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Posted Date: 7 October 2025

doi: 10.20944/preprints202510.0541.v1

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Article

# CEO Characteristics and Risk-Taking Behavior: Statistical Evidence from Saudi Arabia

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## Abstract

This paper aims to capture the impact of CEO characteristics on corporate risk-taking behaviour in the emerging stock market, namely the Saudi market, by analyzing data from 43 firms listed in TADAWUL from 2016 to 2024 using a quantitative method through two statistical models to examine how a CEO's power, tenure, and confidence influence risk-taking behaviour from accounting and market-wise perspectives. Results reveal that CEO power and CEO confidence show significantly positive coefficient impacts on market-wise corporate risk-taking. In contrast, CEO tenure has no impact on market-wise corporate risk-taking. In addition, CEO power and CEO confidence show an insignificant coefficient impact on accounting corporate risk-taking. In contrast, CEO tenure has a significant N-shaped curve in accounting for corporate risk-taking. The findings contribute to the existing accounting literature by providing new evidence from Saudi Arabia and provide insights into the influence of CEOs' attributes in shaping a firm's risk-taking behaviour from two perspectives.

**Keywords:** risk-taking behaviour; CEO power; CEO confidence; CEO tenure

## 1. Introduction

Risk-taking behaviour (RTB) in accounting and finance research refers to the decisions made by firms that involve uncertainty and the potential for negative outcomes (Akbar et al., 2017; Gala & Kashmiri, 2022). Essentially, this behavior reflects a firm's willingness to undertake activities with uncertain outcomes. Key decisions in this context can include investments in new projects or technologies, as well as financial strategies such as leveraging, mergers, and acquisitions. Previous research has shown that many factors may influence these risk-taking decisions, including managerial characteristics, corporate governance, and external environmental factors (Antoniou et al., 2022; Salehi et al., 2022; Feng et al., 2024). So, A major decision that a firm needs to make is the level of risk they accept their firm will face. Moreover, risk-taking is a successful strategy for performing profitable operations. Theoretically, high profit is associated with high risk, but in real practice, risk can also result in financial distress, which can impact the firm's operational performance. Thus, given their propensity for taking risks, managers must decide how much risk they are willing to accept (Frijns et al., 2022).

The theoretical underpinning for examining CEO characteristics as determinants of corporate risk-taking is rooted in many theories (Salehi et al., 2022; Ali et al., 2024). Agency theory suggests that CEO attributes can influence the alignment of interests with shareholders, while the upper echelons theory, which posits that a firm's choices reflect the values and cognitive bases of its powerful actors, highlights how individual biases, such as overconfidence or risk aversion, might systematically affect strategic decisions. Consequently, understanding the specific characteristics of CEOs—including their tenure, educational background, age, and prior experience—becomes paramount in explaining variations in corporate RTB across firms.

Since the beginning of the 20th century, Saudi Arabia, as the biggest economy in the Middle East, has tried to reform corporate governance, especially board governance; this was urged to increase investors' confidence in the Saudi stock market (TADAWEL) and attract more inside and

outside investment. Moreover, Corporate governance in Saudi Arabia became an essential concept, integral to the financial health of firms. So, the development of corporate governance codes in Saudi Arabia has been a positive step towards enhancing corporate transparency, accountability, and investor protection (Alzugaiby, 2022; Hamza & Gamra, 2023). By focusing on the structure of boards of directors in general and the characteristics of the CEO in particular. Given Saudi Arabia's efforts to enhance the corporate governance framework, particularly through reforms on board structures, it becomes important to discover how CEOs influence firm financial behaviors. Among these, RTB appears as a major strategic decision with a significant role in creating the firm's value and investor confidence. Thus, a deeper examination of how the characteristics of CEOs in Saudi Arabia shape firms' behavior is essential for going further in national corporate governance development.

The motivation for this research stems from many issues. First, despite extensive global research around RTB, there remains a gap in understanding the influence of CEO characteristics, especially within Arab countries, and Saudi Arabia, as the largest economy and a nation undergoing regulatory reforms under Vision 2030, presents an ideal business environment to examine the RTB. Secondly, understanding the human influence on the risk behaviour is crucial for governance development. where firms face complex decisions in their CEO selection, as matching CEO characteristics with the firm's strategic objectives is paramount, including its risk profile. Third, the economic transformation in Saudi Arabia needs more understanding of all factors influencing firm strategy to ensure that national development goals are supported by sound corporate behaviour. This study is motivated by the need to bridge this critical empirical gap and provide context-specific insights that are relevant to this dynamic environment.

Several key motivations drive conducting this research. First, RTB as a mechanism to enhance financial performance has led to several studies examining its influencing determinants (Tran & Le, 2022; Liu et al., 2023), but most of the related previous literature has concentrated on developed countries (Tran et al., 2020). However, relatively little is known about developing countries. So, we aim to fill the knowledge gap. Second, find new evidence about the potential impact of firm-level attributes on RTB. Third, determine the impact of the CEO's characteristics on RTB in Saudi Arabia. Thus, the current research aims to find answers to the following research questions from the Saudi context:

- Does CEO power impacts RTB in Saudi Arabia?
- Does CEO tenure impacts RTB in Saudi Arabia?
- Does CEO confidence impacts RTB in Saudi Arabia?

