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Statistical Analysis of Ownership Structure and CSR Disclosure: The Role of Earnings Quality Evidence

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Abstract: The current study aims to assess the effect of Earnings Quality in the relationship between Ownership Structure and CSR Disclosure of publicly listed banks on the Saudi Exchange. As Saudi Arabia process significant mile stones to enhance the financial transparency and integrity specifically CSR disclosure, thus, the Saudi market is a distinct context to conduct academic research on CSR, ownership structure, and earning quality. The data encompassing CSR, Ownership Structure, and other financial metrics was collected over a five year from 2020 to 2024. The sample consisted of 50 observations from 10 banks, with several components exhibiting missing values due to insufficient data availability in the Saudi market, which was difficult to acquire. Theoretical results support the hypotheses association between institutional ownership and sustainability reporting because institutional investors require informative disclosure to keep an eye on businesses and make investment decisions. The results conclude positive significant relationship between the ownership structure proxies and (CSR), where increasing ownership structure indicate direct relations with corporate social responsibility disclosure (CSR).The results show that earning quality significant and positive effect on the corporate social responsibility. We recommend doing more academic research on CSR, in line with the Kingdom's vision.

Keywords: Ownership Structure - CSR Disclosure- Earnings Quality.

1 Introduction

As it is significantly imperative to current and future generations, the current era focuses on sustainability and sustainable activities. Most of the organizations, *inter alia*, and business ones strive their effort to build sustainable establishments. A significant accomplishment in the international climate change activities is the 2030 sustainable development agenda, which was endorsed by all United Nations members in 2015 and established 17 Sustainable Development Goals (SDG) [1]. As a result, there was a quick and significant investment in carbon-related activities such as corporate reporting, monitoring, and verification [2]. The disclosure of non-financial information on CSR disclosure is therefore of imperceptible interest to various stakeholders [3,4].

Companies need to realize that they have a responsibility to consider the environmental setting in which they operate in addition to making significant profits [5]. The idea of corporate social responsibility, or CSR, frees a company from being exclusively answerable to one bottom line, that is, its financial worth [6]. Since financial metrics alone are insufficient to ensure sustainable growth in the company's value, the company's accountability should follow the triple bottom line, which includes social and environmental issues in addition to financial metrics [7]. CSR is a tactic used by businesses to show their dedication to social and environmental responsibility [8,9].

According to an analysis of the body of available literature, studies have been done to look into the direct relationship between ownership structure and CSR. The variety of investors holding the company's shares is reflected in its ownership

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structure. According to earlier studies, ownership structure acts as a governance mechanism that affects the conduct, values, strategic policies, and success of the company [10]. There are several types of ownership structures, including government, foreign, institutional, family, and management ownership.

Prior research has focused primarily on industrialized nations, research on the function of earning quality as a moderator in the association between ownership structure and CSR disclosure in Saudi companies' annual reports is, still, lacking. The key characteristics of the accounting-related data that readers of financial statements look for define the caliber of accounting earnings. By enabling accounting data to predict future earnings as shown in the balance sheets, income statements, and cash flow statements, this feature seeks to improve the disclosure objective [11].

Accounting earnings quality reflects the current ability to represent earnings that may be realized in subsequent quarters and is a good way to gauge the quality of financial reports. EQ acts as a standard for the fineness of financial reports and enhances the capacity of investors to forecast future performance based on current period performance [12]. Furthermore, as [13] showed, the interaction between sustainability disclosure of information and the quality of financial reports, as determined by the quality of accounting earnings, can manifest in two ways: either in a reciprocal or complementary fashion.

Because of these and other compelling characteristics, the Saudi market is a perfect place to study the relationship between OWSTR, CSR, and earning quality. Initially, the Saudi government unveiled the ambitious Saudi Vision 2030 in 2016. It is a comprehensive national program for sustainable development that gives environmental, social, and governance (ESG) issues a lot of weight [14]. Second, family-owned enterprises make up a sizable percentage of businesses in Saudi Arabia [15], and family businesses in developed countries like the USA and Europe differ significantly from those in emerging economies. Asia is home to two-thirds of the largest family-owned businesses worldwide [16].

Asian family enterprises are characterized by cross-holdings and pyramidal structures, and they behave differently than non-family-controlled companies [17]. Third, Saudi Arabia's regulatory and institutional environment differs from that of developed countries due to a number of factors, including market uncertainty, government and family ownership, information asymmetry [18,19]. Fourth, Saudi equities market has been more accessible to international investors since the implementation of Vision 2030, which has promoted asset management and institutional investment growth. This program includes a qualified foreign investment strategy that increases foreign ownership by giving foreign investors the same voting rights as their local counterparts [20].

Fifth, Saudi Arabia is a fascinating and significant market to research, particularly on issues pertaining to financial transparency and integrity regarding CSR disclosure [21]. Thus, the Saudi market's distinct context, along with its institutional, legal, and ownership features, makes it a desirable location for academic research on CSR, ownership structure, and earning quality [22].

