Available Online
Journal of Social Sciences Advancement
www.scienceimpactpub.com/jssa
DOI: https://doi.org/10.52223/JSSA25-060407

Impact of Pyramidal Structure on Firm Performance and Liquidity: The Moderating Role of CEO Power

Muhammad Sikander Iqbal
College of Management Sciences, Karachi Institute of Economics and Technology, Karachi, Pakistan

ARTICLE INFO

ARTICLE HISTORY
Received: September 21, 2025
Accepted: December 17, 2025
Published: December 30, 2025

KEYWORDS
Pyramidal structure;
Firm performance;
Liquidity;
CEO power

ABSTRACT

The study examines the impact of pyramidal structure on firm performance and liquidity. It also examines how the CEO's power moderates the relationship between pyramidal structure and firm performance, as well as between pyramidal structure and liquidity. The study utilizes data from 220 non-financial companies listed on the BSE and PSX for the period 2014-2019. The results suggest that the pyramidal structure has a negative influence on firm performance and liquidity. The CEO's power has been measured using three proxies – CEO pay gap, CEO tenure, and CEO founder status. We found that the CEO pay gap does not influence firm performance or liquidity. The CEO tenure and the CEO founder status negatively influence the firm's performance; however, they do not affect the liquidity. The study also finds that the CEO pay gap has a negative moderating effect, while the CEO tenure has a positive moderating effect on the association between pyramidal structure, firm performance, and liquidity. The CEO founder status does not affect the association between pyramidal structure, firm performance, and liquidity. The study confirms the role of the pyramidal structure on firm performance and liquidity. It also examined the moderating role of CEO power on the association between pyramidal structure, firm performance, and liquidity, especially for emerging economies like India and Pakistan.

Corresponding Author: Muhammad Sikander Iqbal (Email: siqbal3000@gmail.com)

INTRODUCTION

There is an enormous amount of literature that deals with the question of ownership and control rights of a firm. According to Fama and Jensen (1983), the economic environment chooses an organizational form that meets customers' demands at the lowest possible price while covering costs. Faced with competition and survivorship, firms need to allocate resources efficiently. Under such daunting conditions, the principal shareholders retain their control over the firm by resorting to a pyramidal ownership structure that affects the firm's cash flows (Wang et al., 2022). This type of structure is created when a business entity comprising several companies has a top-down chain of command. The top of the pyramid indicates the ultimate beneficial ownership with layers of firms underneath (Wang et al., 2022). This type of organizational structure is used by ultimate owners to control several firms simultaneously (Dau et al., 2021).

Businesses are facing increasing levels of competition from both local and multinational firms. As a result, firms are constantly striving to find new ways to maintain their profitability and liquidity. For any commercial enterprise, managing firm profitability and liquidity are important core activities. Maintaining a proper balance between liquidity and profitability is essential to avoid solvency risks (Chasha et al., 2022). According to some researchers, without liquidity, firms cannot serve the economy. On the other hand, they may serve with low or zero profitability (Zaidi & Rupeika-Apoga, 2021). For this reason, it is vital to study the impact of the pyramidal structure (LAY) on firm performance (FP) as well as on liquidity.

Managerial characteristics of CEOs significantly influence the decision-making process. Which depends upon the power exercised by the CEO (Pikulina et al., 2017). CEO power is the ability to control the firm's policymaking process and persist with it even when dissented by other senior-level managers (Pfeffer, 1997). There are several dimensions of CEO power, and each dimension impacts the decision-making process that ultimately affects the firm's performance (FP) and liquidity. There could be many sources of power, such as organizational structure, ownership, professionalism, reputation, etc. Previous research has exhibited that firm performance and innovation are influenced by the tenure of the CEO (Wu et al., 2005). Further, CEOs with shorter service duration might indulge in malpractices to meet the stock market expectations (Pae et al., 2016). Therefore, the second objective of the study is to find out the influence of CEO power, measured by the CEO pay gap, tenure, and founder status, on FP and liquidity.

It is therefore essential to develop an understanding of how the CEO's power moderates the relationship between the pyramidal structure and FP and liquidity.

The study draws samples from two neighboring countries, Pakistan and India, which have nearly similar governance mechanisms for firms. Pakistan is a developing country, whereas India has a much larger economy. The findings are distinctive for developing economies because, due to a weak governance structure, entrenchment and extraction of private benefits are quite possible. Thus, the study could be beneficial for further research in this area.

To our best knowledge, the study has some unique contributions. First, it explores how the pyramidal structure affects firm performance. Second, it studies the impact of the pyramidal structure on liquidity. Third, it studies the influence of CEO power on firm performance. Fourth, explores how CEO power affects firm liquidity. Fifth, it investigates the moderating impact of CEO power on the association between pyramidal structure and FP. Sixth, explores whether CEO power moderates the association between pyramidal structure and liquidity. Seventh, the study is useful in deciding the CEO's tenure as well as the succession of founder CEOs.

