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Dynamics of Intellectual Capital, Corporate Governance, and Firm Performance in Family-Owned Companies in Pakistan

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Abstract

The study aims to examine the corporate governance effect on the performance of family-owned cement companies in Pakistan for the period 2016 to 2021 using random and fixed effect panel regression based on the Hausman test considering intellectual capital as a moderator. The results indicate a positive effect of audit size and top 20 shareholders while a negative of insider shareholding and board independence on Tobin's Q, ROE, and ROA. Additionally, for Tobin's Q, institutional shareholding and CEO duality, a positive effect while negative of board size is found. While the negative effect of institutional shareholdings and CEO duality and the positive of board size is found in the case of ROE, ROA and intellectual capital moderation is found for all performance measures. The findings are consistent with stewardship and agency theory. The empirical outcomes emphasize the importance of intellectual capital for policymakers and regulators considering it rewarding activity for shareholder wealth maximization.

Introduction

The recent literature on corporate governance (CG) has got considerable attention from academia, especially in family-owned firms where corporate decisions concentrate and rotate within the family over a longer period (Nasution et al., 2021). An essential and integral part of the Pakistani economy is family businesses, as about 80 percent of all companies listed on the Karachi Stock Exchange are either directly or indirectly connected to a significant business family. The Securities and Exchange Commission of Pakistan

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(SECP) has reported more than fifty-thousand private sector firms and family-owned businesses make up the vast majority of publicly traded enterprises in Pakistan and are commanded by a family group (Zaidi & Aslam, 2006). Despite being the backbone of Pakistan's economy, family-owned firms often lack awareness of operating in a closed environment concerning good CG (Amin et al., 2022). Therefore, promoting the fundamentals of good CG for family-owned businesses would aid in the growth of a robust economic sector. In Pakistan, the development of CG has just begun mainly because firms fail to recognize CG's importance and perform at an optimal level; therefore, it is necessary to examine the CG-FP relationship to provide an up to date evidence and practical information for different market stakeholders including policymakers, top-level management of a company, and particularly to regulatory bodies.

CG comprises a collection of industrious and valuable management actions to direct administrative decision-making processes and enhance firm performance (FP) (Bashir et al., 2020). It has a substantial role in the firm's sustainability, efficiency, and profitability as it links its shareholders and stakeholders. The primary CG objective is to encourage responsibility, full disclosure of information, fairness, and transparency relevant to the business's success, regardless of their origination, but at family business levels, it provides a sound base to top executives to be good decision-makers for tackling family ownership challenges, particularly with generations (Mjahid et al., 2022). Intellectual capital (IC), with the other name intangible assets, is popularly defined as "knowledge that is of value to an organization" (Hashim et al., 2015). To tackle current worldwide FP concerns, using IC within the organization, CG's contribution is highly important (Khan & Ali, 2018). This particular asset helps an organization go through the most innovative and profitable opportunities prevailing in the market to achieve a competitive advantage by reducing wasteful resource consumption. Though being a dynamic FP contributor, it is reporting in financial reports is still partial (Wang et al., 2016) and other available evidences concerning its importance for FP (Khan & Ali, 2018; Wang et al., 2016) has attained researcher attention for studying its role for CG-FP relationship.

Recently and in past many studies have been conducted on this topic. However inconclusive results have been obtained while describing the relation between FP and CG. A few studies stated a positive CG-FP relationship (Darko et al., 2016; Sakawa & Watanabel, 2020) and some negative (Bashir et al., 2020; Koji et al., 2020). However, many studies also found no relationship (Barrese et al., 2007; Ponnu, 2008). So, due to vague results, it is significant to study the CG determinants' impact on FP. The study aims to examine the corporate governance effect on the performance of family-owned cement companies in Pakistan for the period 2016 to 2021 using random and fixed effect panel regression based on the Hausman test considering intellectual capital as a moderator. As per the best researcher's knowledge, the family firms are the most ignored domain to research for the understudy conceptual model as the majority of studies are conducted in the Pakistan stock exchange (PSX) context considering financial or non-financial firms

(Ali et al., 2022; Farooq et al., 2021) and IC moderation is not tested in case of family-owned firms. Additionally, FP measured through one market-based proxy, namely Tobin's Q, along with the accounting-based proxies, namely, ROE and ROA has added much value in the current study for family-owned firm's stakeholders. This study will be helpful for the family-owned firms to understand the usefulness of IC in a better way to be innovative and achieve competitive advantage.

