63	0.000
Cons	0.149	0.425	0.000	0 .486	0.250	0.000	0.670	0.104	0.000
LR	204.98			202.06			LR test of $\ln sigma^2 = 0$: $chi^2(5) = 0.54$		
Pseudo R2 Wald $chi^2(2)$*	0.1206			0.1189			3.97		
Prob > chi^2	0.000			0.000			0.000		
Log likelihood	–747.03			–748.49			–770.39		

Note: IO = Institutional ownership, FO = Family ownership, BIG 4 = Auditor Choice, S = Size, R = Risk, A = Age, COMP = Complexity, ROA = Return on Assets, LR = Likelihood Ratio.

For the logit regression model, Table 5 shows that FO (–0.874), ROA (–0.854), and A(–1.101) had a significant and negative effect on the selection of the audit firm at 5% and 1%, respectively, indicating that FO with shorter age and low ROA prefer to hire a non-Big 4 audit firm. IO (0.261) and S (0.960) in terms of total assets have a significant and positive effect on the selection of an audit firm at 1%, indicating that the institutional investors at larger firms prefer to recruit a Big 4 audit firm. In comparison, R and COMP did not affect the selection of the auditor at 1% or 5%, and then we removed them from the final model.

Table 5 shows that probit regression has the same results as FO (–0.530), A (–0.673), and ROA (–0.825) had a significant and negative effect on the selection of the audit firm at 5% and 1%, respectively, indicating that FO with shorter age and low ROA prefer to hire non-Big 4 audit firm. IO (0.154) and Size of the firm (0.607) in terms of total assets have a significant and positive effect on selecting an audit firm at 1%, indicating that the institutional investors in larger firms prefer to recruit a Big 4 audit firm. However, R and COMP did affect the selection of an auditor at 1% or 5%; therefore, we removed them from the final model.

In addition, Table 5 shows the Heteroskedastic probit model results, which are supported by both logit and probit regressions, IO (0.293) and Size of the firm (0.742) in terms of total assets have a significant and positive effect on selecting an audit firm at 1%, indicating that the institutional investors in larger firms prefer to recruit a Big 4 audit firm. FO (–0.188), A (–0.360), and ROA (–0.640) had a significant and negative effect on selecting an audit firm at 1%, indicating that family owners with shorter age and low ROA prefer to hire non-Big 4 audit firm. In this model, R and COMP did not affect the selection of the auditor at 1% or 5%; therefore, we removed them from the final model. The Wald test of the heteroskedastic probit model is significant at 1% (Prob > chi^2 = 0.0000). Likewise, the likelihood-ratio test of heteroskedasticity, which tests the entire model with heteroskedasticity against the full model without, is significant with (LR test of $lnsigma^2 = 0$: chi^2 (2) = 132.93, Prob > chi^2 = 0.000).

The results showed that both the three models (logit, probit, and heteroskedastic probit) equally fit the data, but the results of logit regression are more robust than probit regression. The LR test showed more preference for the logit model (204.98) than the probit model (202.06) in the current data set. Furthermore, the pseudo-R^2 measures also showed more preference for the logit model (0.1206) than the probit model (0.1189).

Table 5 shows the results of Hypothesis 1. This hypothesis examines the effect of IO on the Big 4. H1 is accepted as the coefficient is 0.261, significant at the 1% level. This outcome suggests that the IO prefers to recruit Big 4 audit firms. This study finds a positive association between IO and the Big 4. It implies that institutional investors generally demand that firms in the GCC countries prefer to hire a Big 4 audit firm to express an opinion on financial statements.

The result regarding H1 is supported by Karkacıer and Ertaş (2017), who indicated that institutional investors consider the independent audit report an essential determinant for decision-making purposes. Moreover, this outcome is consistent with those of Karaibrahimoğlu (2013), Sulimany et al. (2024), and Ali

et al. (2024), who reveal a positive effect of IO on audit choice because of the preference for recruiting a Big 4 audit firm. The result for H1 contradicts those of Azibi et al. (2010) and Kouaib and Jarboui (2014), who revealed a negative association between IO and the Big 4 audit firms as the IO has a negative impression toward Big 4 audit firms. Finally, the result for H1 is consistent with the findings of Ali et al. (2024), Guizani and Abdalkrim (2022), Qotba et al. (2024), who found an insignificant effect of IO on the size of the audit firm (audit quality).

Table 5 shows the results of Hypothesis 2. H2 posits that FO prefers to recruit non-Big 4 audit firms. The results in Table 5 show that H2 is accepted as the logit and probit regressions coefficient is negative and significant (–0.874) and (–0.530), and the p-values are 0.031 and 0.027, respectively (P-value < 0.05). These results indicate that FO prefers recruiting non-Big 4 audit firms over Big 4. This result is supported by Niskanen et al. (2010), Khan et al. (2015), Darmadi (2016), Hsu et al. (2018), and Guizani and Abdalkrim (2022), who asserted that family-held or concentrated ownerships are less likely to recruit Big 4 auditors. On the other hand, the result is not in line with the findings by Lei and Lam (2018), indicating that family firms have a high probability of recruiting Big 4 auditors.

The results of control variables, as shown in Table 5, indicate that these variables are requisite for the models. Concerning firm size, large firms have a positive and significant effect on auditor choice in GCC countries, and this outcome means that large firms tend to hire the Big 4 audit firms. This finding is supported by Lawrence et al. (2011), Aslan and Aslanertik (2017), Alfraih (2017), de Nez and da Cunha (2018), and Lie and Lam (2018), who found that large firms tend to use the Big 4 audit firms.

For firm age and ROA, being older and profitable negatively affects auditor choice in GCC countries, thereby indicating that older and profitable firms are less likely to hire the Big 4 auditors. Old and profitable firms are expected to be more experienced and have high-quality financial reporting. They will not accept any errors in their financial statements because such inaccuracies will damage their reputation. This result is not supported by Aslan and Aslanertik (2017).