LITERATURE REVIEW

Agency Theory

The agency theory deals with the relationship and associated concerns when an individual, the agent, works for another individual, the principal (Panda & Leepsa, 2017). For firms in which shareholding is widely dispersed, managers may divert the firm's valuable resources to extract private benefits, inducing the Type I agency problem (Jensen & Meckling, 1976). Barring exceptions, shareholding is mostly closely held (Faccio & Lang, 2002). Under such circumstances, there is close monitoring of managers, so there is no typical owner-manager conflict of interest. However, it causes agency conflict between minority shareholders (principal) and major shareholders (agent), i.e., outside minority shareholders and owners having a controlling interest in the firm (Abdullah et al., 2022). The consequences of agency relationships on the performance of firms in different industries have been widely researched. These studies suggest that factors affecting the firm's performance and liquidity are still open for empirical studies and further discussions. The agency theory, therefore, is most relevant for our empirical study.

Large commercial organizations are mostly dispersed geographically, and hence there are several layers of management. Due to this, agency conflicts might occur naturally at various levels, which require aligning the monitoring and compensation system to obtain the desired financial results (Tosi & Gomez-Mejia, 1989). Thus, it is essential to comprehend how firm performance and liquidity would be affected when firms have several layers of ownership control (pyramidal structure). As this empirical study uses a pyramidal structure as one of the independent variables, agency theory is most relevant to the present work.

Pyramidal Structure, Firm Performance, and Liquidity

Pyramidal ownership refers to a complex web of shareholding patterns that makes it difficult to identify the actual owner and controllers of a firm. The practice can be found frequently in Asian and European economies. The traditional argument is that pyramids separate control rights from cash flow rights by a series of ownership relations (Wang et al., 2022). Outside the US and the UK, it is prevalent for wealthy families controlling large corporations to use cross-shareholding, pyramidal structures, super-voting rights, etc., to control their empire without making a proportionate capital investment (Gama & Bandeira-de-Mello, 2021)

Pyramidal structures are quite prevalent in China and have been studied for various business aspects. They have been found to have a very high agency cost (Shah & Xiao, 2023). When starting a new firm, the control mechanism is decided by the dominant shareholder, which may result in a complex web of ownership. This control mechanism sometimes affects the firm's performance because the dominant shareholder might extract private benefits (Jara et al., 2021; Chrisman et al., 2018; Panda & Leepsa, 2017). Ownership concentration in a few hands and the ultimate owner exercising control over the firm through indirect shareholding may affect the decision-making process, operations, and firm performance (Bany-Ariffin et al., 2010).

Gama and Bandeira-de-Mello (2021) have studied the impact of pyramidal structure on firm performance for 127 Brazilian groups for the period 2001 - 2015. Their finding is that the number of layers in the pyramid has a positive moderation effect on group-level performance despite a negative moderation at the first layer level. At the firm level, this creates agency and entrenchment issues since families having dominant control have little real capital invested. For a firm, the controlling shareholder can divert the resources within the pyramidal group to extract private benefits, which may result in poor firm performance and liquidity issues. Further, for the economy as a whole, excessive control of resources by a few families distorts capital allocation and reduces innovation (Almeida & Wolfenzon, 2006).

Based on the above discussion, the following hypothesis was developed.

H1: Pyramidal structure significantly affects the firm's performance and liquidity.

CEO Power, Firm Performance, and Liquidity

For firms with a pyramidal structure, the position of CEO and its power become of utmost importance. The underlying economic theory postulates that CEO power introduces agency problems. With an increase in their power, there might be entrenchment by misaligning the interests of shareholders and managers (Sheikh, 2018). There are several dimensions, such as structure, ownership, professional strength, and reputation, that could be the source of power for a CEO (Saidu, 2019). Among these, structural power is the most representative as it depends upon the distribution of power among senior-level managerial positions (Williams et al., 2022). Since the CEO is the main architect of the firm's policies, the position is considered a source for the creation of firm value for the shareholders (Williams et al., 2022). In the absence of any clear-cut theoretical guideline on the connection between the CEO's power and the value of a firm, it is of academic interest to study and develop the relationship. According to agency theory, a powerful CEO might entrench managers (Jensen & Meckling, 1976), whereas, according to organizational theory, a powerful CEO might be able to create value by speeding up the decision-making process, especially when market conditions are altering (Boyd, 1995).

When a new CEO is appointed, he lacks a track record of performance, and hence market participants are indecisive about his competencies (Gibbons & Murphy, 1992). Managers sometimes engage in opportunistic behavior owing to intense competitive pressure exerted by the capital market (Shleifer, 2004). Able managers, on the other hand, utilize the firm's resources efficiently to produce positive firm-level results (Biswas et al., 2023). The market keenly observes their performance and evaluates them on several financial and nonfinancial performance criteria. A deleterious evaluation results in lesser remuneration and even loss of job (Chiu & Sharfman, 2016). On the other hand, CEOs with longer terms can improve their market acceptability, and uncertainty about their capabilities may go down (Pan et al. 2015). Literature suggests that significant corporate financial performance and disclosures are closely linked with CEO tenure (Pae et al., 2016). If the CEO's duration is short, he would be more concerned about short-term performance (Ali & Zhang, 2015). Traits such as CEO tenure, ownership, or duality affect the firm's performance (Briano-Turrent et al., 2020). CEO tenure, therefore, can be attributed as another source of power (Sheikh, 2019).