The rest of this paper as follows: Section 2, theoretical background, literature review, and hypotheses development. Section 3, Methodology and statistical models. Section 4, the results. Then, the discussion in section 5, followed by section 6, the conclusion.

## 2. Theoretical Background, Literature, and Hypotheses

Previous financial crises have cast doubt about the RTB of top managers (Sittipongpanich & Polsiri, 2012). From a theoretical perspective, agency theory explains that while CEO characteristics can enhance a firm's performance, it may also increase agency problems and varying levels of risk-taking incentives. If the risk-taking motivations and behaviors of managers are not properly monitored, this can negatively impact the corporate's value. (Cheng & Zhang, 2022). In addition, The upper echelons theory argued that directors' characteristics have an impact on their perceptions (Arulanandam et al., 2023), and thus their own decisions, which risk-taking is one of these decisions (Bsoul et al., 2022). So, we tried to summarize and review the theoretical arguments and previous literature evidence around the nexus between the CEO's characteristics and RTB as follows:

### 2.1. CEO Power

The CEO's power as a characteristic refers to the CEO's ability to influence the strategic and financial decisions beyond the formal authority and the theoretical nexus between the CEO's power

and RTB is mainly shaped by agency theory through two main perspectives. First, powerful CEOs have greater managerial discretion, leading them to engage in higher-risk activities, potentially driven by overconfidence. Second, the managerial entrenchment perspective assumes that, as the CEO's power and personal wealth are associated with the firm's value, CEOs may become more risk-averse, prioritizing their entrenched positions over potentially risky, high-return strategies. These two arguments lead to mixed predictions about the impact of CEO power on RTB. (Korablev & Podukhovich, 2022). In addition, the Upper Echelons Theory assumes that RTB as a strategic decision directly reflects the power of its CEO and suggests that a powerful CEO, possessing greater discretion due to the structural position or ownership, is more likely to implement strategies that align with their personal risk preferences for the firm's direction. For instance, a powerful CEO may push the firm for risky investments, such as substantial R&D or large acquisitions (Al-Shammari, 2021).

In terms of empirical evidence, early contributions such as Akbar et al. (2017) examined the nexus between board of directors attributes and corporate RTB in the UK over ten years from 2003 to 2012 and suggested that the presence of non-executive and powerful CEOs reduces corporate RTB. The negative nexus can be explained within the agency theory. In a different institutional setting, Lawal (2018) examined the effect of board of directors' characteristics on managerial RTB using a sample of Nigerian firms from 2004 to 2010 and found robust evidence that CEO non-duality is negatively associated with RTB due to enhanced board independence. Moreover, Marchini et al. (2020) investigated the nexus between ownership structure and risk-taking behaviour, as well as disclosure as a tool for protecting shareholders in Italy during 2018 and found that a high level of ownership concentration and managerial ownership (power) is positively related to a firm's low level of RTB. Going further, Al-Shammari (2021) investigated the nexus between the CEO and RTB in the USA using an agency theory framework and integrated the incentive alignment and monitoring approaches to reducing principal-agent conflicts and revealed a significant positive nexus between CEO option pay and CEO risk-taking. Further, strong positive effects of CEO duality (power) and managerial ownership. Foong et al. (2021) examined the RTB in Malaysia over the 2009-2015 period and found that the CEOs are risk-takers in general. Moreover, this behavior increased with the degree of CEO power, and the result is also robust when using leverage as a measure of CEO risk-taking. Bsoul et al. (2022) examined the impact of CEOs' demographic characteristics on firms' risk-taking in Jordan during the period from 2015 to 2019 and found a positive nexus between the CEO tenure and the level of risk-taking, but the CEO duality (power) is unrelated to RTB. Most recently, Sarang et al. (2024) examines risk taking behavior using in USA from 1996 to 2019 and documented that the powered CEOs (duality and tenure) have a lower financial risk-taking propensity.

Going to the Saudi economy, Hamza & Gamra (2023) examined the influence of CEOs' power (e.g., ownership power, structural power and expert power) on RTB in Saudi Arabia from 2016 to 2019 and found that CEOs with short tenure and low power are more innovative and tend to risky activities.