Lastly, risk and complexity do not affect auditor choice, as leveraged and complex firms have no difference in recruiting high (low) quality audit firms. This result is supported by Kim et al. (2019), Lei and Lam (2018), Ye (2020), and Wu et al. (2023) but not by Al-Hajri (2018), who found a positive association between leverage and the Big 4 audit firms.

4.5. Robustness checks

In this section, the robustness of the results is conducted to provide more insight into our findings. The logit regression analysis shows that IO and FO are significantly related to auditor choice. First, the robustness checks will examine the magnitude of the effect of IO and FO on auditor choice. In addition, an in-depth analysis will be conducted to investigate the impact of two types of IO: domestic institutional ownership (DIO) and foreign institutional ownership (FIO).

4.5.1. Magnitude effect of IO and FO

To test which variable (IO or FO) has a more significant effect on auditor choice, this study used the Chi-square test to formally compare the differences in the $\alpha 1$ coefficients between IO and FO. Table 6 presents the Chi-square test results between IO and FO for auditor choice for the test data (0.2, 365 observations).

Table 6. Chi-Square tests between IO and FO

Test	IO			FO		
	Value	Df	Asymp. Sig. (2-sided)	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-square	157.358[b]	139	0.000	83.093[a]	63	0.113
Likelihood ratio	194.974	139	0.000	98.772	63	0.003
N of valid cases	361			361		

[a]125 cells (97.7%) have an expected count of less than 5. The minimum expected count is .01.
[b]275 cells (98.2%) have an expected count of less than 5. The minimum expected count is .01.

Note: IO = Institutional ownership, FO = Family ownership, Df = Degree of free.

As per the results in Table 6, the Pearson Chi-square of IO (157.358) exceeds that of FO (83.093), both insignificant at the 0.00 level. Thus, the effect of IO on Big 4 auditor choice is much stronger than that of FO. Table 7 shows the results for these two measures.

Table 7. Symmetric measures of IO and FO

Test		IO		FO	
		Value	Approx. Sig.	Value	Approx. Sig.
Nominal by Nominal	Phi	0.660	0.020	0.471	0.046
	Cramer's V	0.660	0.020	0.471	0.046
N of valid cases		361			361

Note: IO = Institutional ownership, FO = Family ownership.

The results of Phi and Cramer's V value of IO, as in Table 7, are more significant than that of FO. Therefore, the association between IO and the Big 4 is more robust than between FO and the Big 4. This study concludes that sufficient evidence suggests an association between IO and auditor choice ($Chi^2 \geq 46.352$, $p = 0.020$, Phi = 0.660).

4.5.2. Performance metrics

According to Orozco-Arias et al. (2020), splitting data into training and testing sets and selecting adequate metrics that measure the performance of analysis is a crucial and challenging step. These metrics aim to evaluate how well the model generalizes to new data. Orozco-Arias et al. (2019) pointed out that most performance metrics define positive and negative classes. Thus, expected results can be classified as true positives (TP) if they are classified as positive and included in the positive class and as false negatives (FN) if rejected but included in the negative class. In addition, if they are not, the samples in the negative class and predicted to be positive are called false positives (FP) or true negatives (TN).

This study uses performance metrics such as accuracy, precision, recall, F1 score, and AUC for the training and testing sets. Table 8 shows the results of these performance metrics for training sets (80%) and testing sets (20%).

Table 8. Performance metrics for training sets and testing sets

Performance metrics	Training sets (80%)	Testing sets (20%)
Area Under the Curve-AUC(ROC)	0.7468	0.7358
Accuracy score	0.645	0.633
Recall	0.7227	0.6767
Precision	0.7443	0.7130
F1 score	0.829	0.802

Table 8 shows that the AUC score is good: 74.68% for training sets and 73.58% for testing sets, indicating that the probability of randomly selected positive classes is positive. The accuracy score is 64.5% and 63.3% for training and for the training and test sets, respectively, which means that the number of correct predictions to the total number of predictions is valid for the analysis. Recall refers to the ratio of true positives to all positives in the ground truth. The recall score is 72.72% and 67.67% for both training and testing sets, respectively, indicating that both sets have a low number of false negatives, which can result from a balanced class of model metrics. The precision score refers to the ratio of true

positives to total predicted positives. The scores were 74.43% and 71.30% for both training and testing sets, respectively, indicating that the model did not miss the high number of true positives and could classify well between correct and incorrect classes. Finally, the F1 score combines the recall and precision scores into a single score to evaluate the model's performance. The F1 score was 82.9% and 80.2% for both training and testing sets, respectively, indicating that the model has high precision and recall performance.

Table 8 shows that the results of these performance metrics are consistent, and the model's performance has a good classification, effectively evaluating model's generalizability.

4.5.3. Effect of domestic institutional ownership and foreign institutional ownership

Mohammed (2023) noted that foreign IO has recently increased in the GCC countries. He asserted that higher foreign trade and investment can play a prominent role in boosting diversification and growth in GCC countries. Accordingly, these countries have started to attract foreign investments to create a friendly business environment through various incentives such as tax rates and tax exemptions. Currently, foreign investors in general and foreign institutional owners in particular are competing with the domestic investors in these countries. Nevertheless, there is no evidence of whether these foreign investors have any impact on auditor selection. As the results of this study indicate that IO has a significant effect on auditor choice in GCC countries, further logit regression analysis was conducted to examine whether DIO or FIO influences auditor choice. The model that will be examined is explored in Equation 2:

$$\text{BIG } 4_{it} = \alpha_{it} + \beta 1 \text{FIO}_{it} + \beta 2 \text{DIO}_{it} + \epsilon_{it} \quad (2)$$

Both institutional and individual foreign owners have strong motivations to monitor the domestic firms in which they have equity ownership, and such motivations affect their policies and governance structures (Khalil et al., 2008). Firstly, one of the main motivations is that foreign owners have an informational disadvantage relative to their domestic equivalents (Bena et al., 2017). Secondly, foreign owners experience difficulties accessing data and credible financial information. Foreign investors are also disadvantaged in understanding and analyzing local firms' financial statements (Beneish & Yohn, 2008). This work compares the effect of FIO with that of DIO on auditor choice. This research finds that DIO is also positively associated with selecting Big 4 auditors, thereby suggesting that DIO can play an external monitoring role on average by requir-

ing firms to hire high-quality auditors such as the Big 4. Table 9 shows the results of this analysis.