By responding to important research requests from [23,24,25,26,27,28], we add to the body of literature. First, the ownership structure and CSR disclosure with a focus on earning management are highlighted in this literature. Second, the new study adds to earlier research on the relationship between earning quality, CSR, and OWSTR. Based on this, the remainder of the current study can be addressed as follows.

2 Literature Review

Businesses are now using nonfinancial reporting to reveal their environmental and social performance due to the growing significance of corporate sustainability. Companies are under a lot of pressure to adopt sustainability reporting standards due to the increased attention that different stakeholder groups are paying to corporate sustainability [29,30]. As a result, reporting sustainable development performance has therefore become essential for businesses to satisfy stakeholders. According to [31], corporate sustainability reporting is the practice of disclosing how business operations affect the environment and society in order to ensure the survival of the company. CSR shows that the business is committed to putting social welfare and environmental preservation above profit [32]. Accordingly, CSR is about striking a balance between an organization's financial and non-financial goals while putting the general welfare of society first [33].

CSR is the term used to describe an organization's moral obligation to its stakeholders, who may be directly or indirectly impacted by its operations. To enable the public to assess the degree of the company's commitment to social responsibility, the CSR implementation will be detailed in the annual or sustainability report [34]. According to [35], CSR disclosure covers social elements like education, charitable giving, entrepreneurship, and skill development, while the environmental element pertains to the business's attempts to lessen environmental harm like pollution, hazardous waste, and careless energy use.

An increasing amount of research examines CSR and the impact of several organization-specific elements on the disclosure of sustainability [23]. The ownership structure of businesses, which differs depending on the institutional framework, can have a big impact on their willingness and capacity to disclose environmental information [36] (Wei et al., 2024), uses the frameworks of legitimacy theory and voluntary disclosure theory to investigate the impact of ownership structure. So, this section examines pertinent research that stat to OWSTR, CSR, and EQ.

Although there are many elements that make up corporate social responsibility (CSR), [32] argue that only a small number of them must be revealed by businesses; as a result, the extent of CSR disclosure depends on the policies and ownership structure of each company. Additionally, the empirical data shows that institutional ownership improves the connection between REM and CSR in the Saudi market [37]. Furthermore, the results imply that the association between REM and CSR reporting is mediated by institutional ownership.

This is consistent with other researchers' findings [25], which indicate that companies with large institutional ownership are more likely to erode the link between earnings management and CSR reporting. [23] set out to examine the extent and features of CSR disclosure in Jordan, their findings indicate that the percentage of independent directors on the board, the number of shares owned by institutional investors, and the board ownership ratio all had a significant and negative impact on the levels of CSR disclosure.

The EID of businesses in Jordan is unaffected by management ownership, according to [38]. Conversely, data from Malaysian corporations shows that there is a link between higher CSR disclosures and lower managerial ownership [39].

CSR and government ownership are correlated, according to a number of research [40,24,26]. With empirical findings showing a steady improvement in sustainability reporting in India, [40] study aims to explore the influence of ownership structure determinants on CSR disclosure practices in Nigeria. According to [24], the two main factors that have a substantial impact on how much sustainability information businesses disclose are government ownership and the frequency of board meetings. According to [24], more independent directors don't improve Indian corporations' sustainability disclosure.

Government ownership and CSR disclosure was found to be negatively correlated in both directions by the study [26], suggesting that the state has a propensity to invest in companies that make opaque disclosures. The response of CSRD to block ownership is somewhat negative. The findings show that when CSRD levels are low, directors prefer to own stock in the company they manage. Furthermore, [36] find that whereas institutional and state ownership show a negative link with environmental disclosure, managerial ownership shows a favorable correlation. While management, foreign, and public ownership had no effect on CSR disclosure, the results [41] showed that institutional ownership had a beneficial effect. Assessing the relation between the CSRD index and a number of company attributes, such as size, independence, board meeting frequency, CEO duality, firm size, leverage, profitability, and age, is the aim of the study conducted by [42], the results show that CSR disclosure in Saudi publicly traded companies is positively and strongly connected with both size and profitability.

According to this analysis [43], business leverage has a negative impact on CSR disclosure, whereas government and family ownership have a positive impact. Furthermore, in Saudi Arabia, CSR disclosure is not influenced by sector type, role duality, institutional ownership, board independence, effective audit committees, or corporate profitability. In addition to suggesting possible country-level moderators of this association. According to [27] research, a company's shares tend to convey less information regarding water when they are owned by a limited number of people.

On the other hand, [45] look into how institutional ownership affects the quality of earnings in China. Real earnings management and accruals for discretion were the two proxies for earnings quality that were investigated in this study. According to the study, companies with more robust institutional ownership are more likely to have higher-quality earnings, which are indicated by smaller discretionary accruals and less genuine activity manipulation. The accuracy of financial data, especially earnings quality, has drawn the interest of many academics in recent decades [46,47]. A clear and precise definition of profit quality is still elusive despite the attention. The primary goal of financial statements is to provide external users with useful information. The ability of the company to produce earnings that fairly and accurately reflect its actual financial performance, as well as the ability of these financial earnings to accurately predict the firm's future viability, are both considered aspects of earning quality [11].

