JMSS Journal of Multidisciplinary in Social Sciences

Journal of Multidisciplinary in Social Sciences
Journal homepage : https://so03.tci-thaijo.org/index.php/sduhs



Influence of Corporate Governance and Corporate Social Responsibility on Firm Performance: Mediating Role of Intellectual Capital

Panamon Chantabutr[a] & Tipparat Laohavichien[b]*

[a] *Accounting Department, Ubon Ratchathani Business School, Ubon Ratchathani University, Ubon Ratchathani 34190, Thailand*

[b] *Department of Technology and Operations Management, Faculty of Business Administration, Kasetsart University, Bangkok 10900, Thailand*

Article info

Article history:
Received: 10 March 2024
Revised: 1 April 2025
Accepted: 10 April 2025

Keywords:
Corporate governance, Intellectual capital, Corporate social responsibility, Firm performance

Abstract

This study investigates the effects of corporate governance (CG) and corporate social responsibility (CSR) on firm performance, with a particular focus on the mediating role of intellectual capital (IC). Drawing upon the resource-based theory, the research employs secondary data obtained from financial and annual reports of non-financial firms listed on the Stock Exchange of Thailand (SET) during 2016–2017. To analyze the relationships among the constructs, partial least squares structural equation modeling (PLS-SEM) was applied. The findings indicate that both CG and CSR exert an indirect positive influence on firms' financial and marketing performance through IC. This underscores the critical role of IC as a strategic asset that enables organizations to translate good governance practices and CSR initiatives into tangible performance outcomes. The study contributes to the growing body of literature highlighting the importance of leveraging intellectual capital in achieving sustainable competitive advantage. It also offers practical implications for corporate leaders and policymakers aiming to enhance firm performance through integrated governance, social responsibility, and knowledge-based assets. Future research should expand the scope by evaluating performance through environmental and social dimensions to provide a more holistic view of corporate sustainability.

Introduction

According to Jensen and Meckling (1976), the agency theory asserts that businesses vary in terms of owner equity, necessitating the appointment of executives to represent and manage the organization. However, these executives differ fundamentally from business owners and their potential misuse of authority for personal gain can create significant challenges (Arinze et al., 2023). As a result, corporate governance (CG) emerges as a crucial mechanism for safeguarding the interests of all stakeholders (Alaali et al., 2021). It plays a vital role in organizational management, contributing substantial value to enterprises (Alodat et al., 2023).

* Corresponding Author
email: fbustrl@ku.ac.th

In pursuit of their fundamental goal, businesses must continuously improve their performance. However, this ambition can sometimes have adverse impacts on communities, society, and the environment (Freeman, 1984). According to stakeholder theory, businesses should address the needs of all stakeholders as doing it can reduce conflict, streamline administration, and enhance long-term firm performance (Fuadah et al., 2022). Hence, corporate social responsibility (CSR) has emerged as a key strategic concept embraced by most companies. By fostering stronger relationships with stakeholders, businesses can not only enhance their competitive advantage but also achieve sustainable performance (Cegliński & Wiśniewska, 2016).

While many companies have recognized that both CG and CSR can enhance business performance (Ledi & Ameza–Xemalordzo), some studies present contrasting findings. For instance, CG has been shown to negatively influence performance (Alareeni & Hamdan, 2020) and is unrelated to financial performance, as measured by return on equity (ROE) (Ronoowah & Seetanah, 2023). In addition, CG has been found to have no association with market performance as measured by Tobin's Q (Ronoowah & Seetanah, 2023). Similarly, literature indicates a potential negative relationship between CSR and firm performance (Yoon & Chung, 2018). Other research suggests that CSR does not significantly impact firm performance (Chetty et al., 2015). These mixed results underscore the complexity of understanding the true effects of CG and CSR on firm performance.

The role of IC has recently garnered significant interest among scholars. IC is a vital internal asset that enhances productivity, reduces cost, and upholds a positive organizational image. Sofian et al. (2004) describe IC as the combination of knowledge, experience, skills, and technological capabilities that strengthen an organization's competitive advantage and facilitate the achievement of its objectives. Similarly, Edvinsson and Malone (1997) defined IC as the sum of all knowledge applied in business operations, suggesting it can be measured as the difference between an organization's book value and market value. This study adopts the definition of IC as the most valuable resources and capabilities that contribute to a firm's sustainable competitive advantage (Gangi et al., 2019). Previous studies have demonstrated that effective CG fosters the development of effective IC (Aslam et al., 2023). Furthermore, CSR has been shown to promote and enhance IC (Vo et al., 2023), boosting a firm's operational profitability, though it does not significantly impact market value (Yoon & Chung, 2018).