Table 9. Logit regression analysis for FIO and DIO

Variables	GCC Countries		
	Coef.	Z	P>|z|
FIO	0.447	4.114	0.000
DIO	0.630	6.716	0.000
R			0.357
R-Square			0.128
Adjusted R-Square			0.103
F-Value			5.199
Sig.			0.008

Note: DIO = Domestic Institutional Ownership, FIO = Foreign Institutional Ownership, R = Correlation, Sig = Significance Level, Z = Z-Value.

Table 9 shows that the model of the effect of DIO and FIO on the Big 4 audit firms is positive and significant at the 0.001 level, and the R-Square (0.128) supports the model. FIO and DIO are significant at the 0.000 level. However, the coefficient of DIO is greater than that of FIO, suggesting that DIO has a more significant effect on Big 4 auditor choice. The result indicated that DIO demands higher audit quality in the GCC countries than FIO. In general, this outcome is consistent with that of Lee et al. (2018), who revealed that FIOs require high audit quality to monitor managers and protect their reputation, and Kim et al. (2019), who found that FIO demand such audit quality to reduce the information asymmetry they encounter. This work finds the same result for GCC countries because FIO is in an excellent position to monitor and protect their investments, especially after all GCC countries have issued new laws on foreign investments (Oman and Qatar in 2019, the UAE in 2018, Bahrain in 2016 – amendment, Kuwait in 2001, and the KSA in 2000). These laws provide many advantages to foreign investors, such as 100% foreign-owned enterprises, tax holidays for up to 10 years, and 10-year investment visas for foreign investors. The capital markets in GCC countries encourage FIOs to invest their money in these markets through enhanced monitoring, improved corporate governance, and access to credible financial information.

5. Discussion

Our empirical results show that IO positively and significantly affects auditor choice by preferring to recruit Big 4 audit firms. In GCC countries, institutional shareholders have good power, especially in the service sector, and may control the managers' opportunistic behaviors in addition to the requirements of financial reporting transparency. This argument is supported by Mitra et al. (2007), who established that one of the best methods to control the management's opportunistic behaviors and reduce the earnings management is by hiring high-quality auditors.

IO plays a vital role in the institutional environment but does not support the "active monitoring hypothesis." Hussainey and Aljifri (2012) found that IO has less power to protect the firm against some risk-related financial decisions. Our empirical evidence supports the argument introduced by Elsiefy and AbdElaal (2017), who verified that foreign investors lead some of the GCC market instead of institutional investors. In addition, the result is supported by Meah and Hossain (2023) and Xiaoqing et al. (2023), who find that foreign institutions significantly prefer one of the Big 4 auditing firms to improve the quality of financial statements.

In summary, firms in the six GCC countries prefer to recruit Big 4 audit firms for some reasons. First, the market authorities in GCC countries pursue enhanced corporate governance and the signal of good corporate governance. Second, to indicate transparent disclosure, the financial markets in these six countries require transparent financial reporting. GCC countries have rapid stock market development and growing investor protection environments to attract more institutional investors. In this regard, recruiting the Big 4 audit firms is one of the most critical factors to enhance the quality of financial reporting. Third, IO in GCC countries has low levels of experience, skills, and necessary resources to control and influence manager behavior, which is common in most of those countries (Kouaib & Jarboui, 2014).

Regarding FO, non-Big 4 audit firms are recruited if the family percentage is high, whereas the Big 4 audit firms are recruited if such percentage is high. Conversely, a difference exists between big and non-Big 4 audit firms because FO negatively affects audit choice. Moreover, some examples from the GCC business environment supported the results. For example, the institutional environment in Kuwait is characterized by low IO and high FO (Al-Saidi & Al--Shammari, 2013). In Oman, family firms are less likely to hire top-tier auditors because of the less severe agency problems between owners and managers and because most of these firms are not listed in the Muscat Securities Market. As

for Bahrain and Qatar, FO prefers to recruit the Big 4 audit firms given that those firms audit the majority of the companies and that FO entails a low-risk level. In general, this result is in alignment with Guizani and Abdalkrim (2021), who found that family-controlled firms tend to recruit non-Big 4 auditors, suggesting that when families hold high ownership, they use their power to prevent recruiting the Big 4.

Despite the well-developed literature on the choice of auditors, the relationship between IO and FO on one side and the selection of auditors on the other side still needs to be investigated, especially in the GCC region. Our research covers the period 2010–2018 and shows that IO is more likely to employ the Big 4 auditor firms on average. Moreover, the findings of this research reveal that FO is more likely to recruit the Big 4 audit firms, and they prefer to hire the Big 4 audit firms. Chi-square tests show that IO is stronger than FO in deciding auditor quality, indicating the importance of IO as a player in the GCC capital market.

As IO has a positive and significant effect on auditor choice, this study compares the effect of FIO with that of DIO on auditor choice. The additional results revealed that both DIO and FIO demand higher audit quality in GCC countries. Still, DIO has a greater positive effect on the Big 4 auditors than FIO at the significance level of 0.01. Thus, the impact of DIO on Big 4 auditor choice is stronger than that of FIO, indicating the GCC policymakers need to enhance the incentives that are given to FIO to increase their investments in the GCC capital markets.