The ability of the company to maintain long-term profits or the ability of current earnings to predict future earnings with accuracy are indicators of the firm's continuity. Particularly in family businesses, [48,49] investigate how CSR affects accuracy and relevance, two crucial components of profits quality. According to [50], EQ encompasses the reliability and consistency of reported earnings as well as the use of these earnings to forecast future cash flows and appropriately depict a company's earnings. This suggests that a bank's dedication to CSR initiatives improves cash flow predictability and profitability. Furthermore, in order to investigate the mediating and obscuring impacts of earnings quality on the link between environmental disclosure and report quality [28].

Developed countries require firms to publish ad hoc, interim, and annual reports on a regular basis. These reports provide qualitative narrative disclosures about the company's operations and noteworthy events, as well as the financial status of the company [28]. Additionally, according to [51], greater environmental disclosure improves company transparency by reducing the knowledge asymmetry between shareholders and firms. Since the relationship between ownership structures, earnings quality, and CSR has not been studied to date, this article aims to investigate how earnings quality affects ownership structure and CSR.

3 Hypothesis Development

By eliminating the gaps in information between investors and managers, EID initiatives and protocols can successfully minimize market inefficiencies [52]. Government agencies, the media, and society at large have put increasing pressure on businesses to disclose their environmental impact. As a result of the rising global interest in environmental protection, CSR disclosures have increased. By providing easily accessible information about a company's environmental risks, the CSR strategy seeks to empower stakeholders including investors, local communities, customers, employees, and the general public to pressure businesses to embrace more ecologically friendly practices [36]. EID is becoming a crucial component of corporate annual reports as well as other documents that discuss sustainability and social responsibility [53].

A previous empirical study on the association between ownership type and level of sustainability disclosure found that government enterprises are more likely to provide full sustainability information due to heightened public scrutiny [54]. Legitimacy theory states that public perception and organizational legitimacy are more important to state-owned enterprises. People are therefore more inclined to share information on sustainability, [55,56] claim that because state-owned businesses are more visible to the public, they are frequently politically sensitive. As a moral requirement, the public has high expectations for state-owned businesses to follow rules and take part in accountability initiatives. In order to verify the functioning of state-owned businesses, the government thus asks managers to increase the amount of corporate information disclosure.

According to [57,56], public expectations and trust put pressure on government-owned businesses to disclose more information. These companies use CSRD strategies to deal with the increased public scrutiny and expectations. However, because they are subject to independent government supervision, some businesses might decide not to provide full transparency. Numerous earlier studies' empirical data [56,58,59] supports the assumption that there is a favorable correlation between sustainability reporting and government ownership.

By reducing the knowledge asymmetry between the agent and the principal, institutional investors are essential to the supervision of corporate governance, according to agency theory. Their significant ownership holdings give them the ability to vote on company issues, which in turn affects corporate governance and management [60,61]. Investors may therefore put a lot of pressure on management to disclose more voluntary information, especially about carbon emissions [62,63].

Institutional investors' responsibility is to distribute capital among the most promising opportunities, as stated by [64]. According to [65], institutional investors are thought to play a major oversight role in the observation and control of business operations. Other stakeholders cannot access the internal information sources that these investors have exclusive access to [66,67]. According to [68], the analysis demonstrates a favorable correlation between sustainability reporting and institutional ownership. This is because institutional investors need information disclosure in order to keep an eye on businesses and make informed investment decisions.

According to earlier studies, foreign investors from developed countries have a major impact on disclosure standards [27]. [69,70] state that investors from developed countries are better at social responsibility programs and disclosure. One aspect of business ownership structure that has been studied in the corporate disclosure literature is foreign ownership [71]. Agency theory states that in order to address information asymmetry concerns, foreign investors usually look for more information [72]. According to [73], foreign ownership has a significant positive influence on CSR disclosure. Managers will face strong pressure from international investors to improve company disclosure, including social and environmental factors. The corporation's social responsibility may be demonstrated by this disclosure, which would reassure international investors about investing in this company. Foreign companies then use business disclosures to predict future events and reduce the cost of information acquisition [74].

The association between managerial ownership and CSRD is supported by [26], who claim managers are more likely to increase CSR in order to increase the value of the company by achieving a higher CSR rating when they own a significant amount of the share capital. By developing a reputation as caring employers, these managers will benefit. Similarly, external shareholders may push for more oversight at the expense of principal owners, or owner-managers may decide to disclose more information. As a result, managerial ownership has a favorable impact on CSR disclosure. Family ownership is another type of business structure that is common in Middle Eastern developing countries. This happens as a result of owner families' ability to sway business decisions because of their significant ownership stake or board of director positions. According to their choices, they can thereby influence corporate transparency [44].

