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Ownership structure, board characteristics, and audit quality demand: Evidence from Saudi-listed companies

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ABSTRACT

This study examines the impact of ownership structure and board characteristics on the demand for high-quality audit services in Saudi-listed firms, drawing on agency and stakeholder theories. Using panel data from 162 firms listed on the Saudi Stock Market (Tadawul) between 2018 and 2023, audit quality is measured by auditor brand (Big Four vs. non-Big Four), with audit fees used as an alternative measure for robustness. A Two-Stage Least Squares (2SLS) regression with instrumental variables is applied to address endogeneity. The findings reveal that firms with higher foreign and institutional ownership are more likely to engage high-quality auditors, while family ownership has no significant effect. Additionally, greater board independence and gender diversity positively influence the demand for audit quality. These results are consistent across different measures of audit quality. The study offers valuable insights for investors, policymakers, and regulators, suggesting that promoting independent and diverse boards, along with encouraging foreign institutional investment, can enhance audit quality, reduce agency costs, and strengthen corporate governance in Saudi Arabia.

1. Introduction

Since the opening of firms' capital and the separation of ownership from management functions, numerous economic and monitoring issues have emerged. Today, addressing conflicts of interest through the implementation of effective supervisory tools has become a major concern for nations worldwide. Recently, there have been significant and ongoing global efforts to implement corporate governance systems and regulations, typically overseen by stock market authorities or other regulatory bodies.

Despite cultural, social, and economic differences in the competing legal frameworks (Three main models of corporate governance could be considered worldwide: the Anglo-Saxon, the Continental, and the Japanese model, with significant differences related mainly to the ownership structure), the common goal of corporate governance regulations is to safeguard the interests of shareholders and other stakeholders (Becchetti et al., 2020).

Internally, the ownership structure and the board of directors are considered the most important factors in explaining the efficiency of corporate governance within a firm (Sahasranamam et al., 2020). Externally, audit quality has gained significant attention from scholars, especially after the Enron scandal (Zehri and Ben Flah, 2024). This research primarily focuses on explaining the demand for audit quality in relation to ownership structure and board of directors' characteristics in the Saudi context. In the last ten years, Saudi Arabia has experienced several socio-economic changes and has built a strategic plan, namely the "2030 Vision," based on the non-oil economy. Saudi Arabia learned lessons from the decrease of oil- prices (The oil constitutes the main economic revenue source not only for Saudi Arabia but also for the rest of the Gulf Cooperation Council (GCC) countries) post-2007 global financial crisis, and has subsequently implemented new regulations to better govern business life, particularly the revision of the Saudi Corporate Governance Code under the supervision of the Capital Market Authority in 2017. While studies on the demand for audit quality and corporate governance are abundant in developed countries, this topic is still limitedly explored in emerging economies, particularly in Saudi Arabia. This fact, along with the new socio-economic landscape in the country, explains the selection of Saudi Arabia as a case study to analyze the demand for audit quality.

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Moreover, the inconsistent findings from previous literature regarding the effect of ownership structure (Eulaiwi et al., 2016; Al-Matari and Al-Hebry, 2019) and the features of the board of directors (Al-Faryan and Dockery, 2021; Al Sharawi, 2022) suggested that further exploration of this topic is needed. This study contributes to fulfilling the research gap by focusing on Saudi Arabia and contributes to the existing literature by highlighting the effect of ownership structure and the board of directors. Relying on agency theory, institutional and stakeholder framework, this research analyzes a dataset consisting of 972 firm-year observations related to 162 Saudi-listed companies during the period from 2018 to 2023, by using two fixed-effect regressions. The main results show a significant positive effect of foreign and institutional investors on the demand for audit quality. Additionally, empirical findings demonstrate that audit quality is positively related to the independence and gender diversity of board members. These findings should help regulators and financial market supervisors to implement better corporate governance rules in compliance with Saudi socio-economic specificities. Thus, it will be interesting to consider the interplay between audit quality and ownership structure. In the new Saudi social atmosphere, scholars and regulators must pay special attention to corporate governance structures, particularly the ownership structure and features of the board of directors. Despite inconclusive empirical results, previous literature often argued that a strong corporate governance system largely explains the demand for high audit quality. Khan et al. (2016) highlighted that foreign investors and other specific stakeholders will require highly audited financial systems to secure their funds and avoid risky contracts. The choice of audit quality services belongs firstly to the board of directors as a central piece of the internal corporate governance system. Thus, it has been established that the features of the board of directors influence the demand for audit quality. Large boards are more inclined to demand high audit quality. Concerning the independence of the board's members, it is argued that the demand for high audit quality is positively associated with the number of independent members on the board. In addition to the characteristics, board gender diversity could be one factor determining the choice of audit quality. Peni and Vahamaa (2010) supported that women on the board exhibit greater caution and ethical behavior, reducing the likelihood of fraudulent activities. Existing literature suggests that board gender diversity negatively impacts accounting earnings management. Since earnings management is negatively associated with audit quality (Zgarni et al., 2016), it could be anticipated that a gender-balanced board will probably be associated with higher audit quality (Abdel-Meguid et al., 2023). Analyzing the impact of gender diversity in boardrooms offers a new contribution to the existing literature, aligning with recent changes in Saudi Arabia's socio-economic landscape. As noted in the GCC Board Gender Index Report in 2024, there is an increasing focus on promoting female participation in the workforce, especially in board-level roles. This strategic direction is further supported by a Bain and Company survey in 2023, which reports that women currently occupy 5% of board positions in publicly listed companies in Saudi Arabia (Zehri and Ben Flah, 2024; Al-Faryan and Dockery, 2021).

