Governance and Innovation: The Dual Forces of CEO Power and Knowledge Capital in Emerging Market

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Chronicle	Abstract

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The study aims to examine the impact of knowledge capital on firm value under the interaction/moderating effect of powerful CEOs. The panel data analysis is adopted using secondary data of 300 non-financial firms listed in Pakistan Stock Exchange over the period of 2013-2023. The study uses Tobin's Q as dependent variable, while, knowledge capital and CEO's power are independent variables. The theoretical foundation is based on the core assumption of stewardship theory. To evaluate the assumptions of the model, the regression diagnostics tests such as Multi-co-linearity, Heteroscedasticity and Panel serial correlation tests are launched. The study selects the fixed effect regression model among ordinary leased square and random effect model using series of steps based on its appropriate tests. Employing fixed-effect regression, the results indicate a significant and positive association between knowledge capital (KC) and Tobon's Q (firm value), supporting the argument that R&D investments enhance firm value. CEO power (CPR) is also observed to significantly influence firm value, revealing the importance of executive authoritative role. Furthermore, the interaction effect of CEOs power reveals a significant moderation, highlighting the strengthening influence of CPR on the positive relationship between knowledge capital and firm value. These findings contribute valuable insights into the imperative link between knowledge capital and CPR in enhancing the firm value.

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Keywords: Knowledge Capital, CEO Power, Firm Value, Stewardship Theory.

INTRODUCTION

The value creation in a firm has remained a key area in the finance literature. A large number of researches has been done on the subject that explain the connection between different board characteristics and firm value in Pakistan. This study adds important contribution to this literature by studying firm value in association with the "knowledge capital" (KC). The term "knowledge capital" is explained differently in various studies, this study focuses on the firm's investment in research and development. In other fields, KC may also be known as computerized database, design, organizational efficiency, firm specific training, brand equity, etc. (Corrado, Hulten, & Sichel, 2009). KC is the driving force for achieving the highest productivity and expansion of business (Marrocu, Paci, & Pontis, 2011). KC in several studies is also used as intangible capital that explain the same meaning of investment in research and development. The role of KC is more important than investing in physical assets and labors, it helps firm to evaluate investment decisions and provide basis for profitable projects (Braunerhjelm, 1997). The greatest percentage of businesses failure is due to investing in fixed asset without investment in research and development (Ararat, Black, & Yurtoglu, 2016). Investment in research and development helps new businesses to decide launch of new products and educate entrepreneurs regarding potential outcomes of investment. Beside this, it also helps businesses to decide either,

they begin the business in the market or not. A small investment on research might help them to identify product demand, consumer purchasing power, economics and political environment, technological change, disruptive innovation, and identify more significant information to business (Loof & Heshmati, 2001). All these factors help the entrepreneurs to take into account capital budget, product innovation, deciding pricing and promotional strategies, and other important business considerations (Braunerhjelm, 1997). The more information a business has regarding external factors, the more probability to reduce the risk of loss, and ultimately this will contribute to the firm value. Every successful business decides two ways to increase the profit. First, management try to generate more revenue.

Second, they try to reduce the cost of the business, and in turn this leads to raise firm's value. The appropriate research and development will help firms to identify cost efficient technology for the reduction of cost (Dedrick, Kraemer, & Linden, 2010). Furthermore, this study investigates the impact of CPR, specifically their duality as chairman of the board, on firm value. CEOs are highest rank position in every firm who deals with day-to-day operations and provide a link of communication between board of the company and corporate operations (Wagner & Janssen, 1999). This study attempts to investigates whether this power positively influences firm value, independent of KC. In financial studies, it is noted that CEOs possess superior information compared to others across all aspects of the company. This informational advantage aids decision-making, ultimately enhancing firm value (Fahlenbrach, 2009). While aligning with the main corporate objective of shareholder wealth maximization, it is crucial to ensure that such gains do not come at the cost of other corporate stakeholders.