6. Conclusions

The main result of this study indicates that ownership structures are essential determinants of auditor choice. The study's results highlight the critical role of IO against FO in the GCC countries, as the dominant ownership pattern is FO, which prefers to hire low-quality external auditors. However, with the increase in the percentage of IO in GCC firms, there has been a greater tendency to select high-quality auditors to ensure the quality of financial reports. These findings represent a major challenge to the FO pattern, which is a significant contribution to the study.

The result of the study indicates that H1 is accepted as the coefficient is (0.522) which is significant at 1%. This result suggests that the IO prefers to recruit Big 4 audit firms as there is a positive association between IO and Big 4, which means that institutional investors generally demand Big 4 audit firms to express an opinion on financial statements. Conversely, the results show that H2

is accepted as the logit and probit regression coefficients are negative, –0.819 and –0.487, respectively, and significant at 1%. These results indicate that FO prefers recruiting non-Big 4 audit firms over Big 4.

This study contributes to the audit literature in several ways. First, this study contributes to the accounting literature by providing new empirical evidence of the effects of IOs and FOs on auditor choice in emerging economies context, which has not been addressed before. Demand for assurance services in GCC countries is growing because all GCC countries have instituted all their listed firms to comply with the corporate governance code to increase accountability, transparency, and disclosure of financial status (Hassan, 2018) and to improve the reliability of internal control systems. An increase in the quality of financial information helps reliability in the decision-making of investments (Le et al., 2024), protects the stakeholders' interests (Sarhan et al., 2019), and reduces information asymmetry (Tessema, 2020). However, there is little in--depth research on how firms choose their auditors. Second, the study highlights the effects of IOs and FOs on auditor choice for shareholders, executives, institutional investors, regulators, and academics to help them improve the growth of capital and audit markets by developing best practices, thereby helping achieve an optimal framework for auditor choice that matches higher audit quality in these emerging economies. Theoretically, a firm with high IO prefers to hire a Big 4 audit firm (Leuz et al., 2010), while a firm with high FO has a different preference (Ho & Kang, 2013). Therefore, empirical evidence is needed to understand the effects of IO and FO together on auditor choice, as these are the dominant forms of ownership in GCC countries.

This work presents some policy and practical implications. First, our empirical evidence provides policymakers and practitioners with critical insight into the differences in auditor selection criteria between IO and FO. Second, this work sheds light on the strength of IO and FIO in GCC countries and reveals that both IO and FO are the relevant structures. These findings suggest that IO and FO are critical in the corporate governance of GCC countries and may require more evidence. This implication aligns with the growing trend of opening the door for more institutional investments in GCC countries. Many scenarios can be employed to interpret the relationship between IO and higher auditor quality. However, the best one for the case of the GCC countries is that IO prefers to use high-quality auditors because these countries want to enhance the corporate governance of their capital markets, increase transparency disclosures, and attract more institutional investors, specifically foreign institutional investors.

The results from this research also have several important implications for the audit market in the GCC countries. First, the results add positive evidence to the existing literature because they expand our understanding of the vital role of IO in balancing FO in improving audit quality or auditor selection. Second, these results are highly relevant for shareholders, executives, institutional investors, regulators, and academics. This can be done by improving investor protection practices and audit market rules in these countries to select the auditor who matches the highest audit quality. Third, the findings can provide policymakers with guidelines for including institutional investors and FO in the capital market of the GCC countries to ensure high-quality audits. Fourth, the results can also provide auditors with proof that their audit quality enhances the persuasiveness and credibility of financial statements to external parties, especially institutional investors and creditors. As a result, institutional investors will be attracted by firms presenting financial statements that include the signatures of the most qualified auditors, and this inference is supported by Khurana and Raman (2004).

Given the following limitations, interpreting the findings of this study should be performed with caution and future studies are suggested to overcome these shortcomings. First, unlike other countries, GCC countries have few registered audit firms. Consequently, client demand for and the auditors' supply of audits may differ from those in other regions and entail greater complexity. Future studies may build larger samples or include other institutional investors, such as foreign institutional investors. Second, this study focuses on only two types of ownership structures (institution and family) despite the many options because of the extensive debates and discussions on the association between the studied ownership types and auditor choice. Third, the study period is only for nine years (2010-2018), and this duration is short and slightly out-of-date. For better conclusions, the period should be extended and updated. Fourth, the control variables used in this research are limited, with only three such variables for two hypotheses. Therefore, future studies should include more variables to help explain the relationships with the dependent variables. Fifth, we must be cautious when extending the findings to a more general inference. Are the findings applicable to similar cultural and economic entities, such as the Middle East or MENA regions? Note that the GCC countries have a unique legal framework that distinguishes them from the Middle East or MENA markets, and the majority of FOs in the GCC countries involve unlisted firms. Thus, a considerable gap exists between FO and IO. Further investigations may shed light on other developing economies with similar institutional characteristics and ownership structures, such as the MENA and the Middle East. Such research may make the results more generalizable. Finally, most prior research examined the association

of ownership structures from one side and auditor choice and audit fees from another. Still, they overlooked audit fees, given the availability of this information for most GCC-listed firms. In future studies, audit choice concerning audit fees and corporate governance structures should be analyzed in the context of the GCC audit market.

Disclosure statement

No potential conflict of interest was reported by the author(s).