Overall, the study's findings are consistent with both agency theory and stakeholders' conceptual framework. If agency theory is aimed at safeguarding the interests of stockholders against opportunistic behavior and the moral hazard of managerial teams, stakeholder theory takes into consideration the interests of a diverse range of stakeholders, such as customers, suppliers, and employees. Essentially, stakeholder theory provides a framework for organizations to operate in a socially responsible manner by recognizing the concerns and interests of all those who are affected by or can influence the organization. From this perspective, we assert that the implementation of a robust corporate governance structure aligns with the goals of stakeholder theory, consequently leading to an enhancement of company performance. Specifically, investing in structures that minimize risks and enhance transparency will potentially improve the network of relationships between companies and their stakeholders.

The results of the research could serve as a valuable guide for Saudi regulators and decision-makers in publicly listed firms in reinforcing the factors that enhance audit quality, such as foreign investors, board gender diversity, and board independence. A key policy recommendation for Saudi regulators is to continue strengthening the corporate governance framework, especially for family-owned businesses and publicly listed companies. As attracting foreign investment and improving the quality of financial reporting become increasingly important, it would be beneficial for Saudi Arabia to encourage firms, particularly large family-owned businesses, to engage top-tier audit firms by adopting these tailored policy recommendations, Saudi Arabia can strengthen its regulatory framework, improve audit quality, promote greater transparency and earn investors' confidence.

Improving board independence and implementing stricter internal control requirements could drive demand for high-quality audits and mitigate the risk of financial misreporting. Saudi regulators may also consider introducing more stringent guidelines, such as mandatory quotas for female or independent directors on the board. These initiatives could enhance financial reporting quality by emphasizing the need for independent audits to secure the accuracy of financial statements.

For the academic community, the study provides a relative contribution to the limited literature in the Saudi context dealing with the topic of audit quality demand and corporate governance. This study contributes to the growing body of literature in emerging markets on audit quality by examining its specific determinants within the context of Saudi Arabia. The findings from empirical analysis highlight the importance of considering the socio-economic characteristics of each country when examining the demand for audit quality, rather than simply adopting a mimetic approach.

The rest of the paper is organized as follows: Section 2 discusses the theoretical background. Section 3 describes pertinent literature and presents the formulation of the main hypotheses. The methodological aspects related to the paper are explained in section 4. Section 5 showcases the descriptive statistics, the main findings, and discusses the additional tests conducted to validate our results. Finally, we conclude with section 6.

2. Theoretical framework on audit quality demand

DeAngelo (1981) defined audit quality as the auditor's ability to detect fraud and irregularities in financial statements (auditor skills) and, simultaneously, the capacity to reveal such findings impartially in the audit report (auditor independence). This definition has been widely used in literature dealing with audit quality (Khan et al. 2016). Since we investigate the demand for audit quality, we first assume that auditors' services differ from one audit firm to another. From an economic standpoint, Habib et al. (2019) described auditing as a service that operates based on the principles of supply and demand. They argue that the demand for high-quality auditing leads to higher fees. Theoretically, the demand for audit quality has been considered in both agency theory and the stakeholders' conceptual framework.

Agency theory underscores the conflict of interests inherent to the agency relationship due to the separation between ownership of capital and management functions. The main features of an agency relationship are information asymmetry and moral hazard. In these conflictual relations, it was necessary to establish formulas regulating the actions of all actors involved in companies. As emphasized by Jensen and Meckling (1976), the agency rationale explains well the demand for audit services in the absence of a government mandate. To ensure the reliability of the financial information, stockholders need mechanisms that control the accountability of organizations, especially the managerial team. Audit quality could play a significant role in this area thanks to the financial skills of auditors to detect potential bias in financial statements and reduce agency costs by controlling managerial actions (Zehri and Zgarni, 2020). Recently, Fossung et al. (2022) have tested the effect of agency costs on audit quality demand. The study gives evidence of the impact of several agency conflicts (shareholder/manager/creditors/majority/minority shareholders) on audit quality choice. Relying on the agency framework, most studies dealing with audit quality often consider corporate ownership structure (concentration, minority shareholders, domestic and foreign investors, family and non-family counterparts…) as indicators for agency problems (Jensen and Meckling, 1976). Investors are generally recognized as risk-averse, distant, and rational to varying degrees. Therefore, it is expected that they will adjust their investments in favor of firms that provide high audit quality.

In addition to agency theory, the audit quality choice has been well analyzed in the institutional theory. According to Scott (2008), institutional theory is "a widely accepted theoretical posture that emphasizes productivity, ethics, and legitimacy." From this perspective, the academic community underscores that a fundamental aspect of institutional theory is the consideration of ethics and firm-country values rather than optimizing decisions and structures.

This theory offers a broader viewpoint on the necessity for audit quality by encompassing not only the interests of shareholders, as emphasized in agency theory, but also a diverse array of financial statement users, including creditors, suppliers, and others (Scott, 2008). According to this theory, the objective of audit quality is to safeguard the interests of various stakeholders associated with public firms. While agency theory is more aligned with the Anglo-Saxon socio-economic context, where investors hold a privileged position, the stakeholder framework is better suited to the socioeconomic specificities of developing countries and their diverse stakeholders (Khan et al., 2013; Khan et al., 2016). Referring to the stakeholder theoretical output might be relevant mainly when dealing with an emergent economy such as the Kingdom of Saudi Arabia. In essence, stakeholder theory could provide insights that elucidate the demand for high audit quality as a means of protecting stakeholders' interests. This comprehensive service is supposed to reduce risks and contribute to better relationships between companies and different stakeholders.