When a company is managed by its founder CEO, the knowledge base is unmatched and therefore contributes significantly to the firm's value (Chiu et al., 2021). When a person occupies two or more senior management positions in a company, the structural power held enables him to control the resources and their allocation process. If the CEO happens to be the chairman or founder, he has access to internal information and can control the board's discussion or the selection process of directors. Founder CEOs have a lower probability of replacement compared to successor CEOs. Consequently, there could be deviations from shareholders' interests, which might weaken his supervisory role (Chiu et al., 2022).

Based on the above discussion, the following hypotheses were developed.

H2: CEO power significantly affects the firm's performance and liquidity.

H3: CEO power significantly moderates the relationship between pyramidal structure and firm performance and liquidity.

RESEARCH METHODOLOGY

Data and Sample

To empirically validate the hypotheses, the study uses the financial data from 220 active non-financial firms drawn from two countries from 2014 to 2019. Initially, we selected a sample of 75 firms listed on the Bombay Stock Exchange (BSE) and 150 firms listed on the Pakistan Stock Exchange (PSX) based on their market capitalization. After removing the firms with inconsistent data, we are left with 220 firms providing us with 1,100 firm observations. Consistent with past research, we have excluded financial companies from the sample as they are governed by different laws and rules (Anderson & Reeb, 2003). The financial sector is highly regulated by the central bank. Moreover, their primary trading asset is cash, and hence a large cash holding is expected as compared to firms in non-financial sectors (Mwangi et al., 2014). The reason for selecting samples from the two countries is that the two economies have similar business characteristics, though India is much larger than Pakistan. The sector-wise breakup of firms selected from the two economies is presented in Table 1.

Table 1: Sector-wise details of Firms

S. No.	Sector	BSE	Sector	PSX
1	Automobile	8	Automobile	12
2	Breweries, food & personal care	9	Cable & electrical goods, engineering	10
3	Cement, construction, infrastructure	7	Cement, glass &ceramics	17
4	Chemical, paints & varnish	4	Chemical, fertilizer	21

5	Computers & Telecommunications	8	Food and personal care	12
6	Oil & gas, refinery	6	Oil &gas, refinery	14
7	Metals, mining, etc.	7	Pharmaceuticals	6
8	Pharmaceuticals	10	Power, Tech. & communications	17
9	Power	3	Textile, sugar & allied	21
10	Miscellaneous	12	Miscellaneous	16
	Total	**74**	Total	**146**

For several reasons, such as limited financial disclosure as compared with developed economies, manual extraction of data from published accounts due to the non-availability of electronic repositories, and the non-availability of data for the full study period of 2014-2019, only those companies were considered whose data were available (Ashraf & Ghani, 2005).

Measurement of Variables and Model Specification

In literature, firm performance is generally measured through return on assets (ROA), return on invested capital (ROIC), return on equity (ROE), and Tobin's Q, etc. (Al-Matari et al., 2014). The dependent variables for this study are firm performance and liquidity. The proxy for firm performance is ROIC and ROE, while the proxy for liquidity is the quick ratio (QR). Both are per previous research (Abdullah et al., 2022; Tebourbi et al., 2020).

The independent variable is the pyramidal structure (LAY), while CEO power is the moderating variable. The pyramidal structure (LAY) is the number of layers present between the listed company and the ultimate shareholders (Bradford et al., 2013). It is measured as a dummy variable with a value of 1 if layers are present, otherwise 0. The CEO's power is measured by the CEO pay gap (CPG), CEO tenure (CEOT), and CEO being the founder (CEOF).

CPG is the difference between the salaries of the CEO and the key officials (Sheikh, 2018), CEOT is measured by the duration of the CEO's position (Harper & Sun, 2019), and CEOF is a dummy variable. It takes a value of 0 if the CEO and founder of the firm are different, otherwise 1(Sheikh, 2018). The control variables are leverage (LEV) and firm size (SIZE). The measurement of variables used is presented in Table 2.

Table 2: Variables and their Measurements

Variable	Symbol	Measurement
Return on invested capital	ROIC	Net income / Invested capital
Return on equity	ROE	Net income / common equity
Quick ratio	QR	Current assets less inventories / current liabilities
Pyramidal structure	LAY	Dummy variable, 1 if layers are present, otherwise 0
CEO pay gap	CPG	The CEO's salary minus the average salary of key executives
CEO tenure	CEOT	Duration in office (years)
CEO being founder	CEOF	Dummy variable, 1 if the CEO and founder are the same, otherwise 0.
Firm size	SIZE	LN of total assets
Leverage	LEV	Total debt / total assets

To test the hypotheses, the following baseline and interaction models have been developed.

Baseline Models

To validate H1 and H2 empirically, the following baseline models will be used to evaluate the impact of pyramidal structure and CEO power on the firm's profitability and liquidity. One representative model is presented below:

$$ROIC_{i,t} = \beta 1 + \beta 2\ LAY_{i,t} + \beta 3\ Size_{i,t} + \beta 4\ LEV_{i,t} + u_{i,t} \quad (1)$$

In other models, the independent variable LAY was replaced by CPG, CEOT, and CEOF. If the coefficients of the independent variables LAY, CPG, CEOT, and CEOF in these models are statistically significant, then it will support the hypothesis. The sign of the coefficients will indicate whether the influence is positive or negative.