The study's outline is as follows: Section one describes the study introduction and significance, section two reviews existing literature to develop a hypothesis, section three for adopted methods for studying the developed hypotheses, and lastly, sections four & five for data analysis results and conclusion plus recommendations.

Theoretical underpinning

Stewardship and agency theories are used in the current study to provide a theoretical base for the CG-FP relationship. Agency paradox has been orthodoxly allied with CG and is about principal-agent conflict regarding their goal of attaining preference (Jensen & Meckling, 1976). Agency theory or relationship arises when the administration (agents) work on the investor's (principal) behalf for their wealth maximization, and they do not perform accordingly. Agency costs, including residual costs, bonding, and monitoring expenses by management and shareholders respectively, because of the agency problem. In the last few decades, CG literature has recognized certain possibilities, including executive compensation, board of directors, corporate control market and financial institutions' concentrated holdings to mitigate the agency problem (Boubaker et al., 2012).

Donaldson and Davis (1989) proposed stewardship theory as a prescriptive substitute for agency theory. The theory proposes that the agent is not interested in individual benefits but in principal interests being a business steward and inherently motivated to work for them to complete the tasks and obligations entrusted to them. It mainly centers on managerial behavior and affirms the critical motivating aspect for managers is the attainment of satisfaction from work done well, and their behavior is in line with the organization's interests. Therefore, there is no conflict between managers and shareholders; instead, the disputes are the substance of the problems explained by agency theory. The crucial distinction between both theories, however, is that the former is an economic paradigm while the latter is a psychological one from a management context.

Literature review

Afza and Nazir (2015) conducted a study in Pakistan and reveal a positive relationship between institutional ownership and FP defining institutional investors as functioning organizational members responsible to oversee the business operations that ultimately significantly affect firm growth. They argued that if financial institutions with a holding of the long-term firm shares actively and effectively monitor business operations FP can be improved. Additionally, Navissi and Naiker (2006) explored the understudied

relationship dividing New Zealand firms' institutional investors into active and passive ones and found a non-linear relationship for active investors, arguing that up to 30 percent of holdings, a firm's value enhance while above that it decreases. Moreover, Sakawa and Watanabel (2020) showed an optimistic institutional investor's role in Japanese FP and supported the significant institutional shareholder's contribution to enhancing FP. However, some scholars also found a negative relationship (Bashir et al., 2020; Bhattacharya & Graham, 2007).

H1: Institutional shareholding and FP are positively linked.

Studies have been conducted to explore the exact insider shareholding-FP relationship following agency and stewardship theories. The stewardship theory postulates a positive causal relationship because of the owner's and manager's interest convergence through an increase in insider shareholding (Shleifer & Vishny, 1996). Alternatively, the agency theory supports a negative relationship arguing high voting power of substantial manager shareholders enable them to be a permanent firm employee and work for their benefit in contrast to the stockholder's wealth maximization goal achievement (Park & Jang, 2010). However, Barrese et al. (2007) results do not match any above-stated hypotheses/theories postulations. They contend this result arguing because of some industry-related certain factors like structure, control system, and ownership role. Based on the literature, putting both hypotheses together, most scholars intuited a positive impact of insider ownership on FP up to a certain level; however, its inverse effect was also found earlier in that series, especially in family-owned firms.

H2: Insider shareholding and FP are inversely linked.

CEO duality is about holding a CEO and board chairman position simultaneously (Khan et al., 2021). FP and CEO duality relationship have been contradictory by different researchers as some found positive (Hassan & Halbouni, 2013; Khan et al., 2021; Pucheta-Martínez & Gallego-Álvarez, 2020) and some negative relationship (Bashir et al., 2020; Jwailes, 2021). And this also has been proved by two different theories, namely, stewardship theory, which argues for a positive relationship, and agency theory, which supports a negative relationship. Some scholars and studies do not endorse any of these theories and support any relation between the understudy variables (Boyd, 1995; Peng et al., 2010).

H3: FP and CEO duality are inversely linked.