CEOs having excessive power can create challenges for firms, leading to conflicts of interest among stakeholders and causing agency problems (Rozeff, 1982). For instance, when firms prioritize profitable capital budgets, they may reduce the payout ratio, reducing shareholder confidence. The bird-in-the-hand theory highlights shareholder preference for cash dividends over capital gains, creating a clash with management interests. Agency theory further explains powerful CEOs prioritizing firm value over shareholder interests, resulting in organizational agency problems (Green & Talmor, 1985). This incurs agency costs, monitoring, bonding, and residual losses, ultimately reducing firm value over time. While literature often shows a positive CEO power-firm value relationship, real-world scenarios emphasize the reluctance of management to compromise shareholder confidence for operational expansion (Xiao & Zhao, 2012).

Moreover, the practice of enhancing firm value at the expense of shareholders' interests isn't an isolated occurrence; it can yield long-term benefits for shareholders. According to Naiker, Navissi, and Sridharan (2008), shareholders may experience capital gains in the future, as managerial compensation is linked to firm performance. Managers receive additional benefits, such as bonuses, only when their decisions lead to positive outcomes and profit for the firm. Conversely, if decisions result in unfavorable outcomes, managers are limited to their standard remuneration. This contractual arrangement implies that managers, driven by the prospect of bonuses, may take risks that potentially reduce the firm's profits a concern that shareholders mostly consider. Finally, this study investigates the essential exploration of CEOs' role concerning KC and firm value. Thus far, the study has distinctively discussed R&D investments and the CEO's influence on firm value independently. CEOs, being the leaders of business, strive for ideal resource utilization to meet shareholder

expectations, encompassing both financial and non-financial assets. Before investing in physical asset, CEOs employ capital budgeting techniques, often supported by R&D investments, reducing available cash. While shareholders generally hate unnecessary expenses, CEOs may deny projects posing significant risks. The study further examines the interaction effect of CEO power on KC stocks and firm value, questioning whether it enhances firm value. This analysis includes firms where CEOs hold dual positions while simultaneously investing in KC stocks. Embracing the stewardship prediction, the study anticipates managers prioritizing shareholder interests over self-interest.

The study's focus on KC and CPR aligns with recent research on firm value determinants in emerging markets. For instance, Khel, Shah, and Bangash (2024) emphasize the role of human talent capital a subset of KC in shaping firm value in Pakistan's non-financial sector, reinforcing the significance of intangible assets. Addressing critical gaps in existing literature, this study contributes to the understanding of factors shaping firm value in the Pakistan Stock Exchange. Firstly, it explains the previously unexplored relationship between KC investment and firm value. Secondly, it investigates the impact of powerful CEOs on firm value. Notably, this research introduces a novel dimension by examining the interaction of KC and firm value, moderated by CEO's power an aspect largely absents in the literature. The primary objectives include unraveling the complex connections between KC and firm value, probing the influence of CEO's power on firm value, and determining whether CEO's power combines with higher KC to create additional value within the Pakistani stock market.

EMPIRICAL REVIEW

Knowledge Capital and Firm Value

This study, building on Chiu et al. (2019), defines KC as a firm's investment in research and development (R&D). Braunerhjelm (1997) expands this definition to include education, software, and marketing, revealing a strong positive relationship between KC and total profitability in large firms, contrasting with the case for small firms. Additional perspectives identify KC in marketing, advertising, organizational capital, and training, showing positive associations with the Global Value Chain (GVC) in advanced countries. Notably, R&D only positively impacts manufacturing industries (Lasinio et al., 2019). Investigating disruptive innovation in IT firms, Chiu et al. find a positive link between KC and firm value, underscoring its role in fostering a competitive advantage.

Analyzing the Athens Stock Market, Parcharidis and Varsakelis (2010) observe a positive effect of R&D investment on Tobin's Q, particularly pronounced in small firms. Loof and Heshmati (2001) define KC as the "ratio of innovation sales to total sales," revealing a positive relationship with performance heterogeneity. Despite KC's initial impact on current profitability, Li and Hou (2019) advocate for continued investment, as it ultimately enhances productivity and future earnings for faster-growing firms in the long term.