Motivated by the assumptions of agency theory, beside the mixed evidence in the literature, we developed the following hypothesis to determine the impact of the CEO power on RTB in Saudi Arabia:

**H1:** *CEO power impacts RTB in Saudi Arabia*

## 2.2. CEO Tenure

The CEO's tenure as a characteristic refers to the period a CEO has been serving in the position within the firm. The nexus between CEO tenure and RTB is theoretically shaped by the agency theory, which highlights that a CEO's tenure can influence their risk acceptance level, early tenure tends to risky activities to establish competence, while longer tenure led to risk avoidance due to entrenchment or, conversely, increased risk-taking due to greater managerial discretion. In the same line, Stakeholders theory assumes two perspectives, a CEO's tenure might change the focus and leading long-tenured CEOs to either become more align with the interests of stakeholders (balancing

risk with firm's long-term stability) or, if entrenched, to priorities personal interest over stakeholders. In addition, the upper echelons theory argues that a CEO's tenure significantly shapes their strategic choices, and, consequently, early in their tenure, CEOs might exhibit higher risk-taking to establish their competence. As tenure lengthens, the CEOs become more risk-averse to protect their position. (Salehi et al., 2022; Arulanandam et al., 2023; Leng & Pan, 2023)

In terms of empirical evidence, Cirillo et al. (2021) investigated how firms' RTB in Italy is shaped by CEO tenure over the period from 2003 to 2012 and noted that the CEO tenure has a concave nexus with firm risk-taking. Salehi et al. (2022) explored the nexus between management attributes (e.g., tenure and overconfidence) and firm risk-taking in Iran using a sample of listed firms from 2011 to 2017 and noted that the effect of managerial tenure on RTB is positive, but the effect of managerial overconfidence on risk-taking is significantly negative. Adding further complexity, Yeoh & Hooy (2022) examined the nexus between CEO age, tenure, and RTB in Malaysia from 2009 to 2017 and found that CEO age and tenure have an inverse U-shaped nexus, such that RTB increases with CEO age but reduces beyond a certain age threshold. The inconsistencies persist even within the same country context, Arulanandam et al. (2023) employed the upper echelons theory to explore the effects of CEO characteristics on RTB, by using the top 100 listed Malaysian firms from 2015 to 2020 and noted that CEO age negatively impacts RTB. At the same time, the CEO's tenure and gender have no significant impact on RTB. Beyond simple linear or curvilinear relationships, Leng & Pan (2023) examined the nexus between the CEOs' managerial skills and RTB in the USA from 1997 to 2017 and found that generalist CEOs are associated with significantly higher firm risk, with the association decreasing significantly with CEO tenure. Most recently, Liu et al. (2024) explored the firm's risk-taking in China from 2007 to 2021 and noted that firms with short-term CEO tenure are avoiding risky activities and behavior.

Going to the Saudi economy, Hamza et al. (2020) examined the effect of CEO attributes on firms' R&D spending from 2016 to 2019 and noted that firms employing CEOs with high functional backgrounds and tenure invest more in R&D. Similarly, if the CEO has a part in the firm's ownership.

Motivated by the assumptions of agency and stakeholders' theories, beside the mixed evidence in the literature, we developed the following hypothesis to determine the impact of the CEO confidence on RTB in Saudi Arabia:

**H2:** *CEO tenure impacts RTB in Saudi Arabia.*

### 2.3. CEO Confidence

The CEO's confidence as a characteristic refers to the CEO's subjective belief in their abilities, judgment, and the firm's prospects. The nexus between CEO confidence and corporate RTB is illustrated in many accounting theories, such as the agency theory which ensures that a CEO's confidence can positively influence their acceptable risk level, believing their risky decisions can lead to more returns. Moreover, stakeholder theory argues that a CEO's confidence level can impact their consideration of stakeholder interests; while the CEO's confidence might drive risks that balance various demands for long-term firm financial health, overconfidence could lead to a disregard for potential negative impacts on the main stakeholders (investors). Furthermore, signaling theory explains how a CEO's confidence can transfer crucial information to stakeholders, such as a massive volume of investments signaling a strong future financial strategy and influencing stock market perceptions. In addition, The upper echelons theory assumes that a confident CEO, especially one exhibiting overconfidence, might overestimate future profits and underestimate related risks, leading the firm towards risky activities. (Jilani & Chouaibi, 2021; Gala & Kashmiri, 2022; Bhuiyan et al., 2024)

In terms of empirical evidence, Jilani & Chouaibi (2021) explored the CEO's behavioral impact on the RTB based on a sample from 34 different countries from 2007 to 2019 and highlighted that when CEOs seem to be overconfident, they are more likely to reduce the RTB. But there is a positive nexus between the CEO's power and the RTB. Adding another layer of complexity, Gala & Kashmiri (2022) examined the effect of the CEO's integrity on the firm's strategic orientation in USA across

2014–2017 and found that the CEOs who have high degrees of integrity tend to negatively influence the behavior of risk-taking. Moreover, the impact of CEO integrity is likely to be stronger for overconfident CEOs and CEOs with high power. Most recently, Bhuiyan et al. (2024) investigated the nexus between the directors (confident) and the risk-taking propensity using a sample of USA firms and found that the risk-taking propensity increases when a firm appoints a confident director. Further analysis determined that the presence of confident directors decreases the long-term firm value in the aftermath of RTB.