References

Abadi, K., Purba, D. M., & Fauzia, Q. (2019). The impact of liquidity ratio, leverage ratio, company size and audit quality on going concern audit opinion. *Jurnal Akuntansi Trisakti, 6*(1), 69-82. https://e-journal.trisakti.ac.id/index.php/jat/article/download/4871/pdf_1/15055

Abid, A., Shaique, M., & ul Haq, M. A. (2018). Do big four auditors always provide higher audit quality? Evidence from Pakistan. *International Journal of Financial Studies, 6*(2), 58. http://doi.org/10.3390/ijfs6020058

Agus, A., & Ghozali, I. (2019). Mediating effect of audit quality in relationship between auditor ethics and litigation: An empirical study. *International Journal of Economics and Business Administration, VII*(2), 91-100. https://doi.org/10.35808/ijeba/217

Al Ani, M. K. (2020). *IO-FO-GCC-IQCapital.* https://www.researchgate.net/publication/383553419_IO-FO-GCC-IQCapital

Al Lawati, H., & Zakeya Sanad, Z. (2023). Ownership concentration and audit actions. *Administrative Sciences, 13*, 206. https://doi.org/10.3390/admsci13090206

Al-Hajri, M. O. (2018). Corporate governance and auditor choice in Kuwait. *Small Business Economics, 2*(1), 27-51. https://doi.org/10.29117/sbe.2018.0105

Al-Janadi, Y. (2021). Ownership structure and firm performance in the Middle East: A meta-analysis. *Journal of Risk and Financial Management, 14*, 577. https://doi.org/10.3390/jrfm14120577

Al-Saidi, M., & Al-Shammari, B. (2013). Board composition and bank performance in Kuwait: An empirical study. *Managerial Auditing Journal*, *28*(6), 472-494. https://doi.org/10.1108/02686901311329883

Alam, L., & Masoom, M. R. (2016). The role of institutional investors as the next frontier in corporate governance: A case on Dhaka Stock Exchange (DSE). *Asian Journal of Management, 7*(4), 263-271. https://doi.org/10.5958/2321-5763.2016.00040.8

Alexeyeva, I. (2023). Board members' outside directorships and the demand for audit quality: Large sample evidence from private firms. *Journal of Accounting, Auditing & Finance (ahead of print)*, 1-26. https://doi.org/10.1177/0148558X231183758

Alfraih, M. M. (2017). Choosing an external auditor: Does the composition of boards of directors matter? *International Journal of Law and Management, 59*(3), 394-412. https://doi.org/10.1108/IJLMA-03-2016-0032

Alhababsah, S., & Yekini, S. (2021). Audit committee and audit quality: An empirical analysis considering industry expertise, legal expertise and gender diversity. *Journal of International Accounting, Auditing and Taxation, 42*, 100377. https://doi.org/10.1016/j.intaccaudtax.2021.100377

Ali, M. J., Biswas, P. K., Chapple, L., & Kumarasinghe, S. (2024). Institutional ownership and earnings quality: Evidence from China. *Pacific-Basin Finance Journal, 84*, 102275. https://doi.org/10.1016/j.pacfin.2024.102275

Aljaaidi, K. S. Y. (2013). *Corporate governance and auditor choice among companies in GCC countries* (Unpublished PhD thesis, University Utara Malaysia, Malaysia). https://etd.uum.edu.my/3809/7/s92494.pdf

Alshammary, M. J. (2014). Stock market development and economic growth in developing countries: Evidence from Saudi Arabia. *Corporate Ownership & Control, 11*(3), 193-216. https://doi.org/10.22495/cocv11i3c1p6

Ananda, A. S., Sumarta, N. H., Satriya, K. K. T., & Amidjaya, P. G. (2022). Determinants of audit quality: The effect of ownership structure and audit committee activities. *Ekuitas: Jurnal Ekonomi dan Keuangan, 6*(3), 333-350. https://doi.org/10.24034/j25485024.y2022.v6.i3.5214

Andersson, F. W., Johansson, D., Karlsson, J., Lodefalk, M., & Poldahl, A. (2018). The characteristics of family firms: Exploiting information on ownership, kinship, and governance using total population data. *Small Business Economic, 51*, 539-556. https://doi.org/10.1007/s11187-017-9947-6

Andreu, R., Quer, D., & Rienda, L. (2020). The influence of family character on the choice of foreign market entry mode: An analysis of Spanish hotel chains. *European Research on Management and Business Economics, 26*(1), 40-44. https://doi.org/10.1016/j.iedeen.2019.12.006

Aslan, E., & Aslanertik, B. E. (2017). The determinants of auditor selection in terms of firm and IPO characteristics: Evidence from BIST. *Journal of Accounting and Management, 7*(1), 64-74. https://zbw.eu/econis-archiv/bitstream/11159/1429/1/1007311851.pdf

Audousset-Coulier, S., Jeny, A., & Jiang, L. (2016). The validity of auditor industry specialization measures. *AUDITING: A Journal of Practice and Theory, 35*(1), 139-161. https://doi.org/10.2308/ajpt-51176

Azibi, J., Tondeur, H., & Rajhi, M. T. (2010). Auditor choice and institutional investor characteristics after the Enron scandal in the French context. *International Journal of Economics and Accounting, 2*(1), 32-52. https://hal.science/hal-00481076/file/p139.pdf

Belcredi, M., Bozzi, S., Ciavarella, A., & Novembre, V. (2017). Institutional investors' activism under concentrated ownership and the role of proxy advisors. Evidence from the Italian say-on-pay. *Corporate Ownership & Control, 14*(4), 41-57. https://doi.org/10.22495/cocv14i4art4

Bena, J., Ferreira, M. A., Matos, P., & Pires, P. (2017). Are foreign investors locusts? The long-term effects of foreign institutional ownership. *Journal of Financial Economics, 126*(1), 122-146. https://doi.org/10.1016/j.jfineco.2017.07.005

Beneish, M. D., & Yohn, T. L. (2008). Information friction and investor home bias: A perspective on the effect of global IFRS adoption on the extent of equity home bias. *Journal of Accounting and Public Policy, 27*(6), 433-443. https://doi.org/10.1016/j.jaccpubpol.2008.09.001

Carey, P., Simnett, R., & Tanewski, G. (2000). Voluntary demand for internal and external auditing by family businesses. *Auditing: A Journal of Practice and Theory, 19* (Supplement), 37-51. https://doi.org/10.2308/aud.2000.19.s-1.37

Cascino, S., Pugliese, A., Mussolino, D., & Sansone, C. (2010). The influence of family ownership on the quality of accounting information. *Family Business Review, 23*(3), 193-215. https://doi.org/10.1177/0894486510374302