Additionally, compared to other shareholder categories, family investors tend to have a longer-term investment horizon, which means that they receive less from information disclosure than other shareholder types. In general, family investors prefer less information exchange [75]. CSR disclosure is negatively impacted when management's familial relationships are made public. Therefore, we argue that a company's ownership structure may have a favorable impact on CSR disclosure in annual reports; based on the discussion above we can formulate the first hypothesis:

H1. There is a significant effect of the ownership structure on CSR disclosure in Saudi banks' annual reports.

[48,12] argued that the importance of accounting for the EQ stems from the intrinsic value of the earnings. An important consideration when making financial, investing, and other decisions is the earnings ratio. Many evaluative and predictive studies of the company's present and future performance use the earnings figure. According to a related study [50], earnings quality refers to the consistency and dependability of reported earnings as well as their usefulness in properly predicting future cash flows and a firm's profitability.

For users of accounting information, the significance of accounting earnings quality increases because it protects them from opportunistic earnings management strategies, which helps shield businesses from financial collapse and other disasters. Additionally, it helps achieve rational decision-making and effective resource allocation, which improves capital market efficiency [76].

Businesses with less information asymmetry have better accounting profits quality, and as a result, they aim to keep or reduce the amount of disclosure about their sustainability data [77,78]. Businesses with a higher level of information asymmetry, on the other hand, have lower accounting earnings quality and, as a means of making up for the shortcomings in accounting information quality, choose to increase the disclosure level of sustainability information [11].

A growing body of research looks at how different firm-specific characteristics affect organizational sustainability disclosure and how corporate sustainability reporting is affected [24]. According to [79], the firm's survival may be in danger if these social demands and expectations are not met. According to [80], sustainability reporting serves as a tool to validate business operations and demonstrate to stakeholders that the company complies with socially accepted norms. Sustainability disclosure, according to the legitimacy theory, can influence stakeholders' opinions of the company and demonstrate its dedication to social and environmental issues [81,82,24].

[83] refers to a company's profits quality as a complete indication of its financial performance. According to the current study, earnings quality affects how ownership structure and CSR are related, especially in businesses that don't engage in irregularities or accounting fraud. This makes it easier to assess whether value creation is actually occurring. While [84] indicates three ways that earnings quality affects company performance: (1) providing accurate information that helps choose investment projects; (2) reducing managerial opportunism; and (3) reducing information asymmetries. Similarly, [85,21] found that socially conscious companies are less likely to: manipulate earnings through discretionary accruals; alter genuine operating activities; and be the subject of SEC investigations.

In addition, the study clarified how foreign ownership, management, and institutions affect corporate social responsibility [41]. Usually seen in the ownership structure of the company, institutional ownership frequently makes up the majority of the shareholders. Second, managers are in charge of controlling information about business operations. Directors who are also business owners will have more say in decisions about investments and strategy. Third, when it comes to time allocation, priorities, and information asymmetry, foreign investors usually show different characteristics than Americans. Foreign ownership improves the company's performance and has an impact on internal operations [10].

In light of the aforementioned discussion, the present study argues that the ownership structure of businesses and their annual reports' CSR disclosure may be more significantly impacted by the quality of profitability.

H2: Earning quality has a significant effect on the relationship between ownership structure and CSR Disclosure in Saudi banks' annual reports.

4 Research Design

4.1 Data and Sample

The current study aims to assess the effect of Earnings Quality in the relationship between Ownership Structure and CSR Disclosure of publicly listed banks on the Saudi Exchange. The data were obtained from the Mubasher database, utilized by academics, professionals, and practitioners worldwide [86] (Chebbi & Ammer, 2022). The data encompassing CSR, Ownership Structure, and other financial metrics was collected over five years from 2020 to 2024. The sample consisted of 50 observations from 10 banks, with several components exhibiting missing values due to insufficient data availability in the Saudi market, which was difficult to acquire [87,88].

4.2 Variables Measurement

This study seeks to analyze the influence of Ownership Structure on CSR Disclosure, moderated by Earnings Quality, within Saudi Arabian listed banks. The measurement instruments can be defined as follows:

4.2.1 Independent Variable: Ownership Structure

Institutional, government, foreign, family, and managerial ownership are the five independent variables in this study. Institutional ownership is quantified by the proportion of the company's shares held by institutions. This technique is also used to assess government ownership, quantified by the proportion of share ownership held by the government or its agency [89,90,32]. In alignment with previous research, our analysis characterized foreign ownership as the ratio of shares owned by foreign shareholders to the total shares outstanding [91,22]. Managerial ownership is quantified by calculating the percentage of shares held by executive directors [4]. Family ownership is quantified by the ratio of shares held by families to the total number of the firm's shares [44].

4.2.2 Dependent Variable: CSR Disclosure

The dependent variable, the CSR disclosure score, is a dichotomous variable. Each bank that discloses CSR was assigned a score of 1, while non-disclosed banks were scored as 0.