Interaction Models

To ascertain the validity of H3, we have developed interaction models as suggested by Dawson (2014). These models will be used to check if CEO power moderates the relationship between pyramid structure and firm profitability and liquidity. One representative model is presented below:

$$ROIC_{i,t} = \beta1 + \beta2\ LAY_{i,t} + \beta2\ CPG_{i,t} + \beta3\ LAY_{i,t}*CPG_{i,t} + \beta3\ Size_{i,t} + \beta4\ LEV_{i,t} + u_{i,t} \quad (2)$$

In other models, the independent variable CPG was replaced by CEOT and CEOF. Consistent with Dawson (2014) approach, if the interaction terms *LAY*CPG*, *LAY*CEOT*, and *LAY*CEOF* have statistically significant coefficients, then it will confirm our hypothesis. The sign of the coefficients will determine the nature of the influence, i.e., positive or negative.

Statistical analysis

The presence of outliers poses a profound challenge to deal with in empirical finance. Potential outliers were examined by descriptive statistics (Dittmar & Duchin, 2016). Since the dataset is non-normal, FGLS regression was used to minimize the effect of any outlier or influential observation (Adams et al., 2019).

RESULTS AND DISCUSSION

Descriptive statistics

Table 3 exhibits the descriptive statistics. The ROIC has a mean of 0.139 (standard deviation 0.803), indicating that firms in the sample have a return on invested capital of 13.9% on average. This is comparable with previous studies that found a mean value of ROIC in the range of 0.974% to 15.86% (Bhuyan et al., 2021; Simionescu et al., 2020). The ROE has a mean of 0.232 (standard deviation 1.917), indicating that firms in the sample have a return on equity of 23.2% on average. This is comparable with previous studies that found a mean value in the range of 13.71% to 21.87% (Rahman & Howlader, 2022; Simionescu et al., 2020). The quick ratio, having a mean value of 1.499 (standard deviation 4.571), indicates that firms are maintaining pretty good liquidity on average. The LAY has a mean of 0.857 (standard deviation 0.35), indicating that, on average, the majority of the sample firms have a pyramidal structure. The CEO pay gap (CPG) has a mean value of 0.593 (standard deviation 15.926). These values indicate a wide range of CEO salaries among different firms and industries. The mean value of CEO tenure is 8.16 years (standard deviation 8.906 years), indicating an average stay of 8.16 years in office for the sample firms. These values indicate a wide range of CEO tenure. CEOF has a mean of 0.072 (standard deviation 0.258), indicating that nearly 7% of the firms in the dataset have their founder as CEO. To test the normality assumption Shapiro-Wilk statistic has been computed and presented in Table 3. As variables are statistically significant at 1%, we conclude that the dataset is non-normal.

Table 3: Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	S-Wilk test
ROIC	1100	.139	.803	0.176***
ROE	1100	.232	1.917	0.066***
QR	1100	1.499	4.571	0.129***
LAY	1100	.857	.35	0.992***
CPG	1100	.593	15.926	0.090***
CEOT	1100	8.16	8.906	0.814***
CEOF	1100	.072	.258	0.977***
SIZE	1100	4.666	2.764	0.950***
LEV	1100	.471	.24	0.918***

*** indicates statistical significance at 1%.

Pearson Correlations

Table 4 presents the correlation matrix. The results indicate that ROE has a significant positive correlation with LEV. This implies that firms with higher debt levels have greater ROE. The quick ratio (QR) has a negative but significant correlation with size (SIZE) and leverage (LEV) implying that firms with a larger asset base and/ or with a high debt level have liquidity issues. The pyramidal structure (LAY) has a negative and significant correlation with leverage

(LEV). It means firms resort to internal financing through pyramiding instead of borrowing. The CEO tenure (CEOT) has a significant positive correlation with the CEO being the founder (CEOF) and a negative but significant correlation with leverage (LEV). It means founder CEOs tend to stay longer in their offices and have less reliance on borrowings. Lastly, the correlation between SIZE and LEV is negative and significant, indicating a negative influence of leverage on the firm size. As none of the correlation coefficients is above 0.8, we can safely assume that multicollinearity is not an issue.

Table 4: Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) ROIC	1.000								
(2) ROE	0.019	1.000							
(3) QR	0.004	-0.010	1.000						
(4) LAY	-0.042	0.013	0.018	1.000					
(5) CPG	0.005	0.002	0.004	0.012	1.000				
(6) CEOT	-0.028	-0.027	-0.022	0.006	-0.025	1.000			
(7) CEOF	-0.029	-0.013	-0.001	-0.017	0.010	0.480***	1.000		
(8) SIZE	0.003	-0.012	-0.073**	-0.047	-0.006	0.000	-0.018	1.000	
(9) LEV	0.039	0.072**	-0.220***	-0.053*	-0.008	-0.082***	0.024	-0.126***	1.000