The relationships among CG, CSR, IC, and firm performance in Thailand remain ambiguous. Comprehensive studies investigating the potential mediating effects of these factors are scarce. Specifically, there is no empirical evidence demonstrating how the development of IC mediates the relationship between CG, CSR, and firm performance over time. Therefore, to address this gap, this study aims to investigate the direct effects of CG and CSR on IC as well as the indirect effects of CG and CSR on firm performance through the mediating role of IC. Data were collected from 436 non-financial companies listed on the Stock Exchange of Thailand, with firm performance measured from both short- and long-term financial and marketing perspectives.

Addressing these research gaps will provide a more holistic understanding of the interconnections among CG, CSR, IC, and firm performance in Thailand, a key emerging economy in Southeast Asia. This insight would serve as a valuable source for policymakers, managers, and scholars striving to promote sustainable and socially responsible business practices while effectively leveraging intangible assets to enhance organizational performance. The paper is structured as follows: the objectives of the study, theoretical background, hypothesis development, conceptual framework, research methodology, results, discussion, practical recommendations, and suggestions for future research.

Objectives

1. To study the influence of corporate governance (CG) on the intellectual capital (IC) of companies listed on the Stock Exchange of Thailand
2. To assess the impact of corporate social responsibility (CSR) on the intellectual capital (IC) of companies listed on the Stock Exchange of Thailand
3. To investigate the indirect effect of corporate governance (CG) on firm performance, mediated by the intellectual capital (IC) of companies listed on the Stock Exchange of Thailand
4. To explore the indirect effect of corporate social responsibility (CSR) on firm performance, mediated by the intellectual capital (IC) of companies listed on the Stock Exchange of Thailand

Theoretical background

In public companies, ownership is distributed among many shareholders, with a management team or executives entrusted to oversee the daily operations and make decisions on their behalf. This separation of ownership from control introduces potential challenges, as the management team, acting as agent for the shareholders may may prioritize personal interests or those of external parties over the interests of shareholders or the public. CG serves as a critical mechanism to mitigate such conflicts between principals (owners) and agents, helping firms achieve their objectives (Jensen & Meckling, 1976). According to the theory of agency, effective CG not only reduces risks and errors in benefit allocation but also aids shareholders and other stakeholders in ensuring a reasonable return on investment (Alchian & Demsetz, 1972).

CG refers to the practices and processes through which a company is directed and controlled, ensuring that management acts in the best interests of stakeholders to achieve long-term shareholder wealth (Ledi & Ameza–Xemalordzo, 2023). It consists of mechanisms designed to protect investors (owners) from potential mismanagement by insiders (managers). Managers, as employees, may prioritize personal goals and misuse the firm's available resources for their own benefit. Therefore, effective CG must align with the organization's mission, values, and philosophy to address the needs of shareholders and other stakeholders. A robust CG system enables shareholders to elect directors or board members responsible for key decisions, including executive compensation, dividend policies, social concerns, environmental issues, etc. The board of directors typically plays a central role in CG implementation, facilitating the allocation of resources and information to strengthen firm legitimacy and enhance performance (Hillman et al., 2000). Hence, it is logical to expect that the board of directors can provide guidance and counsel to support IC-related strategies such as investing in human resources, R&D activities, and information technology—factors that are pivotal in driving firm performance.

CSR has emerged as a key issue in business, addressing stakeholder engagement and acknowledging moral implications (Dmytriyev et al., 2021). The key elements of CSR include preservation of the environment, social participation in business operations, and fostering reciprocal relationships with stakeholders—foundations of corporate citizenship and voluntary initiatives (Fosu et al., 2023). In modern times, effective managers are expected to align their actions with socially responsible investment policies, CSR initiatives, and stakeholders' commitment. The grounded theory suggests that CSR has a significant positive impact on financial performance (Barnett, 2007). Nonetheless, Zhao et al. (2023) cautioned that investments in CSR activities may reduce resource utilization and overall profitability.