Board size refers to the number of board executives and a group of people who wants to be together to achieve the superlative consequences for an association (N Vaidya, 2019). Scholars have use different CG theories, namely stewardship, resource dependency, and agency theory, to explain the board size-FP relationship. Stewardship theory argues the negative effect in case of large board size and vice versa, while resource dependency and agency theory advises only positive effect (Kalsie & Shrivastav, 2016). Kalsie and Shrivastav (2016) conducted a study in India employing panel data analysis collecting non-

financial firm's data and found a significant positive effect contending that the firms must have larger bard size that will enhance their ability to better comprehend and respond to assorted shareholders. Similarly, Pucheta-Martínez and Gallego-Álvarez (2020) found a positive board size-FP relationship. However, scholars like Salehi et al. (2018) and Samra (2016) also believe in a negative CG-FP relationship. Based on descriptive statistics average board size is 8.36 as consistent with the N Vaidya (2019) recommendation of an idyllic board size between eight and ten for a positive CG-FP relationship.

H4: Board size is positively linked with FP.

Salehi et al. (2018) considered an organization's audit committee members as non-executive managers responsible for protecting shareholders' interests, providing them with factual information about their financial position, and reducing information asymmetry. Ashari and Krismiaji (2020) argued FP is effective in cases of small audit size because of the added focus on the debate on significant organizational and economic issues as it guarantees and provides fair reporting through meeting necessary top practices and guidelines. Furthermore, Al-ahdal and Hashim (2022) conducted a study on the Indian stock exchange to examine audit committee characteristics' effect on non-financial public firms. They found a significant positive effect of the external audit committee. Besides these researchers, Bashir et al. (2020) and Rahman et al. (2019) also found a positive relationship between audit size and FP.

H5: FP and audit size are positively linked.

In the family firm's context, most scholars found a negative effect of board independence on FP. Koji et al. (2020) conducted a comparative study between family and non-family-owned corporations in Japan. They concluded that family firms are better performers than non-family firms, but board independence is negatively related in the case of family firms as compared to non-family. Similarly, Leung et al. (2014) concluded an insignificant negative relationship. They argued that board independence, an agency conflict mitigating mechanism between shareholders and managers, is not valuable in family-owned firms Similarly, Rashid (2018) conducted a study in Bangladesh considering 135 firms' data and found a negative plus insignificant relationship. Besides these scholars, a negative relationship is also shown by (Arosa et al., 2010; Liu et al., 2015; Prabowo & Simpson, 2011).

H6: FP and board independence are negatively linked.

The literature has revealed a contradictory set of results on the relationship between FP and ownership concertation. A study by Bashir et al. (2020) found a positive relationship between Tobin's Q and ROE but a negative with ROCE. Similarly, Darko et al. (2016) found a positive and statistically significant relationship between FP and ownership concentration in Ghana. They contended results arguing that as per findings, businesses having a higher concentration of ownership amongst the top twenty shareholders outperform those with a lesser proprietorship concentration. Some scholars

also supported ownership concertation within a firm to control agency problems, resulting in high FP as managers work for the stockholder's benefits (Al-Najjar & Abed, 2014; Maury, 2006).

H7: Top-20 shareholders is positively linked with FP.

In its most fundamental sense, IC is a knowledge-based asset. All intangible assets with an economic worth that are not physical, like goodwill, brands, and patents, are included in this asset (Gerpott et al., 2008). According to the resource-based perspective, IC is crucial for maintaining and creating chances for organizational growth and also developing a competitive edge; both good CG standards and high technology capital are essential for this (Barney, 1991; Khan & Ali, 2018). CG has a lower likelihood of promoting business growth because of lacking a high level of IC (Grant, 1996). Organization for EOCD claims that monitoring senior management and oversight of risk policy and control are two other aspects of reporting, measurement, and management of intellectual property that are strongly related to CG processes. A company with strong IC can discipline boards of directors and management, safeguard the interests of minority shareholders, and produce profitable results (Bismuth & Kirkpatrick, 2006). A study by Makki and Lodhi (2014) exposes and establishes the prevalence of a fundamental structural relationship between FP and CG, and the effectiveness of IC. The paper concludes that while CG does not continually directly improve FP, it may be considerably enhanced by corporate governors by utilizing available IC resources. Therefore, in the current study, IC's moderating role for CF-FP relationship is expected to be as consistent as the positive moderating effect findings of Khan and Ali (2018).

H8: IC moderates the causal relationship between CG determinants and FP.