*** p<0.01, ** p<0.05, * p<0.1

Panel Regression Results

Tables 5 to 7 present regression results for baseline Models. We have used FGLS regression to estimate the coefficients because our dataset violates the normality assumption. We opine about H1 and H2 based on these results. The results indicate that (LAY) has a negative and statistically significant (β= -0.018, p< 0.028) impact on firm performance when measured through ROIC. On the other hand, it shows a positive and significant association (β= 0.020, p< 0.087) when firm performance is measured using ROE. Moreover, its impact on liquidity (QR) is negative and significant (β= -0.116, p< 0.042). The results imply that with a pyramidal structure, there is a possibility of an increase in leverage that eventually increases financial distress and possible bankruptcy. This could be due to the separation of control rights from cash flow rights (Bany-Ariffin et al., 2010). An ambivalent effect of pyramidal structure on firm performance for Italian firms has also been reported (Bianco & Casavola, 1999). Their findings indicate that by separating control, pyramidal groups facilitate growth, but at the same time, perceived risks of expropriation placed limits on firm performance.

The coefficients of CPG are statistically insignificant, indicating that CEO power measured by the CEO pay gap (CPG) does not affect firm performance or liquidity. The finding is different when compared with earlier studies (Sheikh, 2018). However, when CEO power is measured by tenure, it shows a negative and statistically significant coefficient (β= -.001, p< 0.000) at 1%, indicating a negative influence of CEO tenure on FP. This result is in harmony with past research (Park et al., 2018). It means longer-term CEOs tend to affect them negatively. This could be the result of complacency or collusion with major shareholders. Further, CEOT has a statistically insignificant influence on a firm's liquidity. It means CEO tenure does not affect the firm's liquidity. When CEO power is measured by their founder status, we notice that the coefficients are statistically significant at 1%, having values of (β = -0.049, p<0.000) and (β = -0.041, p<0.000), meaning founder CEOs negatively affect the FP. Earlier research has mentioned both negative and positive influences of founder CEOs on FP. They contribute positively in the earlier days of the firm and become less effective at a later stage (Abebe & Alvarado, 2013). Moreover, it has a statistically insignificant effect on liquidity. The Wald-Chi-squared statistic is statistically significant at 1% for all but one model, indicating that these models have sufficient explanatory power. Overall, results indicate that longer-term CEOs and founder CEOs tend to affect the firm's performance negatively. This may be the result of extracting private benefits at the expense of minority shareholders. The results, therefore, support the agency theory.

Table 5: Baseline Models – ROIC

	1	2	3	4
LAY	-0.018**			
	(0.008)			
CPG		0.000		
		(0.000)		
CEOT			-0.001***	
			(0.000)	
CEOF				-0.049***
				(0.009)
SIZE	-0.001	-0.001	-0.002*	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)
LEV	0.028*	0.017	0.013	0.019
	(0.015)	(0.016)	(0.016)	(0.016)
CONST.	0.128***	0.116***	0.132***	0.120***
	(0.011)	(0.010)	(0.010)	(0.010)
Wald Chi2	12.15***	2.49	24.60***	31.79***
Prob > Chi2	0.0069	0.4765	0.0000	0.0000
N	1,100	1,100	1,100	1,100

* p<0.1, ** p<0.05, *** p<0.01.

Table 6: Baseline Models – ROE

	5	6	7	8
LAY	0.020*			
	(0.011)			
CPG		0.000		
		(0.000)		
CEOT			-0.001***	
			(0.000)	
CEOF				-0.041**
				(0.017)
SIZE	-0.006***	-0.006***	-0.007***	-0.006***
	(0.001)	(0.002)	(0.001)	(0.001)
LEV	0.213***	0.192***	0.208***	0.206***
	(0.019)	(0.020)	(0.019)	(0.020)
CONST.	0.077***	0.100***	0.116***	0.098***
	(0.018)	(0.014)	(0.013)	(0.014)

Wald Chi2	215.33***	143.9***	246.61***	178.17***
Prob > Chi2	0.0000	0.0000	0.0000	0.0000
N	1,100	1,100	1,100	1,100

* p<0.1, ** p<0.05, *** p<0.01.

Table 7: Baseline Models – QR

	9	10	11	12
LAY	-0.116**			
	(0.057)			
CPG		0.000		
		(0.001)		
CEOT			0.000	
			(0.003)	
CEOF				0.014
				(0.082)
SIZE	-0.032***	-0.029***	-0.047***	-0.028***
	(0.010)	(0.009)	(0.010)	(0.010)
LEV	-3.206***	-3.186***	-3.208***	-3.177***
	(0.111)	(0.112)	(0.115)	(0.113)
CONST.	3.060***	2.930***	3.012***	2.921***
	(0.100)	(0.080)	(0.082)	(0.081)
Wald Chi2	841.99***	816.18***	786.4***	801.56***
Prob > Chi2	0.0000	0.0000	0.0000	0.0000
N	1,100	1,100	1,100	1,100

* p<0.1, ** p<0.05, *** p<0.01. The numbers in brackets are standard errors.