3. Literature review and research hypothesis

As an unobservable service, audit quality presents a dilemma for scholars to accurately determine. Numerous proxies have been used in literature to assess audit quality, such as the reputation of the audit firm (big vs non-big) (Olabisi et al., 2020), audit fees (Aljaaidi et al., 2021), the size of the audit firm (Salehi et al., 2009), the audit tenure, the auditor litigation (Al Abdullah and Al-Ani, 2021), and auditor expertise and specialization (Alrawashdeh, 2021).

Previous studies on auditor choice have primarily focused on countries with Anglo-Saxon legal systems, such as the U.S. and the U.K., and have largely been grounded in agency theory. The findings of these studies have been inconclusive and may not be relevant to other countries, such as the context of the GCC, which differs significantly in terms of its audit market, institutional framework, and cultural values (Boshnak et al., 2023). Outside the Anglo-Saxon context, there is a noticeable gap in the literature regarding audit quality in the GCC, particularly in Saudi Arabia (KSA), where this gap has yet to be addressed. Therefore, this study aims to explore the factors influencing auditor choice in Saudi Arabia, which serves as a representative country of the MENA region.

On the supply side, we consider the audit firm's brand name and audit fees as indicators of audit quality. On the demand side, scholars suggest many firm-related factors that influence the demand for audit quality. The most significant factors can be summarized as corporate governance and corporate ownership structure. This research investigates family, foreign, and institutional ownership as factors reflecting ownership structure. For the corporate governance system, we focus on the following features of the board of directors: board size, board member independence, and boardroom diversity.

3.1. Audit quality demand and ownership

Ownership structure refers to the distribution of rights and responsibilities among different types of shareholders within a company. It may involve various types of shareholders, particularly family members, institutional investors, foreign investors, and concentrated ownership groups. According to previous literature, it has been demonstrated that each type of ownership affects the demand for audit quality differently, based on shareholders' needs and risk levels.

Two contradictory opinions are recorded in the literature concerning the influence of family ownership on audit quality demand. Regarding agency theory, it is assumed that interest conflicts should be limited in family-owned firms. Subsequently and relying on the benefits-costs trade-off, some scholars view a limited need for high audit quality in family-owned firms (Ben Ali and Lesage, 2014). Moreover, family owners may potentially look for short-term profitability rather than achieving long-term goals (Charbel et al., 2013). Therefore, they are not willing to pay high fees for the auditing services. However, according to other researchers, even when agency problems are perceived to be limited in family-owned firms, it is anticipated that senior positions will predominantly be held by family members. Consequently, family managers may exhibit opportunistic behavior, taking advantage of their position, potentially leading to a decline in firm performance at the expense of other shareholders' interests. To save their discretion and authority in the decision-making process, family-owned firms are often hesitant to nominate independent directors to the firm board. To mitigate such potential abuse of power, there should be a higher demand for audit quality in family-owned firms. In developing countries, particularly in the GCC region, existing research has examined the demand for audit quality from various perspectives, including firm performance (Al-Ghamdi and Rhodes, 2015; Al-Faryan and Dockery, 2021), ownership structure (Alrawashdeh, 2021), and corporate governance structure (Sanad and Al Lawati, 2023). The findings are often mixed and vary according to the socioeconomic environment, highlighting the need for a contextual analysis of the demand for audit quality. While reviewing the literature on family ownership and corporate governance, we observed both the limited research on the impact of family ownership on audit quality in the GCC region and the inconclusive findings in the existing studies.

Interestingly, the mixed findings regarding the influence of family ownership on audit quality demand could be due to a clustering bias of ownership structure. Thus, there should be a distinctive influence between family shareholders and family managers' shareholders on the audit quality demand. Another possible explanation for inconclusive research findings is the ignorance of the interaction between family ownership taken individually or jointly with other types of ownership (foreign or institutional ownership).

Foreign investors typically suffer from information asymmetry since they are neither native to nor residents of the company's home country. Considering agency theory, it is anticipated that foreign investors require high-quality audit services to secure their investments and to mitigate the negative effects of possible managerial opportunism (Ananda et al., 2022). Compared to other shareholders, foreign investors are willing to pay extra audit fees, opting for a cost-advantage trade-off, to benefit from strong monitoring of a company's business (Al Abdullah and Al-Ani, 2021). A large stream of studies identifies the positive influence of foreign investors on the demand for audit quality (Al Abdullah and Al-Ani, 2021). Other scholars argue that even managers of local companies recruit high-quality auditors to reassure foreign investors and signal their integrity when disclosing financial information (Alshouha et al., 2021). Regarding institutional ownership, empirical findings appear to be mixed, even within similar geographic contexts. For instance, in the USA, some scholars argue that institutional investors have a positive effect on the demand for audit quality (Ben Ali and Lesage, 2014), while others identify a negative relationship between audit quality and institutional shareholders (Mitra et al., 2007). In emerging economies, particularly in the GCC region, most studies confirm that institutional investors demand high audit quality to protect their investments and ensure firm transparency (Guizani and Abdalkrim, 2021; Ananda et al., 2022). Previous literature in developing countries suggests that institutional shareholders are willing to invest in costly monitoring mechanisms, such as high-quality audits, as they believe it is insufficient to rely solely on the board of directors or audit committees to ensure effective corporate governance (Khan et al., 2023).

According to existing literature, the research hypothesized the following:

H1: There is a significant relationship between audit quality and family ownership.
H2: There is a significant relationship between audit quality and foreign ownership.
H3: There is a significant relationship between audit quality and institutional ownership.