Going to the Saudi economy, Alzugaiby (2022) investigated the impact of managerial ability on RTB from 2008 to 2018 and indicated that firms managed by high-ability and confident CEOs have the propensities to take less risk. Moreover, Almufatah et al. (2023) examined the effect of the governance system on firm RTB in the MENA region (including Saudi Arabia) from 2010 to 2019 and suggested that there is a nexus between sound governance systems, managers' personalities, and incentivizing firms to engage in risky activities. That means the managers are motivated to run projects with higher risk and return, with the potential to contribute to the country's growth.

Motivated by the assumptions of agency and signaling theories, beside the mixed evidence in the literature, we developed the following hypothesis to determine the impact of the CEO confidence on RTB in Saudi Arabia:

**H3:** CEO confidence impacts RTB in Saudi Arabia.

### 3. Methods

#### 3.1. The Study Sample

Our population is represented by the Saudi listed firms from 2016 to 2024, and we choised the study sample according to three norms, including: a) the availability of financial reports. b) the firm has not been subject to discontinuation during the study period. c) excluding financial and banking sectors. Thus, the adoption of our norms resulted in a sample of 43 firms.

#### 3.2. Variables Measurement

##### 3.2.1. Risk-Taking Behaviour (RTB)

In this study, corporate risk-taking from an accounting perspective is proxied by the volatility of firm profitability. Following prior research, we compute the standard deviation of Return on Assets (ROA) over the past five years (ROA\_sd5). ROA is defined as net income divided by total assets. This measure captures the extent to which a firm's profitability fluctuates, thereby reflecting its level of risk-taking in operational and investment decisions. Based on that, the Formula (for firm I at year t)

$$ROA\_sd5_{i,t} = \sqrt{\frac{1}{n-1} \sum_{s=t-4}^t (ROA_{i,s} - \bar{ROA}_{i,t})^2}$$

where,  $ROA_{i,s}$  = Return on Assets of firm I in years.  $\bar{ROA}_{i,t}$  = average ROA of firm I over the past 5 years (from t-4 to t).  $n = 5$ (years)

To measure corporate risk-taking from a market-based perspective, we employ the volatility of stock returns over a rolling five-year window (Sri\_sd5). Stock returns are calculated as the natural logarithm of price relatives, adjusted for dividends to reflect total shareholder return. The standard deviation of these returns provides a forward-looking measure of the variability in firm performance as perceived by the market. This proxy is consistent with prior studies in corporate finance and governance literature and reflects investor assessment of managerial risk-taking behaviour. Based on that, the Formula (for firm I at year t)

$$SRI\_sd5_{i,t} = \sqrt{\frac{1}{n-1} \sum_{s=t-4}^t (SR_{i,s} - \bar{SR}_{i,t})^2}$$

where,  $SRI\_sd5_{i,t}$  = corporate risk-taking of firm I in year t (market-based).  $SR_{i,s}$  = stock return of firm I in year s.  $\bar{SR}_{i,t}$  = average stock return for firm I over the past 5 years.  $n = 5$  years.

### 3.2.2. CEO Characteristics

Concerning the CEO's power, we followed Gala & Kashmiri (2022) by using the CEO's ownership and duality, by a composite method, if the sum of CEO duality and equity dispersion is greater than or equal to 1, it is recorded as 1, otherwise it is recorded as 0. In terms of the CEO's tenure, we followed Almulhim & Aljughaiman (2023) By using The number of years.

Regarding the CEO's confidence, we followed Khajavi & Dehghani (2016) and Zribi & Boufateh (2020) by using the asset over-investment method, which argued that the over-investment is characterized from the following regression model:

$$AG_{it} = \beta_0 + \beta_1 SG_{it} + E_{it}$$

In which  $AG_{it}$  represents asset growth,  $SG_{it}$  represents sales growth, and  $E_{it}$  is residuals at the end of year (t) for a firm (i). A positive value of the residuals means that there is an over-investment in the firm's assets; from the over-investment, the indicator is the negative and positive movements that characterize the residuals of the equation. Thus, we argue that the CEO's overconfidence has the same face as positive over-investment fluctuations. So, the following Table 1 summarizes the measurement methods of the CEO's characteristics.

**Table 1.** Measurement of CEO's characteristics.

Variable	Measurement method	Ref.
CEO's power	CEO's ownership and duality	(Gala & Kashmiri, 2022)
CEO's tenure	The number of years since the appointment	(Almulhim & Aljughaiman, 2023)
CEO's confidence	The asset overinvestment method "The positive movements of investment"	(Khajavi & Dehghani, 2016; Zribi & Boufateh, 2020)

### 3.3. Research Models

To test the impact of CEO confidence, CEO power, and CEO tenure on corporate risk taking within the Saudi context, this research uses the following research models.