4.2.3 Moderating Variable: Earnings Quality

Typically assessed in most accounting research through the discretionary elements of the modified Jones accrual model, which utilizes the discretionary components of total accruals (TACC) to reflect annual variations in operating revenues (ΔREV), accounts receivable (ΔAR), and property, plant, and equipment (PPE), as illustrated below [92,93].

$$\frac{TACC_{i,t}}{A_{i,t-1}} = \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \left[\frac{\Delta REV - \Delta AR}{A_{i,t-1}}\right] + \beta_3 \frac{PPE_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t} \tag{1}$$

This supplementary profit quality indicator is denoted by an earnings management meter (EM) derived from equation (2). Considering that managers can alter financial data to inflate or deflate sales, we adhere to the literature and analyze the absolute worth of earnings management to enhance accuracy. To standardize the earning-quality variable, we multiply EM by -1. Consequently, higher (lower) EM values signify superior (worse) profit quality [92,93].

4.2.4 Control Variable

The present study encompasses several control factors associated with firm characteristics, including Size, quantified as the logarithm of total asset value; Return on Assets (ROA), calculated as net profit divided by total assets; Leverage (Lev), defined as total debt divided by total assets; NEDs, the proportion of non-executive directors (NEDS) on the board for firm i in the year t; Loss, a value of 1 when firm i experiences a loss in year t, and 0 otherwise; Market-to-Book Ratio (MTB), the firm's market value divided by its book value [36]; a metric of potential for growth (GROWTH), defined as total assets less total common stock plus the company's market capitalization all scaled by total assets [33,94,95,92,93].

Table 1: Variable Definitions

Type	Variables	Code	Explanation	References
Independent Variable	Ownership Structure	Own_Struc	—	[22]
	Managerial Ownership	Man_Own	The percentage of shares held by executive directors	
	Institutional Ownership	Ins_Own	The proportion of the company's shares held by institutions.	
	Family Ownership	Fam_Own	The ratio of shares held by families to the total number of the firm's shares	
	Government Ownership	Gov_Own	The proportion of share ownership held by the government or its agency	
	Foreign Ownership	Fore_Own	The ratio of shares owned by foreign shareholders to the total shares outstanding	
Dependent Variable	Corporate Social Responsibility Disclosure	CSR	Dichotomous variable: Each bank discloses CSR was assigned a score of 1, while non-disclosed banks were scored as 0.	Governance, sustainability, stock market reports, and the firm's website
Moderator Variable	Earnings Quality	EQ	To standardize the earnings-quality variable, we multiply EM by -1. Consequently, higher (lower) EM values signify superior performance.	[92,93]
Control Variables	Firm size	SIZE	The logarithm of total asset value	[22]
	Return on Assets	ROA	Net profit divided by total assets	
	Market-To-Book Ratio	MB	The firm's market value divided by its book value	
	Leverage	Lev	Total debt divided by total assets	
	Loss	Loss	A value of 1 when firm i experiences loss in year t, and 0 otherwise	
	Non-executive Directors on the Board	NEDS	Proportion of non-executive directors (NEDS) on the board for firm i in the year t	
	Firm's Growth	GROWTH	Change in sales as percentage	

4.3 Empirical Model

4.3.1 Regression Specification for Testing Hypotheses

To investigate the effect of ownership structure on CSR Disclosure in banks' reports by moderating this effect by the earning quality, the binary logistic regression is used according to this equation:

$$\begin{aligned} CSR\_Disc = {} & \alpha+\beta_1 Man\_Own+\beta_2 Ins\_Own+\beta_3 Fam\_Own+\beta_4 Gov\_Own+\beta_5 Fore\_Own+\beta_6 EQ \\ & +\beta_7 SIZE+\beta_8 ROA+\beta_9 Lev+\beta_{10} GROWTH+\beta_{11} MTB+\beta_{12} NEDS+\beta_{13} Loss+\varepsilon \end{aligned} \tag{2}$$

5 Data Analysis and Results

5.1 Descriptive Statistics

Table (2) shows the descriptive statistics of all variables. It illustrates that CSR mean and standard deviation (S.D) are equal to 0.80 and 0.404, respectively. The means of ownership structure variables are 0.74, 0.80, 0.78, 0.90, and 0.76, respectively, i.e., Man_Own, Ins_Own, Fam_Own, Gov_Own, and Fore_Own. Moreover, the mean of Earnings Quality is 186.97. Thus, the current study can assure that the majority of firms tend to disclose CSR, and this result agrees with previous studies [70,66,69,44].