3.2. Audit quality demand and board of directors' characteristics

The board of directors, as a corporate monitoring mechanism, has received significant attention in financial accounting literature for its role in enhancing firm performance through the resolution of conflicting interests. (Zehri and Zgarni, 2020). Despite a large body of literature confirming a substantial association between audit quality and board characteristics, important differences remain between developed and emerging countries (Kalia et al., 2023). Beyond geographic context, a common assertion in the existing literature is that the effectiveness of a board's monitoring role and its contribution to corporate governance depend on several key features identified by scholars.

The most popular board characteristics considered in the previous literature are the board size, the independence of members, and the boardroom diversity. Regarding audit quality, it is generally assumed worldwide that the board of directors has the authority to decide the selection of an auditor. Subsequently, there should be a link between the board of directors' features and the auditor appointment. Extensive literature with mixed findings has investigated the influence of independent boards on audit quality. It is often argued that independent directors aim to protect their reputation and to signal their integrity to the labor market by engaging with highly reputable auditors (Mustafa et al., 2018). Thus, it can be expected that the higher the percentage of independent directors on the board, the greater the likelihood of hiring a reputable auditor (Saidu and Aifuwa, 2020). In the Saudi stock market, regulators promote the involvement of independent directors in public companies through mandatory provisions in the Saudi Corporate Governance Code of 2017. This is because independent directors are expected to enhance the transparency of financial disclosure by advocating for high audit quality (Aladwey and Alsudays, 2023; Zehri and Ben Flah, 2024).

Concerning the size of the board, the literature also provides mixed conclusions. According to the agency theory, the larger the board of directors, the greater the conflicts of interest. Large boards often struggle with communication, and achieving commitment among members becomes more challenging. Given the monitoring role ensured by auditors, it is expected that the demand for audit quality will be positively associated with the size of the board. Referring to institutional theory, an extent stream of research argues that larger boards provide additional protection for various stakeholders compared to smaller ones. A larger board of directors offers additional resources and enhanced oversight of the firm, and is more likely to hire a high-quality auditor (Saidu and Aifuwa, 2020). In contrast, firms with smaller boards of directors tend to have more effective communication, which reduces the likelihood of misunderstandings between directors and, as a result, lowers the need for high-quality audit services (Abbott et al., 2004).

Regarding gender diversity on the board, it has been established that female directors are more likely to engage Big Four auditors (Aladwey and Alsudays, 2023), hire industry-specialist auditors compared to less diversified boards (Lai et al., 2017), and possess a better understanding of the differences between audit services offered by Big Four and non-Big Four auditors (Mustafa et al., 2018). The positive relationship between board gender diversity and the demand for audit quality may stem from female directors' heightened concern for safeguarding their reputational capital. This concern is particularly pronounced in GCC countries, and particularly in Saudi Arabia, where women are often more conservative and socially vulnerable. One interesting challenge related to board diversity in Saudi companies is the prevailing male-dominated societal norms in Saudi Arabia, where boards with a higher proportion of female members may be reluctant to prioritize performance-driven actions due to concerns about the perceived legitimacy of their roles within traditional gender expectations (Aladwey and Alsudays, 2023). The impact of gender diversity on corporate auditor choice remains a largely unexplored area in the MENA region, particularly in Saudi Arabia, despite the significant efforts made by the Saudi government in recent years to increase women's representation in top managerial positions. In this study, we suggest that female directors increase the likelihood of clients hiring high-quality auditors. Hence, the research hypothesizes the following:

H4: There is a positive relationship between audit quality and the independence of the board.
H5: There is a positive relationship between audit quality and the size of the board.
H6: There is a positive relationship between audit quality and the board's gender diversity.

4. Methodology and data

4.1. Data collection

The objective of this paper is to evaluate how a firm's ownership structure and board of directors' features affect the demand for audit quality in Saudi-listed companies from 2018 to 2023. Initially, our analysis covers all publicly listed firms in the Saudi stock market "Tadawul," resulting in a dataset comprising 1200 observations over the six years. After excluding financial companies, due to their specificities, our sample comprises 187 non-financial companies, totaling 1122 observations. Subsequently, companies with incomplete data are removed, which leads to a final sample of 162 non-financial companies, comprising 972 observations, as illustrated in Table 1, Panel I. In addition, Panel II of Table 1 displays the percentage distribution of companies according to sectors in the KSA financial market. The data for our sample was gathered from two different sources: the Refinitiv Thomson Reuters Database and the Argam database (www.argam.com).

Table 1: Sample selection process and the sample ramifications across sectors

Panel I: Sample selection process		
Description	No. of companies	No. of observations
Initial sample	200	1200
Excluding financial companies	13	78
After excluding financial companies	187	1122
Excluding observations with missing data	25	150
Final sample	162	972

Panel II: Sample according to sectors							
Sector	Energy	Material	Industrials	Healthcare	Information technology	Consumers staples	Total
Freq.	145	225	187	105	85	225	972
Percent	15	23	19	11	8	24	100

4.2. Regression and variable definitions

Table 2 defines the key variables in our analysis, with the dependent variable indicating audit quality demand. In the first regression (1), audit quality is represented by the variable AUDREPU, appreciated through a binary measure (1 if the auditor is Big Four, 0 otherwise), whereas in the second regression (2), the analysis uses the variable AUDFEES as an alternative measure for audit quality. The data for the two previous measures were derived from the Refinitiv Thomson Reuters Database.