The first regression model examines the impact of CEO traits on corporate RTB from accounting perspective as follows:

$$ROA\_sd5_{i,t} = \beta_0 + \beta_1 CEOP_{i,t} + \beta_2 Ln\_Ten_{i,t} + \beta_3 CEOC_{i,t} + \beta_4 Size_{i,t} + \beta_5 Lev_{i,t} + \beta_6 OCF_{i,t} + \beta_7 BAS_{i,t} + \beta_8 VOL_{i,t} + \varepsilon_{i,t}$$

The second regression model examines the impact of CEO traits on corporate RTB from market-wise perspective as follows:

$$SRI\_sd5_{i,t} = \beta_0 + \beta_1 CEOPower_{i,t} + \beta_2 Ln\_Ten_{i,t} + \beta_3 CEOC_{i,t} + \beta_4 Size_{i,t} + \beta_5 Lev_{i,t} + \beta_6 OCF_{i,t} + \beta_7 BAS_{i,t} + \beta_8 VOL_{i,t} + \varepsilon_{i,t}$$

where,  $ROA\_sd5_{i,t}$  = corporate risk taking from accounting perspective for firm (i) at year (t).  $SRI\_sd5_{i,t}$  = corporate risk taking from market-wise perspective for firm (i) at year (t).  $CEOP_{i,t}$  = CEO power for firm (i) at year (t).  $Ln\_Ten_{i,t}$  = CEO tenure for firm (i) at year (t).  $CEOC_{i,t}$  = CEO confidence for firm (i) at year (t).  $Size_{i,t}$  = Firm size for firm (i) at year (t).  $Lev_{i,t}$  = Financial leverage for firm (i) at year (t).  $OCF_{i,t}$  = operating cash flow for firm (i) at year (t).  $BAS_{i,t}$  =

information asymmetry measured by bid-ask spread for firm (i) at year (t).  $Vol_{i,t}$  = accumulated trading volume for firm (i) at year (t).  $\beta_0 : \beta_8$  = the estimated constant terms and coefficients.  $\varepsilon_{it}$  = The estimated random error of firm i at year t.

## 4. Results

### 4.1. Descriptive Statistics

Table 2 presents the summary statistics for all variables included in the research models, over the period from 2016 to 2024 in Saudi Arabia.

**Table 2.** Descriptive Statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA sd5	331	.044	.039	.007	.187
SRi sd5	331	.016	.009	.004	.043
CEOTenure	331	3.039	1.713	1	7
Ln Ten	331	.943	.628	0	2.398
Size	331	21.674	1.562	16.821	25.502
Lev	331	.503	.259	.093	1.126
OCF	331	.06	.108	-.189	.317
BAS	331	.031	.017	.003	.078
Vol	331	19.186	1.364	16.509	21.855

Table 2 shows the summary statistics, the study variables used in this research have been minorized at 3%, to solve the impact of outliers. The corporate risk-taking from accounting perspective (ROA\_sd5) ranges from (0.007) to (0.187), indicating substantial variation in corporate risk-taking exposure from accounting perspective. This wide dispersion is reflected in the standard deviation of (0.039), which is large relative to the mean of (0.044). With regards to corporate risk taking from market-wise perspective (Sri\_sd5), it shows significant variation among firms. The maximum value of (0.043) indicating high exposure to corporate risk taking from market-wise perspective relative to the mean (0.016) and the minimum value of (0.004) indicates that other firms do not have exposure to corporate risk taking from market-wise perspective. This wide range is not common in the research sample because the standard deviation of (0.009), which is notably low compared to the mean of (0.016), highlights same exposure to corporate risk taking from marketwise perspective. The average CEO tenure (CEOTenure) is (3), with relatively high standard deviation of (1.713) indicates the asymmetry of CEO tenure over the study period for Saudia Arabia.

In terms of firm size, applying the natural logarithm to the book value of total assets resulted in a smoothing effect on firm size among the sampled Saudi firms. As a result, the standard deviation is only 1.562, which is quite small compared to the mean of 21.674. Regarding firm leverage (Lev), the sampled Saudi firms show an average leverage of 50.3%, suggesting that nearly half of their capital structure, on average, is financed by debt. The range of leverage ratios is wide, from a minimum of 9.3% to a maximum of 1.126% indicating some sampled firm have negative equity and total liabilities greater than total assets. This notable variability in how Saudi firms utilize debt versus equity for financing assets and operations is confirmed by a standard deviation of 0.259, which is moderately high relative to the mean. Concerning operating cash flow OCF, the average (OCF) is (0.06), indicating that the sampled Saudi firms earn a positive cash flow from operations. In terms of the information asymmetry, the sampled firms have mean of (0.031), with relatively high dispersion (0.017) around the mean. The mean trading volume (Vol) is applying the natural logarithm to the accumulated trading volume for each year resulted in a smoothing effect on trading volume among the sampled Saudi firms. As a result, the standard deviation is only 1.364, which is quite small compared to the mean of (19.186). on the other hand, firms are driven by CEO with power 56.8% and CEO confidence 51.66% as show in the following Table 3:

**Table 3.** tabulation of dummy variables.

CEOP	Freq.	Percent	Cum.
0	143	43.20	43.20
1	188	56.80	100.00
<b>Total</b>	331	100.00	
CEOC	Freq.	Percent	Cum.
0	160	48.34	48.34
1	171	51.66	100.00
<b>Total</b>	331	100.00	

#### 4.2. Correlation Analysis Results

The correlation matrix shows an initial insight into the linear correlations. Coefficients are utilized to ascertain both the direction and magnitude of the linear association between regressors and corporate risk-taking proxies.