Tables 8 to 10 present the results of interaction models, dealing with the moderating impact of CEO power on the association between LAY and FP and liquidity. The coefficient of the moderating term LAY*CPG (β = -0.143, p< 0.000) and LAY*CPG (β = -0.119, p< 0.001) is negative and statistically significant at 1%. It means CEO power negatively moderates the association between pyramidal structure and FP. This could be due to the managerial overconfidence of powerful CEOs. However, it is negative and statistically insignificant in Model 19 indicating no significant moderating effect of CEO power on the association between pyramidal structure (LAY) and liquidity (QR). These results indicate that CEO pay negatively moderates the firm's performance.

In Model 14, the coefficient of the moderating term LAY*CEOT (β = 0.002, p< 0.036) is positive and statistically significant at 5%, indicating that CEO tenure positively moderates the association between LAY and FP. The coefficient of the interaction term LAY*CEOT (β = 0.020, p<0.009) in Model 20 is positive and statistically significant at 1%, indicating that CEO tenure moderates positively the association between pyramidal structure (LAY) and firm liquidity (QR). This indicates that longer-term CEOs are in a better position to understand the complexities of the firm's business. The interaction term LAY*CEOF are statistically insignificant coefficient in Models 15, 18, and 21, indicating that the founder CEOs have no moderating impact on the association between pyramidal structure (LAY) and FP or liquidity.

Table 8: Interaction Models - ROIC

	13	14	15
LAY	-0.001	-0.036***	-0.018**
	(0.008)	(0.012)	(0.008)
CPG	0.143***		
	(0.031)		
CEOT		-0.003***	
		(0.001)	
CEOF			-0.063*
			(0.034)
LAY*CPG	-0.143***		
	(0.031)		
LAY*CEOT		0.002**	
		(0.001)	
LAY*CEOF			0.015
			(0.035)
SIZE	-0.002**	-0.002**	-0.001
	(0.001)	(0.001)	(0.001)
LEV	0.033**	0.021	0.031**
	(0.015)	(0.015)	(0.016)
CONSTANT	0.111***	0.162***	0.131***
	(0.012)	(0.015)	(0.012)
Wald Chi2	38.79***	35.35***	40.70***
Prob > Chi2	0.0000	0.0000	0.0000
N	1,100	1,100	1,100

* p<0.1, ** p<0.05, *** p<0.01.

Table 9: Interaction Models - ROE

	16	17	18
LAY	0.036***	0.016	0.022*
	(0.012)	(0.015)	(0.012)
CPG	0.119***		
	(0.037)		
CEOT		-0.002**	
		(0.001)	
CEOF			-0.033
			(0.055)
LAY*CPG	-0.119***		
	(0.037)		

LAY*CEOT		0.001	
		(0.001)	
LAY*CEOF			-0.014
			(0.056)
SIZE	-0.006***	-0.008***	-0.006***
	(0.001)	(0.001)	(0.001)
LEV	0.216***	0.234***	0.234***
	(0.019)	(0.018)	(0.019)
CONSTANT	0.06***	0.101***	0.072***
	(0.018)	(0.021)	(0.018)
Wald Chi2	229.46***	540.90***	288.22***
Prob > Chi2	0.0000	0.0000	0.0000
N	1,100	1,100	1,100

* p<0.1, ** p<0.05, *** p<0.01.

Table 10: Interaction Models - QR

	19	20	21
LAY	-0.058	-0.278***	-0.113*
	(0.062)	(0.076)	(0.060)
CPG	0.077		
	(0.077)		
CEOT		-0.018**	
		(0.007)	
CEOF			-0.010
			(0.137)
RNDI			
CCC			
LAY*CPG	-0.077		
	(0.077)		
LAY*CEOT		0.020***	
		(0.008)	
LAY*CEOF			0.003
			(0.164)
SIZE	-0.036***	-0.057***	-0.032***
	(0.010)	(0.010)	(0.010)
LEV	-3.165***	-3.243***	-3.191***
	(0.112)	(0.115)	(0.112)

CONSTANT	2.988***	3.314***	3.044***
	(0.105)	(0.117)	(0.104)
Wald Chi2	813.13***	807.95***	811.74***
Prob > Chi2	0.0000	0.0000	0.0000
N	1,100	1,100	1,100

* p<0.1, ** p<0.05, *** p<0.01.

CONCLUSIONS AND RECOMMENDATIONS

We examined the impact of the pyramidal structure on FP and liquidity. Also explored the influence of CEO power on FP and liquidity. Further, the moderating impact of CEO power on the association between pyramidal structure (LAY) and FP, and liquidity was investigated. The CEO's power was measured using structural, ownership, and tenure dimensions. FGLS regression was used to estimate the regression coefficients to overcome the non-normality of the dataset. It was found that the pyramidal structure has a significant negative influence on FP and liquidity when measured through ROIC and a significant positive influence on FP when measured through ROE. Overall, results support the agency theory that explains the conflicts of interest between principal and agent. We found that the CEO power indicated by the pay gap does not affect the FP or liquidity, but it does negatively moderate the association between pyramidal structure (LAY) and FP. The CEO tenure has a significant negative association with FP and liquidity, but it positively moderates the association between pyramidal structure and FP and liquidity. The founder CEO has a negative impact on FP, but does not moderate the association between LAY and FP or liquidity.