The independent variables focus on ownership structure and board of directors' features. The ownership structure is identified through three variables: FAMOWN, FOROWN, and INSTOWN, representing family, foreign, and institutional ownership, respectively. Whereas INDBO, SIZEBO, and GDBO reflect the independence, size, and gender diversity of the board of directors. Since auditor selection is not only influenced by ownership structure and board characteristics, we also propose including two firm-specific control variables in our analysis: firm size and profitability.

The choice of these variables is primarily based on previous studies in the GCC, particularly in Saudi Arabia, which have demonstrated that both firm size and profitability significantly impact the demand for audit quality (Tawfik et al., 2022; Boshnak et al., 2023).

The detailed definitions and measures of the variables are displayed in Table 2 and will be used in the two following regressions:

$$AUDREPUT_{it} = \alpha_0 + \alpha_1 FAMOWN_{it} + \alpha_2 FOROWN_{it} + \alpha_3 INSTOWN_{it} + \alpha_4 INDBO_{it} + \alpha_5 SIZEBO_{it} + \alpha_6 GDBO_{it} + \alpha_7 FS_{it} + \alpha_8 FP_{it} + \varepsilon_{1,it} \quad (1)$$

$$AUDFEES_{it} = \alpha_0 + \alpha_1 FAMOWN_{it} + \alpha_2 FOROWN_{it} + \alpha_3 INSTOWN_{it} + \alpha_4 INDBO_{it} + \alpha_5 SIZEBO_{it} + \alpha_6 GDBO_{it} + \alpha_7 FS_{it} + \alpha_8 FP_{it} + \varepsilon_{2,it} \quad (2)$$

where, i and t denote the individual effect and the time, respectively, β_0 is the fixed effect, and $\varepsilon_{j,it}$ is the error term for $j = [1,2]$.

Table 2: Variables measurement summary

Category	Code	Variables	Definition	Reference
Dependent variable	AUDREPUT	Audit reputation	Dummy variable: 1 if auditor is Big 4, 0 otherwise	Salehi et al. (2009) and Zehri and Zgarni (2020)
	AUDFEES	Audit fees	Natural logarithm of the audit fees	Al Sharawi (2022) and Pious et al. (2022)
Independent variables	FAMOWN	Family ownership	Percentage of shares held by family members	Guizani and Abdalkrim (2021) and Al Sharawi (2022)
	FOROWN	Foreign ownership	Percentage of foreign ownership in the firm	Ananda et al. (2022) and Alshouha et al. (2021)
	INSTOWN	Institutional ownership	Percentage of institutional ownership (bank/insurance) in the firm	Guizani and Abdalkrim (2021) and Ananda et al. (2022)
	INDBO	Independence of the board	Percentage of non-executive board members to total board members	Zehri and Zgarni (2020)
	SIZEBO	Size of the board	Total number of board members	Pious et al. (2022)
	GDBO	Board gender diversity	The percentage of female directors serving on a company's board	Aladwey and Alsudays (2023)
Control variables	FS	Firm size	Algorithm of total assets	Al Abdullah and Al-Ani (2021)
	FP	Firm profitability	The ratio of the annual net profit before tax to the average total assets	Al-Musali et al. (2019)

5. Analysis and results

5.1. Descriptive analysis

Table 3 demonstrates the descriptive analysis for the main variables utilized. In terms of AUDREP, the mean value recorded is 0.65, exhibiting a relatively narrow standard deviation of 0.38. Whereas the second measure of audit quality, AUDFEES, spans from a minimum value of 7.1 to a maximum of 12.1. These statistics are comparable to those found in Buallay et al. (2017) in the Saudi context, Al Sharawi (2022) in Egypt and Saudi Arabia, and Alshouha et al. (2021) in Jordan and reflect that more than half of

Saudi companies recruit high-quality auditors. FAMOWN has a mean of 0.42 and a maximum value of 0.72, showing that family ownership is a common type in the KSA. This finding is like Alrawashdeh (2021) dealing with Saudi-listed companies. FOROWN exhibits a range from 0 to 0.43, with an average of 0.12. This confirms that foreign investors still have a relatively low contribution in financing Saudi companies, despite the recommendations of the 2030 Vision, which encourages foreign investors (Zehri and Ben Flah, 2024). Institutional ownership spans from 0 to 38% with a mean value of 28%. Interestingly, similar findings regarding the previous values are reported by Al Nasser (2020) in the KSA. The descriptive statistics display that the size of the board in Saudi-listed firms has a minimum of 4 members and a maximum of 12 directors. It is worth noting that most of the directors in the Saudi sample are independent. Thus, INDBO has a mean value of 0.71 and a maximum of 90%. This finding follows the provision of the Saudi Corporate Governance Code of 2017, requiring that at least one-third of the members should be independent. The mean and maximum values of GDBO (0.19 and 0.21, respectively) highlight the modest participation of women on the boards of Saudi companies. Despite the encouragement provided by the 2030 vision (Saudi Arabia experienced a remarkable 40% rise in female participation by 2023, aligning with the Saudi 2030 vision) to enhance board gender diversity, the Saudi boards are still dominated by men. Overall, the dataset related to board features is quite consistent with Guizani and Abdelkarim (2021) in the GCC countries and Zehri and Ben Flah (2024) in the KSA.