Table 2: Descriptive Statistics for Main Variables

	N	**Mean**	**Standard Deviation (SD)**
Man_Own	50	0.74	0.443
Ins_Own	50	0.80	0.404
Fam_Own	50	0.78	0.418
Gov_Own	50	0.90	0.303
Fore_Own	50	0.76	0.431
CSR	50	0.80	0.404
E_Q	50	186.97	86.266
IEV	50	7.8692	2.7896
Log SIZE	50	7.7214	1.2205
ROA	50	2.0360	1.0864
MB	50	19.7834	7.2286
Loss as dichotomous	50	0.8800	0.3283
NEDS	50	78.7174	4.4800
GROWTH	50	63.66	207.989

Figures (1, 2) shows the descriptive statistics of the independent and dependent variables as following:

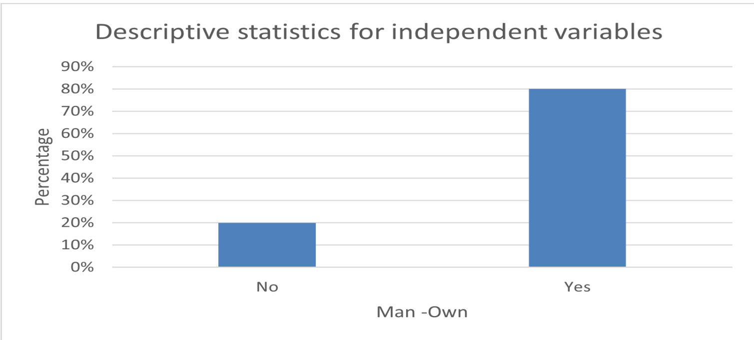

Fig. 1: Descriptive statistics for independent variables

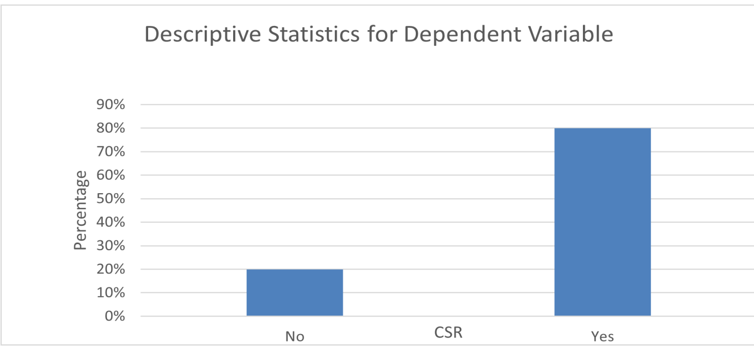

Fig. 2: Descriptive statistics for dependent variable

5.2 Correlation Analysis

Table (3) presents the results of the relationship among the main variables of the current study, illustrating the correlation among the research variables. The coefficients confirm a positive significant relationship between the ownership structure variables and CSR as follows: (0.616, 0.443, 0.338, 0.342, 0.387), respectively. These results indicate that increasing ownership structure variables positively relate to CSR, reinforcing the expected direction of the relationship between ownership structure and CSR disclosure in banks' annual reports.

Similarly, earnings quality (EQ) also exhibits a positive relationship, meaning that an increase in EQ leads to greater CSR disclosure. The correlation coefficient of EQ is (0.360), predicting that earnings quality has a positive relationship with ownership structure and CSR disclosure in the context of Egyptian banks.

Table 3: Correlations Matrix

Variables	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
Man_Own	1													
Ins_Own	-0.068	1												
Fam_Own	0.236	0.217	1											
Gov_Own	-0.046	-0.167	-0.016	1										
Fore_Own	0.414**	-0.164	-0.072	0.125	1									
CSR	0.616**	0.443**	0.338*	0.342**	0.387**	1								
E_Q	0.424**	-0.492	0.426**	0.304**	0.410**	0.360**	1							
LEV	0.007	-0.056	0.158	-0.030	-0.126	-0.105	-0.278	1						
SIZE	0.012	-0.116	-0.085	0.042	0.091	0.085	0.720**	-0.535**	1					
ROA	0.184	0.015	0.236	-0.081	-0.172	0.066	-0.395**	0.819**	-0.589**	1				
MB	0.184	0.016	0.232	-0.073	-0.226	0.149	-0.322*	0.607**	-0.464**	0.914**	1			
Loss	0.047	0.134	0.172	-0.073	-0.259	0.023	-0.368**	0.795**	-0.547**	0.912**	0.858**	1		
NEDS	-0.056	0.047	-0.015	-0.059	-0.083	-0.215	-0.539**	0.620**	-0.458**	0.556**	0.445**	0.625**	1	
GROWTH	0.029	0.207	0.052	-0.029	0.236	0.272	0.464**	-0.351*	0.330*	-0.552**	-0.510**	-0.464**	-0.419**	1

**. Correlation is significant at the 0.01 level.
*. Correlation is significant at the 0.05 level.

5.3 Baseline Results

Table (4) presents the Structural Equation Model (SEM) employing Path Analysis to examine the influence of EQ as a moderating variable in the interaction between ownership structure dimensions and CSR disclosure. Utilizing AMOS software, the analysis indicates the significance of the regression model as follows: CR values (14.816, 1.412, 3.120), path values (0.000, 0.158, 0.002), Standardized Coefficients (0.805, 0.181, 0.401), and Interpretation coefficients (0.648, 0.310), respectively. These results confirm the significant relationship between EQ and CSR, while the relationship between the independent ownership structure and the dependent CSR disclosure as the modifying variable EQ intervenes.