Ehie and Olibe (2010) studied R&D investment's impact on firm value in US manufacturing and services firms, revealing a positive relationship in both sectors. Post-9/11, the service sector exhibited a higher positive effect than manufacturing. Australian large firms showed a positive association between R&D and Tobin's Q (Bosworth & Rogers, 2001). According to international standards, private returns from

R&D remain low. Belkaoui (2003) explored intellectual capital's link to firm value and organizational performance in US multinational corporations, establishing a positive significant relationship. Wang (2008) found a positive connection between intellectual capital and total capitalization in US electronic companies. In addition, Dedrick, Kraemer, and Linden (2010) confirmed the positive impact of innovation on the financial value of firms, especially in high-tech German manufacturing industries (Peters et al., 2017).

H1. Higher knowledge capital firms have higher firm value in PSX

Powerful CEOs and Firm Value

This study deems CEOs powerful when they hold the dual position of chairman of the board. CPR is often viewed as an agency problem, incurring costs that reduce firm value. Organizational and management theories, as outlined by Sah and Stiglitz (1986), contend that CPR has both costs and benefits. Sheikh (2018) discovers a positive association between CPR and firm value in highly competitive markets, where CEOs face intense pressure. Conversely, in low-competition settings, powerful CEOs may contribute to agency problems, rising costs and negatively impacting firm value. Examining the relationship between firm value and CPR, Gunasekarage, Luong, and Truong (2019) find this association dependent on the business life cycle stage, with a positive link in the star and question mark stages and a negative correlation in the cash cow and dog stages of the Boston Consulting Group's matrix.

Under the framework of Performance-Vested Stock Options (PVSO), the CEO's influence has a detrimental impact on the overall profitability of the firm. Abernethy, Kuang, and Qin (2015) reveal that stock options, designed to incentivize employees taking on challenging tasks for value enhancement, often end up concentrated in the hands of powerful CEOs who avoid assigning challenging targets to subordinates. In the context of Chinese banks, Ting, Chueh, and Chang (2017) find complex effects of CPR. CEOs with a gender-diverse board show a positive correlation with performance, while negative associations are noted for CEOs with structural power. Additionally, CEOs having ownership power show a positive link with performance, contrasting with negative relationships tied to diversification and professionalism.

Ararat, Black, and Yurtoglu (2016) present positive relationship between CEO characteristics and Tobin's Q (a proxy for firm value), quantifying an 8 to 10% increase in Tobin's Q with a one-point rise in standard deviation. Javed, Iqbal, and Hasan (2006) reveal a significantly positive connection between corporate governance and firm value in the Karachi Stock Exchange (KSE), emphasizing the enduring influence of large shareholders. In the United States, founder-led firms, comprising 11% of the largest companies, show higher firm value and prioritize acquisitions and R&D investments (Fahlenbrach, 2009). Adams, Almeida, and Ferreira (2005) note the flexible firm performance associated with powerful CEOs, with varying positive or negative impacts on firm value.

Adams, Almeida, and Ferreira (2008) identify a negative effect on performance in firms with at least one founder CEO, contrasting with a positive causal effect between founder CEOs and performance in US corporations. Additionally, Yang and Zhao (2014) demonstrate that duality firms outperform non-duality firms. CPR exhibits a positive association with firm value in IT firms in advanced countries, attributed to lower information costs and heightened influence of powerful CEOs (Chiu et al., 2019). Boyd (1995) supports the positive link between CEO duality and firm performance, aligning with consistent findings from Daily and Johnson (1997) on the favorable impact of CPR

on firm performance. Conversely, Fast, Sivanathan, Mayer, and Galinsky (2012) reveal that CPR induces overconfidence in decision-making, leading to reduced firm value, especially in critical negotiations. Brickley, Coles, and Terry (1994) find outside directors acting in shareholders' best interest, increasing firm value, supported by Weisbach (1988). Cotter, Shivdasani, and Zenner (1997) contend that independent outside directors enhance shareholder gains, employing resistance strategies for shareholder wealth in firms with a substantial number of independent directors. Yasser (2011) establishes a positive and significant relationship between corporate governance structure, including a CEO founder, and firm performance in both family and non-family firms in Pakistan.