Research Methodology

Study's variables and operationalization

The current study is designed to investigate the CG-FP causal relationship through IC moderation, collecting data based on financial ratios and the firm's essential governance characteristics from financial statements and the PSX website from 2016-21 for the 15 listed Pakistan cement family-owned firms. The current study's dependent variable FP is measured through one market-based proxy, namely Tobin's Q, and two accounting-based proxies, namely ROE and ROA. Bashir et al. (2020) argued that market performance measuring proxies indicates long-term, whereas accounting performance measuring proxies reflect short-term FP. Therefore, it is necessary and valuable to use both proxies for measuring FP. Furthermore, Ghazali (2010) considered Tobin's Q a predictor of intangible business resource value like evolution breaks, patent rights, and goodwill. Based on the literature, multiple CG proxies have been used in the current study, namely, board size and independence, institutional and insider shareholders, CEO duality, top twenty shareholders, and audit size. Besides these main variables, the researcher also uses some control variables, including leverage, firm age, firm size, and liquidity. The literature on

the CG-FP relationship has emphasized to use of control variables to ensure model internal validity (Badu & Appiah, 2017). All variables are operationalized in Table 1.

Table 1: Variables' operationalization

Variables	**Operationalization**	**References**
Tobin's Q	Total debt value and market share capitalization value in the proportion of the firm's total assets	(Koji et al., 2020; N Vaidya, 2019)
Return on assets	The proportion of net earnings to total assets of a firm in a specific year	(Khan & Ali, 2018; Koji et al., 2020)
Return on equity	The proportion of net earnings to total equity of a firm in a specific year	(Khan & Ali, 2018; N Vaidya, 2019)
Board size	The directors in a specific year on the board of a firm	(Jwailes, 2021; Khan & Ali, 2018)
Audit size	Toral audit team members in a firm in a specific year	(Ashari & Krismiaji, 2020; Salehi et al., 2018)
Board independence	The ratio of independent to total number of directors in a firm in a specific year	(Jwailes, 2021; Koji et al., 2020)
CEO duality	Designated by 1 if CEO holds a double position in a firm, if not shown by 0	(Jwailes, 2021; Khan et al., 2021)
Institutional shareholders	The ratio of shares held by institutional shareholders to the firm's total shares in a specific year	(Sakawa & Watanabel, 2020; Salehi et al., 2018)
Top twenty shareholders	Shares proportion detained by the top twenty stockholders to entire outstanding stocks	(Darko et al., 2016)
Insider shareholders	The ratio of shares held by insider shareholders to total shares of the firm in a specific year	(Chou, 2015; Park & Jang, 2010)
Intellectual capital	VAIC = ICE + CEE (Value added intellectual capital, intellectual capital efficiency, capital employed efficiently)	(Khan & Ali, 2018)
Firm size	The natural LOG of firm assets in a specific year	(Koji et al., 2020; Sakawa & Watanabel, 2020)
Firm age	The number of years of firm establishment up to a specific year	(Pillai & Al-Malkawi, 2018)
Liquidity	The ratio of current assets to current liabilities of a firm in a specific year	(Bashir et al., 2020)
Financial leverage	The ratio of total debt to total assets	(Khan et al., 2021; Sakawa & Watanabel, 2020)

Model specification and estimation requirements

Based on the objectives of the study, FP is the function of CG determinants and IC along with control variables as follows:

$$FP = f\ (CG, IC, Controls)$$

To achieve the current study's objectives a single comprehensive model is developed following the existing literature (Khan & Ali, 2018).

$$FP_{i,t} = \beta_0 + \beta_1 (AS)_{i,t} + \beta_2 (Insd)_{i,t} + \beta_3 (BS)_{i,t} + \beta_4 (BI)_{i,t} + \beta_5 (CEO\ duality)_{i,t} + \beta_6 (Top20)_{i,t} + \beta_7 (Inst)_{i,t} + \beta_8 (Inst \times IC) + \beta_9 (AS \times IC)_{i,t} + \beta_{10} (Insd \times IC)_{i,t} + \beta_{11} (BS \times IC)_{i,t} + \beta_{12} (BI \times IC)_{i,t} + \beta_{13} (CEO \times IC)_{i,t} + \beta_{14} (Top20 \times IC)_{i,t} + \beta_{15} (Controls)_{i,t} + \epsilon \ \ldots\ldots\ldots \text{Eq. 1}$$

On the right side of the model, all the CG determinants are put, AS is audit size, Insd is insider shareholders, BS is board size, BI is board independence, Inst is institutional shareholders, CEO duality, top twenty shareholders. While in subscripts, *i* represents a firm and *t* to time.