The paper has some important implications for officials, investors, and creditors. Based on the results of this study, it is suggested that proper monitoring of firm performance and liquidity be carried out. Secondly, in areas of corporate governance, long-term financial planning, and liquidity management, it is recommended to limit CEO tenure as it starts affecting the firm's performance negatively. Third, as the impact of the pyramidal structure is negative on the performance of firms, special care and monitoring of firms with a pyramidal structure should be done to safeguard the interests of minority shareholders. The study is useful for investors, investment bankers, and mutual funds to help them in estimating the firms' value for equity investments and participation in IPOs. It is also useful for regulators, as well as the board of directors, in deciding/ limiting CEO tenures to avoid their negative fallout on firm performance. As the dataset comprises firms listed on the BSE and PSX, it has some limitations. The sample was selected based on market capitalization, hence there could be wide variations in firm capital and operating bases. Moreover, the study period was restricted to five years from 2014 to 2019. Nevertheless, this study paves the way for future work in the areas of firm valuation and corporate governance. Further research may be carried out with more countries and more years, and for specific industries as well.

REFERENCES

Abdullah, Hashmi, M. A., & Iqbal, M. S. (2022). Impact of working capital management on firm profitability and liquidity: The moderating role of family ownership. *Accounting Research Journal, 35*(5), 676–697.

Abebe, M., & Alvarado, D. A. (2013). Founder-CEO status and firm performance: An exploratory study of alternative perspectives. *Journal of Strategy and Management, 6*(4), 343–357.

Adams, J., Hayunga, D., Mansi, S., Reeb, D., & Verardi, V. (2019). Identifying and treating outliers in finance. *Financial Management, 48*(2), 345–384.

Ali, A., & Zhang, W. (2015). CEO tenure and earnings management. *Journal of Accounting and Economics, 59*(1), 60–79.

Al-Matari, E. M., Al-Swidi, A. K., & Fadzil, F. H. B. (2014). The measurements of firm performance's dimensions. *Asian Journal of Finance & Accounting, 6*(1), 24.

Almeida, H. V., & Wolfenzon, D. (2006). A theory of pyramidal ownership and family business groups. *The Journal of Finance, 61*(6), 2637–2680.

Anderson, R. C., & Reeb, D. M. (2003). Founding-family ownership and firm performance: Evidence from the S&P 500. *The Journal of Finance, 58*(3), 1301–1328.

Ashraf, J., & Ghani, W. I. (2005). Accounting development in Pakistan. *The International Journal of Accounting, 40*(2), 175–201.

Bany-Ariffin, A. N., Nor, F. M., & McGowan, C. B., Jr. (2010). Pyramidal structure, firm capital structure exploitation, and ultimate owners' dominance. *International Review of Financial Analysis, 19*(3), 151–164.

Bhuyan, R., Khandoker, M. S. H., Tasneem, N., & Taznin, M. (2021). Working capital management (WCM) and firm performance in emerging markets: A case of Bangladesh. *Accounting and Finance Research, 10*(1), 1–36.

Bianco, M., & Casavola, P. (1999). Italian corporate governance: Effects on financial structure and firm performance. *European Economic Review, 43*(4–6), 1057–1069.

Biswas, P. K., Ranasinghe, D., & Tan, E. K. (2023). Impact of product market competition on real activity manipulation: The moderating role of managerial ability. *Accounting & Finance, 63*(1), 247–275.

Boyd, B. K. (1995). CEO duality and firm performance: A contingency model. *Strategic Management Journal, 16*(4), 301–312.

Bradford, W., Chen, C., & Zhu, S. (2013). Cash dividend policy, corporate pyramids, and ownership structure: Evidence from China. *International Review of Economics & Finance, 27*, 445–464.

Briano-Turrent, G. D., Li, M., & Peng, H. (2020). The impact of family-CEOs and their demographic characteristics on dividend payouts: Evidence from Latin America. *Research in International Business and Finance, 51*, 101086.

Chasha, F., Kavele, M., & Kamau, C. G. (2022). Working capital management, liquidity, and financial performance: Context of Kenyan SMEs.

Chiu, J., Chen, C. H., Cheng, C. C., & Hung, S. C. (2021). Knowledge capital, CEO power, and firm value: Evidence from the IT industry. *The North American Journal of Economics and Finance, 55*, 101012.

Chiu, J., Li, Y. H., & Kao, T. H. (2022). Does organization capital matter? An analysis of the performance implications of CEO power. *The North American Journal of Economics and Finance, 59*, 101382.

Chiu, S. C., & Sharfman, M. P. (2016). Executive succession, corporate social performance and the dismissal of newly appointed CEOs. In *Academy of Management Proceedings* (Vol. 2016, No. 1, p. 14226).

Chrisman, J. J., Chua, J. H., Le Breton-Miller, I., Miller, D., & Steier, L. P. (2018). Governance mechanisms and family firms. *Entrepreneurship Theory and Practice, 42*(2), 171–186.

Dau, L. A., Morck, R., & Yeung, B. Y. (2021). Business groups and the study of international business: A Coasean synthesis and extension. *Journal of International Business Studies, 52*, 161–211.