The debate on CPR's dual effects enhancing firm value versus exacerbating agency problems finds resonance in Pakistan's corporate environment. Khel et al. (2022) demonstrate how governance composition, including gender diversity and critical mass assumptions, influence governance outcomes like dividend policies. Their findings complement the stewardship-agency contrast discussed here, suggesting that CPR's impact may vary with contextual factors (e.g., board composition). This aligns with the study's hypothesis (H2) that powerful CEOs in PSX may drive value when aligned with strategic investments.

H2. Firms with powerful CEO's has higher firm value in PSX

KC, CEOs power and Firm Value

In reviewing theoretical literature, stewardship theory posits that managers exhibit collectivistic behaviors, viewing themselves as stewards of organizations (Donaldson & Davis, 1991). This perspective defines collectivistic behavior as considering all stakeholders before making decisions within the firm. In contrast, agency theory challenges the assumption of steward behavior, asserting that managers primarily focus on their individual interests (Fama & Jensen, 1983). Stewardship theory further develops a "model of man" based on stewards, emphasizing a preference for collectivistic over individualistic behavior, prioritizing the organization as a whole (Davis et al., 1997).

Executives, as per this theory, are driven by intrinsic rewards and often develop a strong sense of belonging to their organization (Arthurs & Busenitz, 2003). The efficiency theory posits that CEOs should wield significant power within a firm. Faced with the perpetual trade-off between the benefits and costs of a decision, firms consistently grapple with this delicate balance. According to Brickley et al. (1994) and Dey, Engel, & Liu (2011), the agency cost incurred by powerful CEOs is outweighed by the benefits reaped.

Yang and Zhao's (2014) research reveals that firms led by influential CEOs exhibit superior performance in the face of exogenous shocks. Additionally, Dowell et al. (2011) demonstrate that a firm's survival capability strengthens with an increase in CPR. The augmentation of CPR not only enhances firm performance but also contributes to organizational efficiency, thereby diminishing the probability of financial loss. Building upon these findings, this study posits that higher firm value is expected when KC is elevated and concurrently when CEOs wield substantial power. When viewed through the lens of the stewardship model, this expectation forms the basis for the third hypothesis.

H3. CEOs power further increase the firm value with knowledge capital stocks

RESEARCH METHODOLOGY

Data Collection and Sample Size

The data for this study focus on Pakistan Stock Exchange, from 2013 to 2023 period. The data is collected from the annual reports of the companies registered on the Pakistan Stock Exchange. According to 2021 report of Pakistan Stock Exchange, there are 540 registered companies, around 300 non-financial companies provide annual reports, so sample size for this study is all these companies.

Data Processing and Data Analysis

First, the descriptive statistics of the variables are presented. Second, the regression diagnostics test was applied to check for multi-co-linearity, heteroscedasticity, and panel serial correlation and solved if these problems exist. Finally, panel data model is run on the data. To find the true model for result ordinary-least- squared and random effects models are checked. Random effect model is selected through Bruch pagan

Variables	Symbols	Description	Type
Tobin's Q (Firm Value)	TQ	$TQ = \dfrac{Book\ value\ of\ Debt + Market\ Cap}{Book\ Value\ of\ Assets}$	Dependent
Knowledge Capital	KC	$KC_{i,t} = (1 - \delta_{R\&D})KC_{i,t-1} + R\&D_{i,t}$	Independent
CEO Power	CPR	It takes 1 if CEO is chairman of the board and 0 otherwise	Moderator
CEO Tenure	TR	It means the total time a CEO has spent in the firm	Control
CEO Pay	CEOPY	Natural Logarithm of total Compensation	Control
Firm Size	SIZE	Natural Logarithm of total Assets	Control
Financial Leverage	LRG	Long term debt over total Assets	Control
Capital Expenditure	CPEX	ratio of capital expenditure to total assets or the ratio of fixed assets to total assets	Control
Dividend Payout Ratio	DVD	Total dividend divided by net income or the part of net income that is distributed to shareholders	Control
Firm Age	FRMAGE	Firm Age from the date of incorporation	Control

multiplier test. Lastly, fixed and random effect models are tested through Hausman test. Following this process, fixed effect regression model is selected to explain the results.