Data analysis is initiated with correlation and variance inflation factor (VIF) test to ascertain multicollinearity absence following data stationery based on the unit root test. Furthermore, an appropriate panel data regression model is selected based on the Hausman test considering the data type as short because of the short period and firm's number too, according to Baltagi (2005). Significant test statistic value leads to the selection of a fixed effects model while insignificant test statistic value leads to the selection of random effects model. Then the obtained results are compared with the expected hypothesis and theory to find consistency with the literature and provide possible interpretations after testing classical regression assumptions and variable omission bias.

Results and discussion

Descriptive statistics

Table 2 shows the descriptive statistics for all understudy variables containing mean, maximum, minimum, and standard deviation values to assure data precision before running any other statistical tests. In descriptive statistics, two values are most important, namely mean and standard deviation. It is normal to have a standard deviation less than the mean for the same industry/sector. The mean value shows the average of data, whereas the standard deviation shows the extent to which it deviates from the mean. Table 2 shows 5.63 %, 9.36 %, and 1.17 % mean performance against ROA, ROE, and Tobin's Q, respectively. The mean score of Tobin's Q is less as compared to ROA and ROE; however, Yu (2022) considered Tobin's Q more than one profit indicator for a firm or sector which is up to the mark in the current study context. The standard deviations of all three FP measures are 6.87, 11.54, and 0.58, respectively close to the actual mean value. Significant P-values of the Levin-Lin-Chu test at Lag one confirms data stationary at level 1%*** for all variables; however, ROE, institutional shareholders, and CEO duality are stationary using the Harris-Tzavalis test.

Table 2: Descriptive statistics and data stationery

	Descriptive statistics				Unit root test
Variables	**Mean**	**STD**	**MIN**	**Max**	**Statistic**
Tobin's Q	1.170	0.580	0.390	2.560	-48.979***
Return on equity (ROE)	9.360	11.544	-39.190	32.010	0.533***
Return on assets (ROA)	5.631	6.869	-15.930	22.790	-1.669**
Insider shareholdings	17.220	20.430	0.000	76.570	-17.664***
Institutional shareholdings	3.175	4.100	0.000	17.510	0.839***
Board independence	0.439	0.190	0.110	0.860	-9.478***
Board size	8.366	1.692	6.000	13.000	-29.145***
Audit size	0.541	0.148	0.180	0.780	-7.117***
Top 20 shareholders	84.692	14.302	50.650	100.000	-49.221***
CEO duality	0.111	0.316	0.000	1.000	0.777***
Leverage	0.985	0.720	0.170	3.900	-21.418***
Liquidity	1.836	1.863	0.370	13.410	-49.584***
Firm size	10.376	0.580	8.660	11.190	-33.191***
Intellectual capital	35.367	11.604	11.000	61.000	-31.786***
Firm age	0.852	0.796	-0.240	3.390	

Notes: STD=standered deviation, MIN=minimum, MAX= maximum

Correlation matrix

In Table 3, correlation values less than ± 0.70 and VIFs less than five affirm no multicollinearity issue.

Table 3: Correlation matrix

Variables	**Insd**	**Inst**	**BI**	**BS**	**AS**	**TTS**	**CEO duality**	**VIF**
Insd	1							1.31
Inst	-0.274	1						1.32
BI	-0.077	-0.036	1					1.4
BS	-0.209	0.397	0.049	1				1.22
AS	0.042	0.107	0.454	0.097	1			1.4
TTS	-0.019	0.132	0.068	0.020	-0.101	1		1.07
CEO duality	0.349	-0.097	0.114	-0.124	-0.063	-0.049	1	1.22

Note: Insd=insider shareholdings, Inst=Institutional shareholdings, BI=Board independence, BS=board size, AS=audit size, TTS=top 20 shareholders

Appropriate model estimation

Table 4 presents the appropriate model estimated for each performance measure.