Corten, M., Steijvers, T., & Lybaert, N. (2018). Auditor choice in private firms: A stakeholders perspective. *Managerial Auditing Journal, 33*(2), 146-170. https://doi.org/10.1108/MAJ-03-2017-1535

Darmadi, S. (2016). Ownership concentration, family control, and auditor choice: Evidence from an emerging market. *Asian Review of Accounting, 24*(1), 19-42. https://doi.org/10.1108/ARA-06-2013-0043

Davis, J. G., & García-Cestona, M. (2023). Institutional ownership, earnings management and earnings surprises: Evidence from 39 years of U.S. data. *Journal of Economics, Finance and Administrative Science, 28*(56), 218-236. https://doi.org/10.1108/JEFAS-01-2023-0021

DeAngelo, L. E. (1981). Auditor size and audit quality. *Journal of Accounting and Economics, 3*(3), 183-199. https://doi.org/10.1016/0165-4101(81)90002-1

DeFond, M., & Zhang, J. (2014). A review of archival auditing research. *Journal of Accounting and Economics, 58*(2), 275-326. https://doi.org/10.1016/j.jacceco.2014.09.002

Delaney, M. O. D. (2009). *The role of external auditors in corporate governance: Agency problems and the management of risk* (Paper No. 28149). MPRA. https://doi.org/10.2139/ssrn.1427899

Dong, T., Eugster, F., & Vazquez, A. B. (2024). Passive investors and audit quality: Evidence from the U.S. *European Accounting Review, 33*(3), 965-993. https://doi.org/10.1080/09638180.2022.2136227

Elsiefy, E., & AbdElaal, M. A. (2017). Analyzing foreign investors behavior in the emerging stock market: Evidence from Qatar Stock Market. *Accounting and Finance Research, 6*(4), 197-216. https://doi.org/10.5430/afr.v6n4p197

Fallatah, E. M., Mohdsatt, N. A., Shah, S. M., & Chong, C. W. (2021). Moderating effect of IFRS on ownership-structures – audit-quality relationship for listed firms in Saudi Arabia. *Journal of Contemporary Issues in Business and Government, 27*(2), 3511-3525. https://cibgp.com/au/index.php/1323-6903/article/view/1259

Fan, J. P. H., & Wong, T. J. (2002). Corporate ownership structure and the informativeness of accounting earnings in East Asia. *Journal of Accounting and Economics, 33*(3), 401-425. https://doi.org/10.1016/S0165-4101(02)00047-2

Fan, J. P. H., & Wong, T. J. (2005). Do external auditors perform a corporate governance role in emerging markets? Evidence from East Asia. *Journal of Accounting Research, 43*(1), 35-72. https://doi.org/10.1111/j.1475-679x.2004.00162.x

Ferreira, M. A., & Matos, P. (2008). The colors of investors' money: The role of institutional investors around the world. *Journal of Financial Economics, 88*(3), 499-533. https://doi.org/10.1016/j.jfineco.2007.07.003

Francis, J. R., Maydew E. L., & Sparks, H. C. (1999). The role of Big 6 auditors in the credible reporting of accruals. *Auditing: A Journal of Practice and Theory, 18*(2), 17-34. https://doi.org/10.2308/aud.1999.18.2.17

Francis, J., LaFond, R., Olsson, P. M., & Schipper, K. (2004). Cost of equity and earnings attributes. *The Accounting Review, 79*(4), 967-1010. https://doi.org/10.2308/accr.2004.79.4.967

Gu, J. (2021). Voluntary IFRS adoption and accounting quality: Evidence from Japan. *Economic Research-Ekonomska Istraživanja, 34*(1), 1985-2012. https://doi.org/10.1080/1331677X.2020.1860793

Guedhami, O., Pittman, J. A., & Saffar, W. (2014). Auditor choice in politically connected firms. *Journal of Accounting Research, 52*(1), 107-162. https://doi.org/10.1111/1475-679X.12032

Guizani, M., & Abdalkrim, G. (2021). Ownership structure and audit quality: The mediating effect of board independence. *Corporate Governance, 21*(5), 754-774. https://doi.org/10.1108/CG-12-2019-0369

Guizani, M., & Abdalkrim, G. (2022). Ownership structure, board independence and auditor choice: Evidence from GCC countries. *Journal of Accounting in Emerging Economies, 12*(1), 127-149. https://doi.org/10.1108/JAEE-06-2020-0145

Han, S., Kang, T., & Rees, L. (2013). The association between institutional ownership and audit properties. *Asia-Pacific Journal of Accounting and Economics, 20*(2), 199-222. https://doi.org/10.1080/16081625.2012.748449

Harymawan, I., Prabhawa, A. A., Nasih, M., & Putra, F. K. G. (2021). Risk management committee, auditor choice and audit fees. *Risks, 9*(9), 156. https://doi.org/10.3390/risks9090156

Hassan, W. K., Aljaaidi, K. S., Bin Abidin, S., & Nasser, A. M. (2018). Internal corporate governance mechanisms and audit quality: Evidence from GCC region. *International Journal of Advanced and Applied Sciences, 5*(8), 72-90. https://doi.org/10.21833/ijaas.2018.08.010

Healy, P. M., & Palepu, K. G. (2001). Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of Accounting and Economics, 3*(1-3), 405-440. https://doi.org/10.1016/S0165-4101(01)00018-0

Ho, J. L., & Kang, F. (2013). Auditor choice and audit fees in family firms: Evidence from the S&P 1500. *Auditing: A Journal of Practice and Theory, 32*(4), 71-93. https://doi.org/10.2308/ajpt-50533

Hsu, H.-H., Lin, C.-H., & Tsao, S.-M. (2018). Founding family and auditor choice: Evidence from Taiwan. *Corporate Governance: An International Review, 26*(2), 118-142. https://doi.org/10.1111/corg.12226