Table 4: Path Analysis Results

Dep. Variable	**Indep. Variable**	**Coefficient (B)**	**Standardized Coefficient (Beta)**	**R^2**	**S.E.**	**C.R.**	**P-value**	**Significance**
E_Q	Owner_ship	0.198	0.805	0.648	0.013	14.816	0.000	Significant
CSR	Owner_ship	139449.706	0.181	0.310	98769.745	1.412	0.158	Insignificant
CSR	E_Q	1255428.080	0.401		402385.198	3.120	0.002	Significant

The current study investigates the effect of earnings quality as a moderating variable in the association between ownership structure dimensions and CSR, with a Model Fit Summary presented in Figure (3).

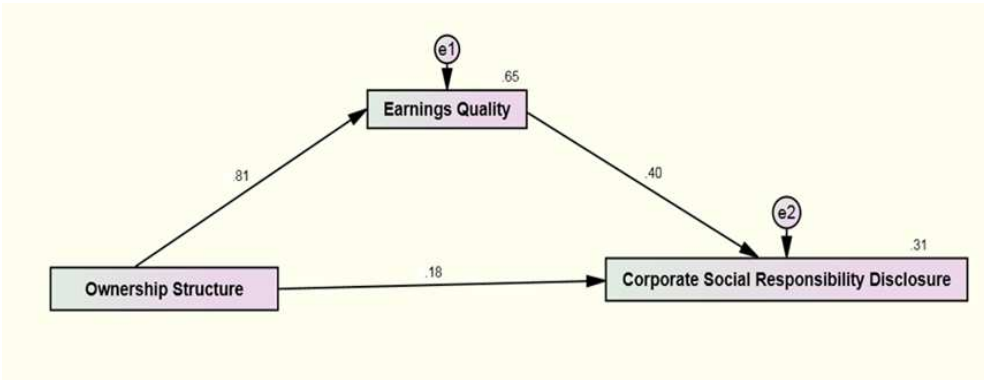

Fig. 3: Effect of EQ as a moderating variable

–**CMIN/DF**: The ratio between the value of Chi-Square (Chi^2) and the degrees of freedom (DF) = 1.10
–**P-value of CMIN**: 0.351
–**Relative Fit Index (RFI)**: 0.940
–**Normed Fit Index (NFI)**: 0.802
–**Incremental Fit Index (IFI)**: 0.960
–**RMSEA**: 0.031
–**Goodness of Fit Index (GFI)**: 0.905
–**Comparative Fit Index (CFI)**: 0.933
–**Root Mean Square Residual (RMR)**: 0.024

Despite the limited sample size, confirmatory factor analysis conducted with AMOS for ownership structure dimensions yielded a satisfactory fit (CFI=0.933, RMSEA=0.031). The findings indicate that the relationship between the independent variable (ownership structure) and the dependent variable (CSR) is contingent upon the moderating variable (EQ). The direct relationship between ownership structure and CSR is not significant; however, the relationship between EQ and CSR is significant. This result aligns with prior studies [83,84,85,21], which found that socially conscious companies are less likely to manipulate real operating activities, engage in earnings management, or attract SEC investigations.

5.4 Regression Analysis

Table (5) reports the results of a Logistic Panel Regression Model analyzing the effect of ownership structure and earnings quality on CSR using STATA software. The model employed is a Random-effects logistic regression model, as determined by Hausman's test. The model as a whole is significant according to the Wald test. Additionally, most independent variables exhibit significant effects on the dependent variable, whereas the results of control variables remain inconclusive.

Table (5) shows that ownership structure positively impacts corporate social responsibility. Specifically, managerial ownership (Man_Own) is significant and positive ($\beta = 0.517$, P-value=0.005), indicating that increasing managerial ownership leads to higher CSR disclosure. This result aligns with [26], which supports the relationship between managerial ownership and CSR disclosure.

Institutional ownership (Ins_Own) is also significant and positive ($\beta = 0.111$, P-value$<$0.05), indicating that increasing institutional ownership enhances CSR disclosure. This finding concurs with [68], which argues that institutional investors require informative disclosure for monitoring and investment decisions.

Family ownership (Fam_Own) is significant and positive ($\beta = 0.204$, P-value$<$0.05), suggesting that increasing family ownership improves CSR disclosure. However, contrasting views exist, such as [75], which posits that family investors prefer limited information sharing.