Table 4: Fixed vs Random vs Pooled model

	Return on equity	**Return on assets**	**Tobin's Q**
Chi2	15.62	22.27	49.52
Prob>chi2	0.619	0.220	0.000
Preferable model	Random	Random	Fixed

Regression results

Results reported in Table 5 confirm the model's statistical significance (Prob F < 0.05), normality presence (Prob F < 0.05), no serial autocorrelation (Prob F > 0.05), and variable omission bias (Prob F > 0.05) in all three models. The value of R square = 0.559, 0.280, 0.333 shows that approximately 55.9 %, 28.0%, and 33.3% variation in Tobin's Q, ROE, and ROA, respectively, because of all the CG determinants, interaction terms & control variables used in the current study and being still is because of some unobserved factors. To control heteroskedastic issues, robust regression was applied for ROE and ROA measure proxies. While in Tobin's Q model, both heteroscedastic and serial autocorrelation issues were found for which FGLS regression was run.

Table 5: Regression estimates

Variables	Tobin's Q	Return on equity	Return on assets
Insider shareholders	-0.002***	-0.275	-0.079*
	0.007	(0.129)	(0.077)
Institutional shareholders	0.035**	-1.052	-0.424
	0.033	(0.730)	(0.427)
Board independence	-0.429	-15.87	-6.617
	0.494	(10.82)	(3.457)
Board size	-0.091**	0.292	0.0187
	0.043	(0.831)	(0.397)
Audit size	1.057	9.481	2.526
	0.631	(15.47)	(5.751)
Top twenty shareholders	0.007***	0.236	0.204*
	0.006	(0.132)	(0.069)
CEO duality	0.014	-8.781	-6.608
	0.561	(7.975)	(6.254)
Insider shareholders × intellectual capital	-0.066*	0.051	-0.011*
	0.087	(0.124)	(0.077)
Institutional shareholders × intellectual capital	-0.027**	0.947	0.312
	0.034	(0.611)	(0.324)
Board independence × intellectual capital	0.344	3.451	0.882
	0.123	(4.897)	(2.339)
Board size × intellectual capital	-0.003	-6.901	1.076
	0.006	(8.867)	(5.197)
Audit size × intellectual capital	-0.007	0.633	3.540
	0.008	(11.22)	(5.543)
Top twenty shareholders × intellectual capital	-0.082**	0.001*	-0.059**
	0.0383	(0.077)	(0.040)
CEO duality × intellectual capital	0.307	33.65	22.29
	0.435	(11.80)	(9.607)
Leverage	0.988	-6.814	-3.684
	0.653	(1.815)	(0.755)
Liquidity	-0.446	1.253**	1.151
	0.600	(0.500)	(0.491)
Firm size	-0.006***	3.739	4.722
	0.005	(2.594)	(1.322)
Firm age	0.278	-0.409*	-0.240*
	0.993	(0.0978)	(0.0647)
Constant	-2.338	-23.78	-46.47
	1.605	(38.60)	(19.49)
Prob > chi2	-0.002	0.000	0.000
R-square (Within)	0.559	0.280	0.333
Jarque-Bera normality test Prob>F	0.343	0.735	0.209
Wooldridge test for autocorrelation Prob>F	-	0.412	0.062
Variable omission Ramsey RESET test Prob>F	0.164	0.0.06	0.931

Robust standard errors in parentheses

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

The institutional shareholding coefficient value indicates a positive relationship with FP as measured by Tobin's Q, while negative in the case of ROA and ROE. The findings confirm the rejection of hypothesis 1 for the second two performance proxies as consistent with (Bashir et al., 2020; Bhattacharya & Graham, 2007). However, the positive relationship is also consistent (Afza & Nazir, 2015; Navissi & Naiker, 2006). A larger (smaller) institutional shareholdings will surely decrease (increase) FP. Alternatively, the insider shareholders indicate a negative relationship and acceptance of hypothesis 2 for all FP proxies in line with agency theory and Bashir et al. (2020) findings. It infers that a larger (smaller) insider shareholding will surely decrease (increase) FP in family firms. Moreover, The CEO duality coefficient value indicates a positive relationship with FP as measured by Tobin's Q while negative in the case of ROA and ROE. The findings confirm the acceptance of hypothesis 3 for the second two performance measures as consistent with agency theory and Jwailes (2021) findings; however, the positive relationship is also consistent with stewardship theory and Hassan and Halbouni (2013) findings. It infers that larger (smaller) board size will surely decrease (increase) FP. Furthermore, the board size coefficient value indicates a positive relationship with FP as measured by ROE and ROA while negative in the case of Tobin's Q. The findings confirm the acceptance of hypothesis 4 and reveal that a positive board size effect on FP indicates an upward trend consistent with agency & resource dependency theory and ideal board size by (N Vaidya, 2019). The negative relationship is also consistent (Salehi et al., 2018; Samra, 2016).