Hussain, S., & Safdar, N. (2018). Ownership structure of family business groups of Pakistan. In *Proceedings of 9th Economics and Finance Conference* (pp. 75-89). International Institute of Social and Economic Sciences. https://doi.org/10.20472/EFC.2018.009.006

Hussainey, K., & Aljifri, K. (2012). Corporate governance mechanisms and capital structure in UAE. *Journal of Applied Accounting Research, 13*(2). 145-160. https://doi.org/10.1108/09675421211254849

Huyghebaert, N., & Van Hulle, C. (2004). The role of institutional investors in corporate finance. *Tijdschrift voor Economie en Management, XLIX*(4), 689-726. https://lirias.kuleuven.be/retrieve/12819

Jadoon, I. A., Noreen, U., Ayub, U., Tahir, M., & Shahzadi, N. (2021). The impact of family ownership on quality and disclosure of internal control in Pakistan. *Sustainability, 13*(16), 8755. https://doi.org/10.3390/su13168755

Jose, A., Philip, M., Prasanna, L. T., & Manjula, M. (2020). Comparison of probit and logistic regression models in the analysis of dichotomous outcomes. *Current Research in Biostatistics, 10*, 1-19. https://doi.org/10.3844/amjbsp.2020.1.19

Joseph, V. R. (2022). Optimal ratio for data splitting. *Statistical Analysis and Data Mining: The ASA Data Science Journal, 15*(4), 409-538. https://doi.org/10.1002/sam.11583

Karaibrahimoğlu, Y. Z. (2013). Is corporate governance a determinant of auditor choice? Evidence from Turkey. *Ege Academic Review, 13*(2), 273-284. https://dergipark.org.tr/tr/download/article-file/559837

Karkacıer, A., & Ertaş, F. C. (2017). Independent auditing effect on investment decisions of institutional investors. *Accounting and Management Information Systems, 16*(3), 297-319. https://doi.org/10.24818/jamis.2017.03004

Khalil, S., Magnan, M. L., & Cohen, J. R. (2008). Dual-class shares and audit pricing: Evidence from the Canadian markets. *Auditing: A Journal of Practice and Theory, 27*(2), 199-216. https://doi.org/10.2139/ssrn.875352

Khan, A., Muttakin, M. B., & Siddiquib, J. (2015). Audit fees, auditor choice and stakeholder influence: Evidence from a family-firm dominated economy. *The British Accounting Review, 47*(3), 304-320. https://doi.org/10.1016/j.bar.2015.03.002

Khurana, I. K., & Raman, K. (2004). Are big four audits in ASEAN countries of higher quality than non-big four audits? *Asia-Pacific Journal of Accounting and Economics, 11*(2), 139-165. https://doi.org/10.1080/16081625.2004.10510640

Kim, J.-B., Pevzner, M., & Xin, X. (2019). Foreign institutional ownership and auditor choice: Evidence from worldwide institutional ownership. *Journal of International Business Studies, 50*(1), 83-110. https://doi.org/10.1057/s41267-018-0160-x

Klieštik, T., Kočišová, K., & Mišanková, M. (2015). Logit and probit model used for prediction of financial health of company. *Procedia Economics and Finance, 23*, 850-855. https://doi.org/10.1016/S2212-5671(15)00485-2

Kotu, V., & Deshpande, B. (Eds.). (2015). Data mining process. In *Predictive analytics and data mining concepts and practice with Rapidminer* (pp. 17-36). Elsevier Publisher. https://doi.org/10.1016/B978-0-12-801460-8.00002-1

Kouaib, A., & Jarboui, A. (2014). External audit quality and ownership structure: Interaction and impact on earnings management of industrial and commercial Tunisian sectors. *Journal of Economics, Finance and Administrative Science, 19*(37), 78-89. https://doi.org/10.1016/j.jefas.2014.10.001

Krišto, J., Stojanoviić, A., & Pavkoviić, A. (2014). Impact of institutional investors on financial market stability: Lessons from financial crisis International. *Journal of Diplomacy and Economy, 2*(1/2), 102-117. https://doi.org/10.1504/IJDIPE.2014.060746

Kusumaningtyas, M., Chariri, A., & Yuyetta, E. N. A. (2019). Information asymmetry, audit quality, and institutional ownership on earnings management: Evidence from mining companies listed on the Indonesia Stock Exchange. *International Journal of Engineering and Advanced Technology, 8*(5C), 126-136. https://doi.org/10.35940/ijeat.E1018.0585C19

Lawrence, A., Minutti-Meza, M., & Zhang, P. (2011). Can Big 4 versus non-Big 4 differences in audit-quality proxies be attributed to client characteristics? *The Accounting Review, 86*(1), 259-286. https://doi.org/10.2308/accr.00000009

Le, H. T. M., Lai, Ch.-P., Phan, V. H., & Pham, V. T. (2024). Financial reporting quality and investment efficiency in manufacturing firms: The role of firm characteristics in an emerging market. *Journal of Competitiveness, 16*(1), 62-78. https://doi.org/10.7441/joc.2024.01.04

Lee, S. C., Rhee, M., & Yoon, J. (2018). Foreign monitoring and audit quality: Evidence from Korea. *Sustainability, 10*(9), 3151. https://doi.org/10.3390/su10093151

Lei, A. C. H., & Lam, S. W. K. (2018). Family ownership, auditor choice and audit fees: Evidence from Hong Kong. *International Journal of Accounting and Financial Reporting, 8*(1), 1-36. https://doi.org/10.5296/ijafr.v8i1.12571

Lei, A. C. H., & Song, F. (2011). Board structure, corporate governance and firm value: Evidence from Hong Kong, *Applied Financial Economics, 22*(15), 1289-1303. https://doi.org/10.1080/09603107.2011.650329