Table 3: Descriptive statistics for variables (summary descriptive statistics for utilization of variables; 810 observations)

Variables	Observations	Mean	Standard deviation	Min	Max
AUDREP	972	0.65	0.38	0	1
AUDFEES	972	9.5	2.1	7.1	12.1
FAMOWN	972	0.42	2.71	0	0.72
FOROWN	972	0.12	0.74	0	0.43
INSTOWN	972	0.28	0.23	0	0.38
INDBO	972	0.71	1.2	0.33	0.9
SIZEBO	972	7.1	0.31	4	12
GDBO	972	0.19	2.71	0	0.21
FS	972	9.16	0.83	7.30	13.13
FP	972	11.2	4.34	-0.35	14.1

5.2. Correlation analysis

Table 4 delineates the findings regarding the correlation between continuous variables. Following Gujarati (2005), it's crucial to ensure correlation coefficients remain below 0.8 to mitigate multicollinearity risk. In the light of Panel I, Table 5, there is no evidence of multicollinearity issues within the dataset. Additionally, Econometrics researchers suggest that multicollinearity is unlikely if the Variance Inflation Factor (VIF) values stay below 10. Panel II of Table 4 presents VIF statistics consistently below this threshold, affirming the absence of multicollinearity concerns.

Table 4: Pearson correlation matrix and VIF statistics

	Panel I: The correlation matrix										Panel II: VIF Statistics	
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	VIF	1/VIF
(1) AUDREP	1.000										1.65	0.62
(2) AUDFEES	0.45**	1.000									1.17	0.86
	(0.03)											
(3) FAMOWN	0.017	0.080***	1.000								1.07	0.93
	(0.408)	(0.000)										
(4) FOROWN	0.017	0.104*	0.729*	1.000							1.11	0.91
	(0.418)	(0.09)	(0.081)									
(5) INSTOWN	-0.138*	0.148*	0.095*	0.102*	1.000						1.11	0.90
	(0.06)	(0.000)	(0.000)	(0.000)								
(6) INDBO	-0.065*	0.032	0.004	0.006	0.117***	1.000					1.12	0.90
	(0.02)	(0.133)	(0.863)	(0.791)	(0.001)							
(7) SIZEBO	-0.011	0.026	0.021	0.019	0.146*	-0.201*	1.000				1.08	0.92
	(0.596)	(0.216)	(0.311)	(0.361)	(0.000)	(0.07)						
(8) GDBO	-0.023	0.15	0.05	0.14*	0.07**	-0.99	0.13	1.000			1.12	0.89
	(0.9)	(0.34)	(0.12)	(0.06)	(0.04)	(0.21)	(0.11)					
(9) FS	0.143**	0.102	0.235	0.09	0.101***	0.123**			1.000		1.03	0.97
	(0.01)	(0.133)	(0.863)	(0.791)	(0.003)	(0.02)						
(10) FP	0.06**	-0.042	0.235	0.65*	0.96	0.04	-0.07	0.03	0.33***	1.000	1.22	0.81
	(0.04)	(0.23)	(0.13)	(0.09)	(0.45)	(0.23)	(0.023)	(0.17)	(0.009)			

***: p<0.01; **: p<0.05; *: p<0.1

5.3. Discussions

The main results of the empirical analysis are displayed in Table 5. As delineated in Table 5, the results of the Hausman tests yield statistical significance at 0 percent, indicating the preference for the fixed effect model over the random effect in both regressions (1) and (2).

The first set of hypotheses posited a significant association between ownership structure and audit quality. Table 5 indicates that FAMOWN has a negative but non-significant effect on audit quality ($\alpha_1 = -1.194$ with a p-value of 0.133), which contradicts H_1. This result is consistent with previous findings in emerging countries, as stated by Sahasranamam et al. (2020) and Khan et al. (2023), and aligns with the agency's theoretical framework. Thus, conflicts of interest should be reduced when shareholders are from the same family. Since audit quality is considered a tool to mitigate moral hazards and risks, family-owned businesses may not be motivated to hire high-quality auditors. Additionally, research suggests that family firms experience fewer entrenchment issues as managerial ownership increases (Habib et al., 2019).

In the GCC region, family shareholders face higher auditing risks due to their weak corporate governance structures, making them less likely to engage a Big Four auditor to avoid outside litigations (Aljaaidi et al., 2021; Kalia et al., 2023). Regarding FOROWN, the results show a significant positive effect of foreign investors on the audit quality, with α_2= 42.022 at a 1% significance level. Compared with previous literature, this finding fully complies with previous findings in many developing countries, particularly the GCC region (Al-Musali et al., 2019; Khan et al., 2023) and allows us to confirm H2. In line with Saudi Vision 2030 and the opening of the KSA stock market, companies in Saudi Arabia with significant foreign investments are likely to hire high-quality auditors. To safeguard their investments against potential managerial opportunism, foreign investors often exert pressure on the local board of directors to ensure the appointment of high-quality auditors. Moreover, foreign investors are generally willing to pay higher audit fees, as it is viewed as a signal of better performance and transparency, which, in turn, might enhance the attraction of additional investments (Al Abdullah and Al-Ani, 2021). Similarly, the results show a significant positive association between institutional ownership and audit quality (α_3 = 12.773 and a p-value = 0.003) confirming H3. This finding indicates that pension funds, insurance companies, and other institutional organizations play a central role in monitoring managerial teams by increasing the likelihood of demanding Big Four audit services (Guizani and Abdalkrim, 2021). The previous findings seem to be following the provision of the new Saudi corporate governance code promulgated in 2017 and the strategic Saudi plan, namely the "2030 Vision." These two last regulations aim to attract foreign investments and improve the transparency and accountability of Saudi-listed companies (Zehri and Ben Flah, 2024).