Additionally, the audit size coefficient value indicates a positive relationship and confirms the acceptance of hypothesis 5 for all three FP measuring proxies as consistent (Al-ahdal & Hashim, 2022; Ashari & Krismiaji, 2020). It infers that a larger (smaller) board size will surely increase (decrease) FP. Alternatively, the board independence coefficient value indicates a negative relationship and confirms the acceptance of hypothesis 6 for all three FP measuring proxies as consistent with (Liu et al., 2015; Rashid, 2018). The findings infer that a larger (smaller) board size will surely decrease (increase) FP. Furthermore, the top 20 shareholder's coefficient value indicates a positive relationship with FP and confirms the acceptance of hypothesis 7 for all three FP measuring proxies as consistent with (Bashir et al., 2020; Darko et al., 2016). It infers that larger (smaller) ownership concentration will surely increase (decrease) FP. The empirical study revealed a significant effect of interaction terms of Insider shareholders × intellectual capital for Tobin's Q and ROA but not for ROE; however, the Top twenty shareholders × intellectual capital for all three performance measuring proxies. And lastly, Institutional shareholders × intellectual capital is only significant in the case of Tobin's Q. The current study findings are consistent with prior research showing IC moderating effect on the CG-FP relationship (Khan & Ali, 2018). Consequently, in the Pakistan context, the contemporary study's observed results designate the IC influence on CG-FP association.

Table 6:Summary of results

Variables (Expected sign)	Tobin's Q	ROE	ROA	Hypothesis
Institutional shareholding (+)	+	-	-	Not supported
Insider shareholding (-)	-	-	-	Supported
CEO duality (-)	+	-	-	Supported
Board size (+)	-	+	+	Supported
Audit size (+)	+	+	+	Supported
Board Independence (-)	-	-	-	Supported
Top-20 shareholders (+)	+	+	+	Supported
Intellectual capital moderation (Yes)	Yes	Yes	Yes	Supported

Notes: ROE=return on equity, ROA=return on assets

Table 6 presents the summary of the regression results along with the developed hypothesis supported or not supported nature.

Conclusion

The current study is designed to investigate the causal relationship between FP and CG through IC moderation, collecting data based on financial ratios and the firm's essential governance characteristics from financial statements and the PSX website from 2016-21 for the 15 listed Pakistan cement family-owned firms. Random and fixed effect panel regression was applied based on the Hausman test, initiating from correlation analysis between regressors and variance inflation factors to ascertain multicollinearity absence after examining data stationery based on the unit root test. No multicollinearity issue was found, and descriptive statistics reveal ROE, an accounting-based FP measuring proxy with a high mean value. The results indicate a positive effect of audit size and top 20 shareholders while a negative of insider shareholding and board independence on Tobin's Q, ROE, and ROA. Additionally, for Tobin's Q, institutional shareholding and CEO duality, a positive effect while negative of board size is found. While the negative effect of institutional shareholdings and CEO duality and the positive of board size is found in the case of ROE, ROA, and IC moderation is found for all performance measures. The findings are consistent with stewardship and agency theory.

This study is distinctive as it endeavors to examine the CG-FP relationship in respect of cement family-owned firms of Pakistan based on recent data from 2016-21 through IC moderation. The results are consistent with both stewardship and agency theories that focus on investor wealth maximization, which is only possible in the case of good managerial policies and CG practices. The empirical outcomes emphasize the importance of IC for policymakers and regulators considering it a rewarding activity for shareholder wealth maximization. Therefore, the managers are primarily recommended to focus on employees' skills, knowledge, and efficiency to enhance FP and maintain stakeholders' trust in the organization. The current study's major limitation is non-

generalizability to other sectors, which provides a base for protentional researchers to conduct more research on this specific topic of interest. The current study model can be applied to other family-owned firms' sectors or to do a comparative study between different family-owned and non-family-owned firms considering other CG determinants using EVA and innovative performance as FP measure along with capital structure mediation.

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