The Pearson's correlation matrix reported in Table 4 reveals that there is a significant weak negative correlation between corporate risk taking by accounting perspective (ROA\_sd5) and market-wise perspective (Sri\_sd5) indicating that the two proxies are complementary measures of corporate risk taking. This implies that as the volatility of ROA tends to decrease the volatility of stock return tends to increase. CEO tenure (CEOT) has an insignificant correlation with corporate risk taking from accounting and market-wise perspectives. On the other hand, firm size has a negative association with corporate accounting risk taking. In contrast, it has an insignificant association with market-wise corporate risk taking. Capital structure has a positive relationship with two proxies of corporate risk taking. OCF has a negative relationship with two proxies of corporate risk taking. Information asymmetry (BAS) has a negative association with corporate accounting risk taking. In contrast, it has an insignificant association with market-wise corporate risk taking. Finally, trading volume has a positive association with corporate accounting risk taking. In contrast, it has a negative significant association with market-wise corporate risk taking.

**Table 4.** Correlation Matrix - Pairwise Correlations.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) ROA_sd5	1.000							
(2) SRi_sd5	-0.090*	1.000						
	(0.101)							
(3) CEOT	0.065	0.015	1.000					
	(0.237)	(0.781)						
(4) Size	-0.32***	0.065	-0.084	1.000				
	(0.000)	(0.240)	(0.127)					
(5) Lev	0.380***	0.191***	0.049	0.053	1.000			
	(0.000)	(0.000)	(0.370)	(0.337)				
(6) OCF	-0.21***	-0.14***	-0.073	0.346***	-0.39***	1.000		
	(0.000)	(0.009)	(0.182)	(0.000)	(0.000)			
(7) BAS	-0.15***	0.072	-0.071	-0.101*	-0.044	0.134**	1.000	
	(0.006)	(0.191)	(0.196)	(0.067)	(0.424)	(0.015)		
(8) Vol	0.274***	-0.119**	-0.021	0.009	0.195***	-0.25***	-0.42***	1.000
	(0.000)	(0.030)	(0.710)	(0.871)	(0.000)	(0.000)	(0.000)	

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

The fact that correlation coefficients do not consider non-linear correlations between variables is something that should be taken into consideration. The curvilinearity of the data must thus be taken into consideration while doing the regression analysis.

#### 4.3. Hypotheses Testing

The direct effects in this research are estimated using both the Ordinary Least Squares (OLS) method and the Generalized Least Squares (GLS) method. The GLS method addresses potential issues that may arise with OLS, providing a more robust analysis.

##### 4.3.1. Analysing the Impact of CEO's Traits on Market-Wise Corporate RTB

Table 5 is organized into three panels. Panel (1) reports the OLS goodness-of-fit tests, Panel (2) presents the fitted GLS regression results, and Panel (3) provides the estimated turning points for the non-linear effects. Regarding the goodness-of-fit tests, the results of the mean variance inflation factor (VIF) indicate no multicollinearity among the regressors, as shown in Panel (1) of Table 5. For heteroskedasticity, the Breusch–Pagan/Cook–Weisberg test reveals significant heteroskedasticity, supporting the alternative hypothesis that error variances are not constant across observations. Additionally, the Ramsey RESET test for omitted variables suggests model 1 is well specified, as the p-values are greater than 5%, as reported in Panel (1) of Table 5. Finally, the Wooldridge test for autocorrelation in panel data detects serial correlation in the residuals, given that the p-values are less than 5%, as shown in Panel (1) of Table (). Panel (2) of Table 5 reports the fitted GLS regression results. The research model reported in Panel (2) of Table 5 are significant because their Prob > F values are lower than 0.05. The R-squared values show that the explanatory variables account for approximately 21.5% of the variation in market-wise corporate risk taking.

CEO power and CEO confidence show significantly positive coefficients impact on market-wise corporate risk taking. In contrast, CEO tenure has no impact on market-wise corporate risk taking. Firm size has positive significant impact on market-wise corporate risk taking. Regarding capital structure it has a significant U-shaped curve. Meaning that at low levels of Lev, Lev shows a negative slope coefficient on market-wise corporate risk taking at the start. Beyond a certain threshold, 0.45 further increases in Lev lead to a positive slope coefficient on market-wise corporate taking. On the other hand, OCF and Vol show significant negative impact on market-wise corporate taking. Finally, information asymmetry has a significant inverted U-shaped curve. Meaning that at low levels of BAS, BAS shows a positive slope coefficient on market-wise corporate taking at the start. Beyond a certain threshold, 0.045 further increases in BAS lead to a negative slope coefficient on market-wise corporate risk taking.