Table 1.
Description of Variables
Empirical Method

The data for this study is panel data, the study specifies the following model for empirical test:

$$TQ_{i,t} = \alpha_{i,t} + \beta_1 KC_{i,t} + \beta_2 CPR_{i,t} + \beta_3 \left(KC_{i,t} * CPR_{i,t}\right) + \beta_4 TR_{i,t} + \beta_5 CEOPY_{i,t} + \beta_6 SIZE_{i,t} + \beta_7 LRG_{i,t} + \beta_8 CPEX_{i,t} + \beta_9 DVD_{i,t} + \beta_{10} FRMAGE_{i,t} + \beta_{11} Beta_{i,t} + D17 + \varepsilon_{i,t}\ \ldots\ldots\ldots\ldots(3.1)$$

In above equation $TQ_{i,t}$ is Tobin Q, which is proxy of firm value, i is firm and t is time, $KC_{i,t}$ is knowledge capital, $CPR_{i,t}$ is CEO power, $\left(KC_{i,t} * CPR_{i,t}\right)$ is the interaction/moderating effect of R&D investment and CEO's power, $TR_{i,t}$ is CEO tenure, $CEOPY_{i,t}$ is CEO pay, $SIZE_{i,t}$ is firm size, $LRG_{i,t}$ is firm leverage, $CPEX_{i,t}$ is capital expenditure, $DVD_{i,t}$ is total dividend, $FRMAGE_{i,t}$ is firm age, $\alpha_{i,t}$ is constant and $\varepsilon_{i,t}$ is residual, annual Beta from CAPM regression that measures the relationship between systematic risk and firm's expected returns lastly, D17 is dummy variable generated to capture change in regulation for the year 2017. This variable is created for after and

before 2017 year as new rules of corporate governance are incorporated. The Capital Asset Pricing Model (CAPM) by Sharpe (1964), and Lintner (1965) posit a positive correlation between a stock's required/observed rate of return and its beta, representing systematic risk adjustment. Beta, the ratio of a stock's return covariance with market return to market return variance, serves as CAPM's proxy for all systematic risks. As a stock's beta rises, investors demand a higher risk premium, leading to a lower stock price and an anticipated negative correlation with the firm's market performance.

RESULTS

Descriptive Statistics

The dependent variable of the study is Tobin's Q which is used as a proxy for firm value. Outliers were identified using ±3 standard deviation from the mean value following Cousineau and Chartier (2010). Variables were "winsorized" at 1st and 99th percentiles. Descriptive statistics presented in Table 2 and all other tables are based on these winsorized variables.

The mean Tobin's Q value is 1.236, with a standard deviation of ±0.747, ranging from 0.444 to 4.923. This suggests that, on average, companies have a deviation of 74% from the mean, indicating that their book value of debts and market capitalization exceeds the book value of assets. The first variable, KC, averages 0.0000743 with a standard deviation of ±0.0003428, indicating limited investment in R&D. CPR, the second variable, with a mean of 0.064, reveals that only 6.4% of sample firms have a CEO as chairman. CEO tenure averages 9.111 years, showing a positive relationship with performance. CEO pay, firm size, financial leverage, capital expenditure, dividend payout ratio, firm age, and annual beta show varying means and standard deviations. The dummy variable for changes in corporate governance rules (D17) has a mean of 0.158, indicating shifts in board structures.

Table 2.