The second set of hypotheses is related to the effect of the board of directors' features on auditor choice. The findings indicate that board independence has a significant positive impact on audit quality, confirming H4 (α_4 = 12.960, p-value = 0.000). This aligns with the agency theory, which suggests that independent directors provide better oversight of the board's decisions, thereby improving firm performance. Additionally, independent directors are often motivated to maintain their external reputation and are willing to incur additional audit fees to ensure high-quality quality services. In contrast, the variable SIZEBO (board size) shows no significant effect on auditor choice, with a coefficient of α_5 = -15.426 and a p-value of 0.31. Previous literature reflects ongoing debate regarding board size and its influence on corporate governance, particularly concerning auditor selection. The analysis also reveals a statistically significant positive effect of gender diversity in the board on the audit quality demand, confirming H5, as the presence of women on the board increases the likelihood of hiring a Big Four auditor. This finding, consistent with Aladwey and Alsudays (2023) in the Saudi context, also supports agency theory by suggesting that gender diversity may serve as an alternative to mitigate the non-significant effect of family ownership on the demand for audit quality. From this perspective, BGD could be a strategic choice for companies seeking to balance their board dynamics. Moreover, it could be deduced that BGD may strengthen the role of foreign and institutional investors to increase the opportunity of hiring a Big Four auditor.

Regarding control variables in Model 1, the results show a positive and significant association between firm size (FS) and AUDREP in Saudi-listed companies, as displayed in Table 5 (α_7 = 10.231, p-value = 0.02). This outcome suggests that large firms are more inclined to hire a Big Four auditor. This evidence could be justified by an eventual additional complexity in mitigating agency conflicts in larger firms, despite the supplementary control measures that such corporations can implement. Thus, recruiting a Big Four Auditor might reduce information asymmetry, the inherent feature of large companies (Jensen and Meckling, 1976). Additionally, large firms possess greater financial resources compared to smaller companies, enabling them to afford the higher fees associated with hiring Big Four auditors. In terms of firm profitability (FP), there is no significant relationship with audit quality demand (α_8 = 1.57, p-value = 0.203). This implies that even most successful companies do not necessarily hire a Big Four auditor, confirming the complexity of the decision of audit quality selection. Overall, our results interestingly align with previous literature on GCC and MENA countries (Aljaaidi et al., 2021; Deepali Kalia et al., 2021; Tawfik et al., 2022). This verdict confirms that the determinants of audit quality within public companies in developing countries are largely similar, driven by common socio-cultural environmental factors. The maturation of the GCC equity market over the past decade, along with its increasing integration into the global economy, can explain the heightened pressure from both domestic and foreign investors for higher standards of disclosure, and, consequently, a greater demand for high audit quality (Sahasranamam et al., 2020; Boshnak et al., 2023).

5.4. Robustness check

To scrutinize the robustness of the findings and to mitigate potential omitted variables bias, we replicated the model (1) utilizing an alternative measure for the dependent variable. Accordingly, we revisited our main analysis, employing Audit fees (AUDFEES) in regression (2) as a proxy for audit quality. The results from the robustness check are displayed in Table 5, column 2. Overall, the findings of the sensitivity analysis are consistent with the results of the main model (1).

The robust check analysis brings statistical evidence of a positive association between both foreign and institutional ownership and audit fees. This finding aligns with Khan et al. (2016) but contradicts the results of Mitra et al. (2007), who found a significant negative association between audit fees and foreign and institutional ownership. Consistent with Guizani and Abdalkrim (2021), the robustness check analysis confirms that family ownership still has no significant effect on audit fees among Saudi companies. However, this contrasts with the findings of Alshouha et al. (2021), which report a significant positive relationship between family ownership and audit fees.

Apart from the ownership structure, the characteristics of the board of directors also yield results like those of the main model. Both board independence and gender diversity are positively associated with higher audit fees. This suggests that independent directors and female board members in the Saudi context are willing to pay higher audit fees to protect their reputations in the human capital market. Regarding control variables and contrary to the main model results, the firm's profitability has a significant positive effect on audit fees, as revealed through the robustness check. The following results were recorded in the GCC region (Aljaaidi et al., 2021). This finding indicates that more profitable firms are more likely to incur higher audit fees compared to less profitable firms. Interestingly, the mixed findings regarding ownership structure and board characteristics could be explained by potential bias arising from the complementarity or substitution effects that may exist between ownership components and board characteristics.

Table 5: The main regression results

	Model1 (AUDREP)		Model 2 (AUFEES)	
	Coefficient	P-value	Coefficient	P-value
FAMOWN	-1.194	0.133	-1.374	0.21
FOROWN	42.022***	0.000	2.798***	0.001
INSTOWN	12.773***	0.003	10.384*	0.000
INDBO	12.960***	0.000	0.424**	0.02
SIZEBO	-15.426	0.31	0.234	0.680
GDBO	1.05*	0.089	0.266**	0.03
FS	10.231**	0.02	-0.143	0.153
FP	1.57	0.203	0.063*	0.076
Constant	-70.88	0.824	-44.25***	0.000
R-squared	0.252		0.1597	
Hausman test	32.66	0.000	94.08	0.000
No. of observations	972			

***: p<0.01; **: p<0.05; *: p<0.1

5.5. Endogeneity check

To address endogeneity, we used Two-Stage Least Squares (2SLS) regression with an instrumental variable that comprises industry and firm averages for firm ownership structure items and board characteristics, reflecting industry norms and pressures that influence firm behavior without directly affecting auditor quality (Yu et al., 2023).

The results presented in Table 6, including coefficients and p-values, closely align with the main findings from Table 5. Additionally, we assessed the validity and explanatory power of the instrument using Shea's partial R^2 by following Semykina and Wooldridge (2010). In Table 6, the Partial R^2 values indicate the proportion of variance in the endogenous regressors (ownership structure and board directors' features) explained by the instruments. Notably, variables such as INSTOWN (0.647), INDBO (0.739), and GDBO (0.7731) exhibit explanatory solid power, confirming the robustness of the instruments used. Additionally, FAMOWN and FOROWN with Partial R^2 values of 0.358 and 0.324, respectively, show reasonable instrument relevance, in line with standard econometric practices (Semykina and Wooldridge, 2010).