Leuz, C. D., Lins, K. V., & Warnock, F. E. (2010). Do foreigners invest less in poorly governed firms? *Review of Financial Studies, 23*(3), 3245-3285. https://doi.org/10.1093/rfs/hhn089.ra

Martinez-Garcia, I., Basco, R., Gomez-Anson, S., & Boubakri, N. (2022). Ownership concentration in the Gulf Cooperation Council. *International Journal of Emerging Markets, 17*(1) 219-252. https://doi.org/10.1108/IJOEM-03-2020-0290

Meah, M. R., & Hossain, R. (2023). Ownership structure and auditor choice in emerging economy: An empirical study. *Indonesian Journal of Business, Technology and Sustainability, 1*(1), 12-22. https://www.researchgate.net/publication/375379541_Ownership_Structure_and_Auditor_Choice_in_Emerging_Economy_An_Empirical_Study

Mitra, S., Hossain, M., & Deis, D. (2007). The empirical relationship between ownership characteristics and audit fees. *Review of Quantitative Finance and Accounting, 28*(3), 257-285. https://doi.org/10.1007/s11156-006-0014-7

Mo, K., Park, K. J., & Kim, Y. (2019). The role of institutional investors in the sustainable CEO compensation structure. *Sustainability, 11*(5485), 5485. https://doi.org/10.3390/su11195485

Mohammed, K. A. S. (2023). An analytical study of Foreign Direct Investment in the Gulf Cooperation Council (GCC). *African Journal of Economics, Politics and Social Studies, 2*(1), 97-105. https://czasopisma.marszalek.com.pl/images/pliki/ajepss/2-1/ajepss2023107.pdf

De Nez, E., & da Cunha, P. R. (2018). Influence of board interlocking in the selection of the audit firm on the mandatory caster. *Contaduría y Administration, 63*(3), 1-19. https://doi.org/10.22201/fca.24488410e.2018.1077

Niskanen, M., Karjalainen, J., & Niskanen, J. (2010). The role of auditing in small, private family firms: Is it about quality and credibility? *Family Business Review, 23*(3), 230-245. https://doi.org/10.1177/0894486510374456

Nizam, U. D., Cheng, X., Ahmad, B., Sheikh, M. F., Adedigba, O. G., Zhao, Y., & Nazneen, Sh. (2021). Gender diversity in the audit committee and the efficiency of internal control and financial reporting quality. *Economic Research Ekonomska Istraživanja, 34*(1), 1170-1189. https://doi.org/10.1080/1331677X.2020.1820357

Orozco-Arias, S., Isaza, G., Guyot, R., & Tabares-Soto, R. (2019). A systematic review of the application of machine learning in the detection and classification of transposable elements. *PeerJ, 7*, e8311. https://doi.org/10.7717/peerj.8311

Orozco-Arias, S., Piña, S. J., Tabares-Soto, R., Castillo-Ossa, L. F., Guyot, R., & Isaza, G. (2020). Measuring performance metrics of machine learning algorithms for detecting and classifying transposable elements. *Processes, 8*, 638. https://doi.org/10.3390/pr8060638

Qotba, A. M., Elsalem, B. A., & Shawtari, F. A. (2024). The effect of corporate governance mechanisms on audit quality: Evidence from the UK FTSE-350 listed companies. *International Journal of Accounting and Finance, 11*(4), 245-266. https://doi.org/10.1504/IJAF.2023.138967

Rahman, M. J., Zhu, H., & Hossain, M. M. (2023). Auditor choice and audit fees through the lens of agency theory: Evidence from Chinese family firms. *Journal of Family Business Management, 13*(4), 638. https://doi.org/10.1108/JFBM-02-2023-0027

Sarhan, A. A., Ntim, C. G., & Al-Najjar, B. (2019). Antecedents of audit quality in MENA countries: The effect of firm- and country-level governance quality. *Journal of International Accounting, Auditing and Taxation, 35*, 85-107. https://doi.org/10.1016/j.intaccaudtax.2019.05.003

Sartawi, A. M. A. M. (2018). Does institutional ownership affect the level of online financial disclosure. *Academy of Accounting and Financial Studies Journal, 22*(2). https://www.abacademies.org/articles/does-institutional-ownership-affect-the-level-of-online-financial-disclosure-7205.html

Siriopoulos, C., Tsagkanos, A., Svingou, A., & Daskalopoulos, E. (2021). Foreign Direct Investment in GCC countries: The essential influence of governance and the adoption of IFRS. *Journal of Risk and Financial Management, 14*(6), 264. https://doi.org/10.3390/jrfm14060264

Suhardi, D. A., Susilo, A., Priyanto, S. H., & Abdi, A. S. (2022). Brand auditing and the development of the brand salience management model of the Statistics Study Program. *Journal of Innovation and Entrepreneurship, 11*(1), 1-23. https://doi.org/10.1186/s13731-022-00215-6

Sulimany, H. G. (2024). Does institutional ownership moderate the relationship between audit committee composition and audit report lag: Evidence from Saudi. *SAGE Open, April-June*, 1-14. https://doi.org/10.1177/21582440241241171

Tessema, A. (2020). Audit quality, political connections and information asymmetry: Evidence from banks in gulf co-operation council countries. *International Journal of Managerial Finance, 16*(5), 673-698. https://doi.org/10.1108/IJMF-01-2020-0027

Wu, D., Bao, X., & Su, Q. (2023). From green ideas to green savings: Assessing the financial impact of green innovations on audit fees. *Sustainability, 15*, 11224. https://doi.org/10.3390/su151411224

Xiaoqing, F., Wen, W., Yun, K., & Ying, H. (2023). Multiple large shareholders and auditor choice: Evidence from China. *Managerial Auditing Journal, 38*(4), 474-513. https://doi.org/10.1108/MAJ-03-2021-3052

Ye, X. (2020). Literature review on influencing factors of audit fees. *Modern Economy, 11*(2), 249-260. https://doi.org/10.4236/me.2020.112022