Variables	Obs	Mean	Std. Dev.	Min	Max	p1	p99	Skew.	Kurt.
TQ	1450	1.236	.747	.444	4.923	.444	4.207	2.199	8.928
KC	1450	.0000743	.0003428	0	.003082	0	2.011	5.533	35.95
CPR	1450	.064	.246	0	1	0	1	3.548	13.586
TR	1450	9.111	4.539	1	24	1	24	.803	4.293
CEOPY	1450	9.379	1.134	5.629	12.357	5.733	12.357	-.343	3.807
SIZE	1450	15.596	1.402	11.847	18.922	12.042	18.592	-.027	2.858
LRG	1450	.471	.182	.107	.98	.107	.903	.229	2.537
CPEX	1450	.079	.093	-.125	.519	-.12	.442	1.782	7.777
DVD	1450	.278	.285	-.263	1.229	-.263	1.229	.875	3.705
FRMAGE	1450	39.529	15.302	10	83	11	83	.336	2.344
Beta	1450	.689	.517	-.268	2.087	-.268	2.086	.369	2.72
D17	1450	.158	.365	0	1	0	1	1.878	4.525

DESCRIPTIVE STATISTICS

Matrix of Correlations
The matrix bellow in table 3 illustrates positive correlations between Tobin's Q and KC, CEO pay, firm size, capital expenditure, and dividend payout ratio. However, the degree of the correlations varies; CEO pay and dividend payout ratio show moderate correlations with Tobin's Q, whereas firm size, capital expenditures, and KC display weaker correlations. Conversely, CEO's power, CEO's tenure, financial leverage, and firm age demonstrate negative correlations with Tobin's Q, with correlation degrees below -0.1, indicating a weak relationship in these cases.

Table 3.
Matrix of Correlations

Variables	1	2	3	4	5	6	7	8	9	10	11	12
TQ	1.000											
KC	0.146	1.000										
CPR	-0.058	-0.029	1.000									
TR	-0.061	-0.074	-0.070	1.000								
CEOPY	0.309	-0.035	-0.120	0.086	1.000							
SIZE	0.082	-0.094	0.026	0.136	0.499	1.000						
LRG	-0.008	-0.082	0.114	-0.023	-0.224	-0.056	1.000					
CPEX	0.017	-0.025	0.018	0.044	0.025	0.099	-0.067	1.000				
DVD	0.304	-0.002	-0.147	-0.001	0.351	0.251	-0.230	-0.035	1.000			
FRMAGE	-0.071	0.049	0.016	0.022	-0.132	-0.060	-0.140	0.030	-0.122	1.000		
Beta	0.144	-0.033	0.026	0.008	0.274	0.275	-0.002	-0.079	-0.023	-0.186	1.000	
D17	-0.051	-0.007	-0.089	0.117	0.069	0.049	0.038	-0.009	0.067	0.009	0.003	1.000

Multicollinearity

The result of VIF test in table 4 shows that mean VIF is less than 10, so we can state that there is no multicollinearity in the model.

Table 4.
Variance Inflation Factor

	VIF	1/VIF
KC	1.039	.963
CPR	1.127	.887
(CPR*KC)	1.097	.911
TR	1.121	.892
CEOPY	1.596	.627
SIZE	1.479	.676
LRG	1.164	.859
CPEX	1.04	.962
DVD	1.268	.788
FRMAGE	1.111	.9
Beta	1.193	.838
D17	1.094	.914
Mean VIF	1.192	.

Heteroscedasticity

To check for heteroscedasticity, we use Cook-Weisberg test for heteroskedasticity. The results in table 5 declare that the heteroscedasticity problem exists; to deal this problem the robust option is used to robust standard errors in the model.

Table 5.
Heteroscedasticity

Cook-Weisberg test for heteroskedasticity

Ho: Constant variance
Variables: fitted values of residuals
      chi2(1)   =   10.23
      Prob > chi2 = 0.0014

Panel Serial Correlation

To find whether this problem exists or not, we use Wooldridge test. H0: There is no first order autocorrelation. Since the p-value in table 6 is higher than 5%, the null hypothesis is accepted.

Table 6
Wooldridge test for autocorrelation

H0: no first order autocorrelation
F (1, 76) =   6.682
Prob > F =   0.0917

Panel Data Models

In the panel data models, we have to choose an appropriate model using a series of steps. These steps include; choosing between ordinary leased square (pooled regression) and random effect models. If pooled regression is found inappropriate then we have to choose between fixed and random effect model. These steps are discussed below:

Pooled VS Random Effect Models

This is the first step to decide between these two models using the Bruch pagan multiplier test. The null hypotheses in this test are always, H0 there is no random effect in the model. The p-value in table 7 declares the rejection of null hypothesis. The random effects model is selected.