Table 6 also reports the results of the Hansen J test for overidentifying restrictions. With a p-value of 0.9435, which suggests that the instrument is likely uncorrelated with the error term in the second-stage regression, affirming its validity for our 2SLS estimation. These results provide robust empirical evidence supporting the hypothesis confirmed by the main regression: the ownership structure (foreign and institutional ownership) and the board features (directors' independence and gender diversity) significantly influence audit quality in the Saudi context.

6. Conclusion

This research aims to investigate the role of ownership structure and characteristics of the board of directors in the choice of audit quality. The main findings from 162 Saudi non-financial firms reveal a significant positive correlation between foreign and institutional ownership and audit quality. This underscores that ownership structure, in line with agency theory, plays a pivotal role in the decision related to the selection of audit quality, thereby the pressure exerted by both foreign and institutional investors, who focus on reducing conflicts of interest. Furthermore, the results confirm that the Saudi firms exhibiting the presence of female and independent directors on their boards are more inclined to have high audit quality. These findings follow previous literature related to developing countries, particularly the GCC region, as underlined earlier in the results discussions. The common socio-institutional specificities of these nations could largely explain the concordance of results.

Table 6: Endogeneity test: 2SLS

Independent variables	The industry and firm averages for ownership structure and board characteristics			
	coefficient	P-value	Partial R^2	Adjusted partial R^2
FAMOWN	-0.375	0.121	0.358	0.3443
FOROWN	13.08***	0.003	0.324	0.3184
INSTOWN	-20.26	0.112	0.647	0.6982
INDBO	15.41***	0.000	0.739	0.725
SIZEBO	-12.46	0.124	0.8756	0.7669
GDBO	6.85*	0.09	0.7731	0.7412
Control variables				
FS	-3.511*	0.061	0.321	0.3408
FP	54.09	0.122	0.4768	0.442
Constant	25.167***	0.000		
Observations			972	
Number of years			5	
Overidentifying restrictions test	0.9435			

***: p<0.01; **: p<0.05; *: p<0.1

However, contrary to our predictions, the empirical tests do not support the influence of either family ownership or board size on enhancing audit quality in the Saudi context. The mixed findings in our results, along with those in previous literature, highlight the complexity of the relationships between ownership structure, board characteristics, and audit quality. This complexity is further influenced by the cultural and social contingencies specific to each country.

Considering the main findings, several practical implications might be provided, particularly to investors, policymakers, and regulators. Thus, Saudi firms could improve their corporate governance system by encouraging the participation of women and independent directors on their boards, which in turn helps other firms' partners to protect their interests from potential managerial opportunism as suggested by stakeholder theory.

Investors should consider the presence of foreign and institutional shareholders in the ownership structure as well as the inclusion of independent and female directors on Saudi boards as indicators of effective corporate governance practices and reliable financial reporting. Subsequently, investors may adjust their investment strategies to favor companies with foreign and institutional ownership types rather than family-owned firms. Furthermore, investors should prioritize firms with a more independent and female director on their boards over those with larger boards, since these attributes may be positively associated with higher audit quality.

Saudi policymakers are encouraged to consider promoting greater openness to foreign and institutional investments. Despite recent efforts by companies to attract foreign funds, the Saudi market is still dominated by domestic investments, and more effort is needed to achieve the goals outlined in Vision 2030 in this regard. Although the GCC region, and particularly Saudi Arabia, remains dominated by family-owned businesses, foreign and institutional investors should be given greater consideration in the ownership structure of Saudi companies.

In addition, as part of efforts to enhance demand for higher audit quality, promoting gender diversity and board independence should be prioritized within corporate boards. Encouraging the inclusion of female and independent directors may contribute to more effective oversight of financial reporting practices and help mitigate the risks of earnings management by fostering the selection of higher-quality auditors. Such measures, widely adopted in developed countries, should be emphasized in local corporate governance codes and guidelines due to their potential to reduce agency conflicts and enhance the integrity of financial reporting.

To improve the efficiency of the Saudi financial market, regulators should focus on measures that encourage family-owned firms to invest more in high-quality audits. Prioritizing family ownership is particularly relevant, as it remains the most common ownership structure in Saudi Arabia.

The limitations of this research offer avenues for future research. First, our paper enriches the existing literature by illuminating the complex interplay among ownership structure, board of directors, and the choice of audit quality in the Saudi context. Researchers can further conduct comparison analyses with GCC and emerging economies to enhance the external validity of the current research findings. Additionally, two other common types of ownership—royal and governmental ownership—warrant further exploration, not only in Saudi Arabia but also in other GCC economies.

Last, this paper does not explicitly consider the cultural or institutional influences on the observed relationships. Future research could explore how cultural norms and legal frameworks shape the interactions between ownership structures, governance mechanisms, and audit quality.

List of abbreviations

2SLS	Two-stage least squares
AUDREPU	Audit reputation
AUDFEES	Audit fees
FAMOWN	Family ownership
FOROWN	Foreign ownership
INSTOWN	Institutional ownership
INDBO	Independence of the board
SIZEBO	Size of the board
GDBO	Board gender diversity
FS	Firm size
FP	Firm profitability
GCC	Gulf Cooperation Council
KSA	Kingdom of Saudi Arabia
VIF	Variance inflation factor
ESG	Environmental, social, and governance

Compliance with ethical standards

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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