**Table 5.** The Impact of CEO's Traits on corporate risk taking from market-wise perspective.

<b>Panel (1): The Ordinary Least Square Goodness of Fit Tests</b>	
<b>Test</b>	<b>SRi_sd5</b>
OCF	1.496
Vol	1.328
Lev	1.269
BAS	1.267
Size	1.234
CEOC	1.022
Ln Ten	1.017
CEOP	1.016
Mean VIF	1.206
Heteroskedasticity	Chi2 = 26.85 P> chi2 = 0.0000
Omitted variables	F = 0.09 P > F = 0.9668

Autocorrelation		F = 14.625 P > F = 0.0004
<b>Panel (2): The Fitted GLS Regression Results</b>		
Variable	SRi_sd5	
CEOP	.003***	
Ln_Ten	-.001	
CEOC	.002**	
Size	.001***	
Lev	-.018*	
Lev2	.02**	
OCF	-.014***	
BAS	.515***	
BAS2	-5.703***	
Vol	-.001*	
Firm-Year Observations	331	
P > F statistics	0.000	
R2	21.5%	
<b>Panel (3): The Turning Points of Non-linear Effects</b>		
Variable	SRi_sd5	
Lev	0.45	
BAS	0.045	
*** p<0.01, ** p<0.05, * p<0.1 / The turning point is calculated as follows: $\frac{\beta}{-(\beta^2)*2}$		

#### 4.3.2. Analysing the Impact of CEO's Traits on Accounting Corporate RTB

Regarding the goodness-of-fit tests, the results of the mean variance inflation factor (VIF) indicate no multicollinearity among the regressors, as shown in Panel (1) of Table 6. For heteroskedasticity, the Breusch–Pagan/Cook–Weisberg test reveals significant heteroskedasticity, supporting the alternative hypothesis that error variances are not constant across observations. Additionally, the Ramsey RESET test for omitted variables suggests model 2 is mis-specified, as the p-values are less than 5%, as reported in Panel (1) of Table 6. Finally, the Wooldridge test for autocorrelation in panel data detects serial correlation in the residuals, given that the p-values are less than 5%, as shown in Panel (1) of Table 6. Panel (2) of Table 6 reports the fitted GLS regression results. The research model reported in Panel (2) of Table 6 are significant because their Prob > F values are lower than 0.05. The R-squared values show that the explanatory variables account for approximately 48.1% of the variation in accounting corporate risk taking.

CEO power and CEO confidence show insignificant coefficient impact on accounting corporate risk taking. In contrast, CEO tenure has a significant N-Shape curve on accounting corporate risk taking. Meaning that at low numbers of years of CEO tenure, Ln\_Ten shows a negative slope coefficient on accounting corporate risk taking at the start from 1 to 2 years. After 2 years to 6 years there is a positive impact of CEO tenure on accounting corporate risk-taking exposure, after 6 years the accounting corporate risk taking will decrease.

Firm size has negative significant impact on accounting corporate risk taking. In contrast, capital structure and trading volume have positive impact on accounting corporate risk taking. On the other hand, information asymmetry has an insignificant impact on accounting corporate risk taking. Finally, OCF has a significant U-shaped curve. Meaning that at low levels of OCF, OCF shows a negative slope coefficient on accounting corporate risk taking at the start. Beyond a certain threshold, 0.057 further increases in OCF lead to a positive slope coefficient on accounting corporate risk taking.

**Table 6.** The Impact of CEO Traits on corporate risk taking from accounting perspective.

<b>Panel (1): The Ordinary Least Square Goodness of Fit Tests</b>	
<b>Test</b>	<b>ROA_sd5</b>
OCF	1.496
Vol	1.328
Lev	1.269
BAS	1.267
Size	1.234
CEOC	1.022
Ln_Ten	1.017
CEOPower	1.016
Mean VIF	1.206
Heteroskedasticity	Chi2 = 50.45 P > chi2 = 0.0000
Omitted variables	F = 21.33 P > F = 0.0000
Autocorrelation	F = 218.118 P > F = 0.0000
<b>Panel (2): The Fitted GLS Regression Results</b>	
<b>Variable</b>	<b>ROA_sd5</b>
CEOPower	.001
Ln_Ten	-.033**
Ln_Ten2	.044**
Ln_Ten3	-.014**
CEOC	.002
Size	-.008***
Lev	.045***
OCF	-.089**
OCF2	.774***
BAS	-.128
Vol	.004**
Firm-Year Observations	331
P > F statistics	0.000
R2	48.1%
<b>Panel (3): The Turning Points of Non-linear Effects</b>	
<b>Variable</b>	<b>ROA_sd5</b>
Ln_Ten	2 and 6 Years
OCF	0.057