Table 5: Logistic Panel Regression Results

Variables	Coefficient (B)	Z	P-value	Significance
Man_Own	0.5172	2.80	0.005	Significant
Ins_Own	0.1111	3.52	0.031	Significant
Fam_Own	0.2036	3.14	0.006	Significant
Gov_Own	0.5838	2.29	0.005	Significant
Fore_Own	-0.1020	-0.58	0.559	Insignificant
EQ	0.4144	4.32	0.002	Significant
IEV	-0.0439	-0.75	0.454	Insignificant
Log SIZE	-5.3300	-3.23	0.013	Significant
ROA	0.4070	3.16	0.016	Significant
MB	0.0027	0.10	0.917	Insignificant
Loss (Dichotomous)	0.1457	1.24	0.316	Insignificant
NEDS	-0.0079	-0.37	0.708	Insignificant
GROWTH (% change in Sales)	2.5600	3.62	0.015	Significant
Constant	0.8539	0.51	0.610	Insignificant
R^2	0.76			
Wald Test	14.68			
P-value	0.023			
Hausman's Test	11.21			
P-value	0.4261			

Government ownership (Gov_Own) is significant and positive ($\beta = 0.584$, P-value<0.05), implying that higher government ownership leads to greater CSR disclosure. This finding aligns with [56,58,59], confirming the positive correlation between government ownership and sustainability reporting.

Conversely, foreign ownership (Fore_Own) is insignificant and negative ($\beta = -0.102$, P-value=0.559). This result suggests that increasing foreign ownership reduces CSR disclosure, contradicting prior research [27,69,70], which found that foreign investors from industrialized nations significantly influence disclosure practices. According to [73], foreign ownership substantially enhances social and environmental disclosure.

In the same vein, the results reveal that the association among ownership structure and CSR is stronger in high (ROA)-banks, and the impacts of Man_Own, Ins_Own, Fam_Own, Gov_Own on CSR vary by firm size. The findings indicate that CSR disclosure is positively and significantly correlated with both size and ROA in the context of Saudi banks.

Consequently, the first hypothesis is partially accepted as follows:

H1There is a significant effect of the ownership structure (Man_Own, Ins_Own, Fam_Own, Gov_Own) on CSR disclosure in Saudi banks' annual reports.

And the results in Table (5) show that earning quality has significant and positive effects on corporate social responsibility, where earning quality (EQ) as a moderator variable is:

$$\beta = 0.414, \quad P\text{-value} < 5\% \tag{3}$$

The statistical results are compatible with [41,10], where earning quality may have a greater impact on enterprises' ownership structure and CSR disclosure in their annual reports.

These results support the second alternative hypothesis of this research as follows: **H2** Earnings quality has a significant effect on the relationship between ownership structure and CSR Disclosure in Saudi banks' annual reports.

So, the current study may express the construction of the regression model as follows:

$$\begin{aligned} \text{CSR\_Disc} = {} & 0.854 + 0.517\text{Man\_Own} + 0.111\text{Ins\_Own} + 0.204\text{Fam\_Own} + 0.584\text{Gov\_Own} - 0.102\text{Fore\_Own} \\ & + 0.414\text{EQ} - 5.33\text{SIZE} + 0.407\text{ROA} - 0.044\text{Lev} + 2.56\text{GROWTH} + 0.003\text{MTB} - 0.008\text{NEDS} + 0.146\text{Loss} \end{aligned} \tag{4}$$

6 Results& Recommendations

The current study highlighted the relation between ownership structure and CSR disclosure considering the mediation role of earning quality in Saudi banks' annual reports. As Saudi Arabia progresses significantly to enhance financial transparency and integrity, specifically CSR disclosure, the Saudi market is a distinct context to conduct academic research on CSR, ownership structure, and earning quality. Theoretical results support the hypothesis of the association between institutional ownership and sustainability reporting because institutional investors require informative disclosure to monitor businesses and make investment decisions. According to prior studies, foreign ownership significantly improves social and environmental disclosure, managerial ownership contributes positively to CSR disclosure, and family ownership has the power to affect company disclosure according to their preferences.

In this line, the statistical results of the current study agree with a vast stream of prior studies [70,66,69,44,67]. The results conclude a positive significant relationship between the ownership structure proxies and CSR, where increasing ownership structure indicates direct relations with corporate social responsibility disclosure (CSR). The current study states that the degree of CSR disclosure varies depending on the ownership structure and policies of each individual firm [32]. Results reveal that the association among ownership structure and CSR in the presence of ROA varies by firm size in the Egyptian banks context.

The results show that earning quality has a significant and positive effect on corporate social responsibility. This statistical result is compatible with [41,10], where earning quality may have a greater impact on enterprises' ownership structure and CSR disclosure in their annual reports. Thus, these results support the second alternative hypothesis of this research:

H2: Earning quality has a significant effect on the relationship between ownership structure and CSR Disclosure in Saudi banks' annual reports.So, we can conduct the logistic regression model.

As an emerging market, the study confirms that Saudi banks are characterized by cross-holdings and pyramidal structures. Saudi Arabia's regulatory and institutional environment differs from that of developed countries due to several factors, including market uncertainty, government ownership, family ownership (FAMW), information asymmetry, considerable government intervention, a lack of external governance mechanisms, and the possibility of minority shareholder rights being expropriated. Saudi Arabia is a promising market for research, particularly on issues pertaining to financial transparency and integrity regarding CSR disclosure. Therefore, we recommend conducting more academic research on CSR in line with the Kingdom's vision.

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