Fixed VS Random Effect Models

In this section we follow the second step that is to decide between fixed and random effect model. To decide between fixed and random effects model, we run Hausman test that holds the null hypothesis as H0: there is no fixed effects.

Table 7.
Breusch and Pagan Lagrangian Multiplier Test

Breusch and Pagan Lagrangian multiplier test for random effects
    TQ [id, t] = xb +u[id] + e [id, t]
    Estimated results:

	Var	sd = sqrt(var)
TQ_w	.053466	.1934675
e	.029473	.1384782
u	.038494	.1183842

Test: Var(u) = 0

Chibar2(01)	=	419.89
Prob > chibar2	=	0.0000

Table 8.
Hausman (1978) Specification Test

	Coef.
Chi-square test value	77.936
P-value	0

The test result in table 8 rejects the null hypothesis, so the true model is fixed effect model for this study.

Fixed Effect Model

The table 9 shows the coefficient of fixed effect model. The research study investigates the impact of CEO's power and KC on firm value in Pakistan Stock Exchange for the period of 2013 to 2023. The Tobin's Q is the dependent variable, whereas, KC, CEOs power, CEOs tenure, CEOs pay, firm size, financial leverage, capital expenditure, divided payout ratio and firm age are the independent variables. ***, ** and * show significance at the level of 1%, 5% and 10% respectively. The r-squared of the regression shows that 18.6 percent of variations in Tobin's Q is explained by the variation in the explanatory variables, and remaining 81.4 percent of variations are explained by other variables that are not included in the model.

The statistically significant coefficient of KC suggests that an increase in KC significantly influences firm value (TQ) with a positive coefficient of 0.062. This indicates that the first null hypothesis is rejected. Therefore, the study finds enough evidence that KC increases the firm value. Similar results are observed in Canada, Singpore, Ireland, and Korea, Johnson and Pazderka (1993); Ho, Keh, and Ong (2005); Harris and Trainor (2009); Xu, Sim, and Jin (2016). However, the result contradicts with Keh and Ong (2005); Chan et al. (2001); Hall (1993); Erickson and Jacobson (1992); Cazavan-Jeny and Jean (2007); Xu and Jin (2016); Chrisman et al. (2005); Corbetta and Salvato (2004).

Table 9.
Fixed Effect Regression

TQ	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
KC	.062	.138	0.45	.065	-.212	.336	*
CPR	.141	.079	1.78	.078	-.016	.298	*
(CPR*KC)	.254	.159	-1.60	.011	-.57	.062	**
TR	-.018	.013	-1.37	.174	-.045	.008	
CEOPY	.044	.028	1.56	.122	-.012	.099	
SIZE	-.225	.096	-2.33	.022	-.416	-.033	**
LRG	.589	.236	2.50	.014	.12	1.058	**
CPEX	.281	.231	1.22	.227	-.177	.739	
DVD	-.105	.129	-0.81	.421	-.362	.152	
FRMAGE	.163	.029	5.65	0	.106	.22	***
Beta	.049	.065	0.76	.45	-.079	.177	
D17	-.429	.069	-6.20	0	-.566	-.291	***
Constant	-2.116	1.393	-1.52	.132	-4.885	.653	

Mean dependent var	1.236	SD dependent var		0.747	
R-squared	0.486	Number of obs		1450	
F-test	.	Prob > F		.	
Akaike crit. (AIC)	195.322	Bayesian crit. (BIC)		244.633	

*** p<.01, ** p<.05, * p<.1

The second independent variable in the model reveals that CPR significantly impacts firm value (TQ) at the 10% confidence level (p = 0.078). With a coefficient of 0.141, an increase in CPR influences firm value. This result indicates that second null hypothesis is also rejected. The results verify the prediction of the stewardship theory in Pakistan's context. The result is contradicted with Han et al. (2016); Sivanathan et al. (2012); Bebchuk et al. (2011); Faulkender and Yang (2010); Bebchuk and Fried (2004).