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

## 5. Discussion

The main objective of this research was to capture how CEO characteristics (confidence, tenure, and power) impact corporate RTB among Saudi listed firms. The findings offer compelling insights that both align with established theoretical frameworks and highlight the unique complexities of the Saudi environment

### 5.1. Interpretation of Key Findings

Regarding the CEO's power and risk-taking, the assumption that CEO power is positively associated with risk-taking underscores the role of the chief executive in shaping organisational strategy, as posited by the Upper Echelons Theory. Powerful CEOs face minimal opposition from the board or internal monitoring mechanisms. This discretionary freedom allows them to push through

large, transformational projects, often characterised by higher risk. In the Saudi context, this research found that the CEO power shows a significantly positive coefficient impact on marketwise RTB and an insignificant coefficient impact on accounting RTB. Where external capital markets and corporate governance bodies are still maturing, internal power structures become critically important. High CEO power acts as a multiplier, allowing individual behavioural traits (like power) to be fully translated into strategic actions, leading to higher levels of corporate risk.

Concerning the CEO's tenure and risk-taking, the analysis of the CEO's tenure suggests a complex, often non-linear relationship with risk-taking, which largely translates into risk aversion as tenure progresses. This aligns with agency theory regarding managerial entrenchment. As CEOs achieve longer tenure, their professional identity and wealth become increasingly tied to the firm's stability and survival. In the Saudi context, this research found that the CEO tenure has no impact on marketwise RTB, and CEO tenure has a significant N-shape curve on accounting RTB. In addition, long-tenured CEOs are often deeply integrated with the shareholders. Their primary incentive shifts from maximising shareholder value to protecting private benefits. This leads to excessive conservatism, where profitable but risky investment opportunities are foregone to maintain a predictable financial performance.

Moving to the CEO's confidence and risk-taking, the results indicate that the CEO's confidence is a significant and positive predictor of a firm's risk-taking. The findings strongly support the behavioural agency model derived from upper echelons theory. Moreover, confident CEOs tend to overestimate the success probability for high-risk investments. In the Saudi context, this research found that the CEO confidence shows a significantly positive coefficient impact on marketwise RTB and an insignificant coefficient impact on accounting RTB. This effect may be amplified due to the prevailing economic climate, which often favours bold, large-scale investments aligned with national development goals (Vision 2030).

### 5.2. Research Implications in Saudi Arabia

Given the strong link between CEO confidence and risk-taking, regulators (such as the CMA) should focus on enhancing board capabilities to challenge confident managerial proposals. This includes mandating greater board financial literacy and independence to critically evaluate high-risk projects driven by CEO optimism.

The observed tendency towards conservatism with longer tenure highlights the need for effective mechanisms to counter managerial entrenchment. Governance codes should consider stricter term limits for independent directors and performance evaluations linked not just to short-term stability, but to long-term risk-adjusted returns and innovation metrics.

The positive impact of CEO power emphasizes the need to enforce best-practice governance principles, particularly the separation of the Chairman and CEO roles. This separation creates a structural check-and-balance, preventing excessive managerial dominance and ensuring that the board functions as a genuine oversight mechanism, not merely a rubber stamp for the CEO's strategic choices.

## 6. Conclusions

Our research examined the impact of CEO confidence, tenure, and power on corporate risk-taking behaviour, providing new evidence from the Saudi context by adopting robust empirical methods and connecting the findings to scientific theories of corporate governance. So, our research makes many key contributions. The findings establish that the CEO's confidence and power are significant catalysts for increased firm risk-taking, consistent with the established view that individual cognitive biases and structural dominance shape strategy. Conversely, the CEO's tenure introduces complexity, often correlating with risk aversion due to managerial entrenchment and a preference for stability over opportunistic growth in the emerging environments.

### 6.1. Theoretical and Empirical Contributions

Firstly, we provided empirical validation for the assumptions of the upper echelon's theory and the behavioral agency model within the unique institutional landscape of Saudi Arabia. Secondly, we added to the academic literature on CEO behavioral characteristics by quantifying the impact of confidence, tenure, and power, moving beyond traditional demographic variables. Thirdly, our findings are directly relevant to ongoing corporate governance reforms in Saudi Arabia, highlighting a CEO's main characteristics. The governance focus is critically needed to achieve the balance between the strategic managerial decisions and risk-taking behaviour.

### 6.2. Limitations and Future Research

This research was subject to some empirical limitations, including dependence on available data and the inherent difficulty in precisely quantifying psychological traits like CEO confidence. To build upon these findings, future research should (A) investigate how specific governance filters unique to Saudi Arabia (e.g., the controlling family, sovereign wealth funds) moderate the nexus between CEO characteristics and RTB. (B) Utilize alternative measures of RTB, such as R&D intensity and capital expenditure volatility, to provide another view of RTB. (C) Conduct a cross-country study comparing our findings in Saudi Arabia with emerging markets to determine the universality of our results.

**Acknowledgments:** The authors extend their appreciation to Prince Sattam bin Abdulaziz University for funding this research work through the project number (PSAU/ 2025/02/32850).

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