Dawson, J. F. (2014). Moderation in management research: What, why, when, and how. *Journal of Business and Psychology, 29*(1), 1–19.

Dittmar, A., & Duchin, R. (2016). Looking in the rearview mirror: The effect of managers' professional experience on corporate financial policy. *The Review of Financial Studies, 29*(3), 565–602.

Faccio, M., & Lang, L. H. P. (2002). The ultimate ownership of Western European corporations. *Journal of Financial Economics, 65*(3), 365–395.

Fama, E. F., & Jensen, M. C. (1983). Separation of ownership and control. *Journal of Law and Economics, 26*(2), 301–325.

Gama, M. A. B., & Bandeira-de-Mello, R. (2021). The effect of affiliation structure on the performance of pyramidal business groups. *Journal of Business Research, 124*, 24–37.

Gibbons, R., & Murphy, K. J. (1992). Optimal incentive contracts in the presence of career concerns: Theory and evidence. *Journal of Political Economy, 100*(3), 468–505.

Harper, J., & Sun, L. (2019). CEO power and corporate social responsibility. *American Journal of Business*.

Jara, M., López-Iturriaga, F. J., & Torres, J. P. (2021). Firm value and pyramidal structures: New evidence for family firms. *Journal of Business Research, 127*, 399–412.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs, and ownership structure. *Journal of Financial Economics, 3*(4), 305–360.

Mwangi, L. W., Makau, M. S., & Kosimbei, G. (2014). Relationship between capital structure and performance of non-financial companies listed in the Nairobi Securities Exchange, Kenya. *Global Journal of Contemporary Research in Accounting, Auditing and Business Ethics, 1*(2), 72–90.

Pae, S., Song, C. J., & Yi, A. C. (2016). Career concerns and management earnings guidance. *Contemporary Accounting Research, 33*(3), 1172–1198.

Pan, Y., Wang, T. Y., & Weisbach, M. S. (2015). Learning about CEO ability and stock return volatility. *The Review of Financial Studies, 28*(6), 1623–1666.

Panda, B., & Leepsa, N. M. (2017). Agency theory: Review of theory and evidence on problems and perspectives. *Indian Journal of Corporate Governance, 10*(1), 74–95.

Park, J. H., Kim, C., Chang, Y. K., Lee, D. H., & Sung, Y. D. (2018). CEO hubris and firm performance: Exploring the moderating roles of CEO power and board vigilance. *Journal of Business Ethics, 147*, 919–933.

Pfeffer, J. (1997). *New directions for organization theory: Problems and prospects*. Oxford University Press.

Pikulina, E., Renneboog, L., & Tobler, P. N. (2017). Overconfidence and investment: An experimental approach. *Journal of Corporate Finance, 43*, 175–192.

Rahman, M. M., & Howlader, M. S. (2022). The impact of research and development expenditure on firm performance and firm value: Evidence from a South Asian emerging economy. *Journal of Applied Accounting Research*.

Saidu, S. (2019). CEO characteristics and firm performance: Focus on origin, education, and ownership. *Journal of Global Entrepreneurship Research, 9*(1), 29.

Shah, M. H., & Xiao, Z. (2023). Internal pyramid structure, judicial efficiency, firm-level governance, and dividend policy. *International Review of Economics & Finance, 83*, 764–785.

Sheikh, S. (2018). CEO power, product market competition, and firm value. *Research in International Business and Finance, 46*, 373–386.

Sheikh, S. (2019). An examination of the dimensions of CEO power and corporate social responsibility. *Review of Accounting and Finance, 18*(2), 221–244.

Shleifer, A. (2004). Does competition destroy ethical behavior? *American Economic Review, 94*(2), 414–418.

Simionescu, L. N., Gherghina, Ş. C., Sheikha, Z., & Tawil, H. (2020). Does water, waste, and energy consumption influence firm performance? Panel data evidence from the S&P 500 information technology sector. *International Journal of Environmental Research and Public Health, 17*(14), 5206.

Tebourbi, I., Ting, I. W. K., Le, H. T. M., & Kweh, Q. L. (2020). R&D investment and future firm performance: The role of managerial overconfidence and government ownership. *Managerial and Decision Economics, 41*(7), 1269–1281.

Tosi, J. H. L., & Gomez-Mejia, L. R. (1989). The decoupling of CEO pay and performance: An agency theory perspective. *Administrative Science Quarterly*, 169–189.

Wang, J. C., Yi, J., Zhang, X., & Peng, M. W. (2022). Pyramidal ownership and SOE innovation. *Journal of Management Studies, 59*(7), 1839–1868.

Williams, M. J., Lopiano, G., & Heller, D. (2022). When the boss steps up: Workplace power, task responsibility, and engagement with unpleasant tasks. *Organizational Behavior and Human Decision Processes, 170*, 104140.

Wu, S., Levitas, E., & Priem, R. L. (2005). CEO tenure and company invention under differing levels of technological dynamism. *Academy of Management Journal, 48*(5), 859–873.

Zaidi, S. H., & Rupeika-Apoga, R. (2021). Liquidity synchronization, its determinants, and outcomes under economic growth volatility: Evidence from emerging Asian economies. *Risks, 9*(2), 43.