However, inn developed economies most of the literature present consistant results that can be found in Ararat et al. (2016); Fahlenbrach (2009); Adams et al. (2005); Boyd (1995); Daily and Johnson (1997). The interaction term (CPR*KC) in the regression model indicates a statistically significant moderation effect on firm value (TQ) at the 5% confidence level (p = 0.011). The negative coefficient (-0.254) suggests that the combined impact of CPR and KC is associated with a decrease in firm value. The interaction term (CPR*KC) in the regression model indicates a statistically significant moderation effect on firm value (TQ) at the 5% confidence level (p = 0.011). The positive coefficient (0.254) suggests that the combined impact of CPR and KC is associated with an increase in firm value. This suggests that powerful CEOs in the firms prefer R&D investments that bring a huge increase in firm value. Therefore, the prediction of the stewardship theory is supported in the sample firms. The result support Chen (2014), and contradict with Brickley et al. (1994).

The coefficients of CEOs tenure, CEOPY (CEOs pay), CEXP (capital expenditures), DVD (dividend payout ratio) and Annual Beta are statistically insignificant. The coefficient of SIZE (firm size) shows that one unit increase in the firm size, Tobin's Q decrease by 0.225. The negative effect of firm size with firm value is similar with Hirdinis (2019). The LRG (financial leverage) has positive (58.9%) and significant relationship with Tobin's Q. In the study of finance, it is observed that using debt financing has tax shield, that is might be the reason of strong relationship between LRG and TQ in Pakistan. however, the coefficient of FRMAGE (firm age) shows that one unit increase in firm age will increase the Tobin's Q by 0.163 units. Finally, a dummy variable (D17) was added in the regression to account for regulatory changes in 2017, reflecting the SECP's mandate for separate CEO and chairman roles. The statistically significant coefficient justifies the inclusion of this variable, suggesting its impact on the results.

CONCLUSION

In conclusion, this study investigates the impact of KC on firm value, considering the moderating effect of CPR in the context of Pakistan. The regression results show a statistically significant and positive relationship between KC and firm value, supporting the assumption that investments in research and development positively influence a firm's value. Additionally, CPR is found to significantly impact firm value, suggesting that a stronger CEO influence contributes positively to firm performance. The interaction effect further verifies a significant moderation, indicating that CPR strengthens the positive relationship between KC and firm value. These findings contribute to the understanding of the complex connection between KC, CPR, and firm value in the Pakistani firms. However, it is critical to note that further research may be undertaken to explore the relationships across different industries or regions within Pakistan.

POLICY IMPLICATIONS AND RECOMMENDATIONS

The findings suggest practical implications for firms in Pakistan. Firstly, recognizing the significant positive impact of KC on firm value highlights the importance of sustained investments in research and development. Moreover, acknowledging the significant role of CPR, corporate governance practices should be adapted to empower CEOs positively. However, given the moderation effect observed, a careful balance in CPR is essential to connect the benefits of KC effectively. Policymakers can consider facilitating businesses to invest in KC while simultaneously fostering transparent governance practices. These recommendations emphasize the potential for enhancing firm value through strategic investments, effective leadership, and

effective governance mechanisms in the Pakistani firms. Furthermore, the policy implications of this study reflect with broader calls for governance reforms in Pakistan's equity markets. Khel and Shah (2025) advocate for regulatory frameworks that address volatility and information asymmetry, which could amplify the benefits of CPR and KC. Similarly, Khel et al. (2024) stress the need for policies fostering human capital development, a key component of KC. These insights collectively advocate for integrated governance and innovation strategies to sustain firm value.

DECLARATIONS

Availability of data and material: In the approach, the data sources for the variables are stated.
Authors' contributions: Each author participated equally to the creation of this work.
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Consent to Participate: Yes
Consent for publication and Ethical approval: Because this study does not include human or animal data, ethical approval is not required for publication. All authors have given their consent.

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