CSR refers to a company's ethical behavior toward its stakeholders, including suppliers, government entities, social communities, and the surrounding environment. Effective CSR practices can enhance a company's value and positively impact the lives of stakeholders. Stakeholder engagement plays a pivotal role in implementing CSR initiatives (Adomako & Tran, 2022). Freeman (1984) defines a stakeholder as an individual or group of people capable of influencing or being influenced by the common goals of an organization. Similarly, Barnard's (1938) stakeholder theory emphasizes that stakeholders' engagement is a key driver of CSR as it encompasses actions taken by companies to foster positive outcomes in the future. The stakeholder theory also acknowledges that business operations may unintentionally harm communities, society, and the environment both directly and indirectly. As a result, CSR has evolved into a vital strategic concept in modern management (McWilliams et al., 2006), aiming to balance economic, social, and environmental priorities, forming the basis of corporate sustainability. Furthermore, companies that neglect societal responsibilities risk damaging their image, reputation, and customer relationships (Yoon et al., 2006). Research further confirms that effective CG supports CSR engagement (Sahut et al., 2019). While CG traditionally focuses on prioritizing shareholders and maximizing their wealth, CSR broadens that scope by addressing the interests of stakeholders, including economic, societal, and environmental concerns, alongside business ethics.

Recently, intellectual capital (IC) has gained significant attention as a critical component influencing firm performance (Xu & Liu, 2020). The concept of IC was developed in the 1990s, with scholars offering various definitions. For instance, Brennan and Connell (2000) define IC as a company's internal capital founded on knowledge, whereas Edvinsson and Malone (1997) describe IC as encompassing knowledge, its application, connections with buyers, and proficient abilities that collectively provide a competitive edge in the marketplace. Therefore, IC functions as a mechanism that integrates

both visible and invisible resources within a company's value-creation process. The theoretical foundation of IC lies in the resource-based theory (RBT), which emphasizes how a firm's unique resources and capabilities—including intellectual capital—contribute to its competitive advantage and ultimately influence its performance (Matulatuwa et al., 2023). RBT posits that to sustain a competitive advantage, a company must possess resources that meet the VRIN criteria: valuable, rare, inimitable, and non-substitutable. Firms that hold intellectual capital that is difficult for competitors to replicate gain an enduring advantage, ultimately enhancing their performance (Wujarso et al., 2021). Additionally, investing in human capital, physical assets, and other intangible resources can create long-term value for firms (Conner, 1991). RBT supports the notion that IC is a vital knowledge-based resource in the value-creation process (Bhattu-Babajee & Seetanah, 2022).

Hypothesis Development

Previous studies have shown that CG enhances many aspects of a firm's operations. For example, CG improves supervision capabilities and decision-making processes (Guluma, 2021) while fostering internal cohesion through employee engagement, empowerment, and teamwork (Kim et al., 2022). Companies with strong CG practices are more likely to develop personnel efficiency and IC than those with weaker CG frameworks (Gangi et al., 2019). Furthermore, Aslam & Haron (2020) discovered a strong correlation between CG with IC. Appuhami and Bhuyan (2015) identified three specific elements of CG that positively influence IC efficiency: (1) the separation of roles between executives and company directors, (2) the compensation structure of the executive committee, and (3) the company's ownership structure. Based on these insights, the following hypothesis is established:

H1: CG has a positive direct impact on the IC of the firm.

Existing literature suggests that CSR activities can enhance a firm's image, reputation, and contribute to the value of IC (Lungu et al., 2012). However, contrasting findings by Aras et al. (2011) indicate that the relationship between CSR and IC may be insignificant. These mixed results highlight the complexity of the interaction between CSR and IC. In this study, it is believed that firms actively engaging in CSR initiatives, such as promoting business fairness and anti-corruption practices, respecting human rights and fair labor standards, and dedicating time, money, and skills to benefit the community and society are more likely to invest in IC. Therefore, the following hypothesis is proposed:

H2: CSR has a positive direct influence on the IC of the firm.

Sohel Rana & Hossai (2023) emphasize that enhancing IC efficiency drives superior firm performance. IC contributes to the valuation of securities and delivers sustained long-term returns. Tufa & Kant (2023) assert that investment in human resources adds value to an organization, enabling it to achieve its objectives (Payab et al., 2023). In addition, IC facilitates the creation of knowledge and technology, granting firms a competitive edge in the future (Wahyuni et al., 2023). Developing human capital and establishing performance standards for employees are essential strategies for boosting firm performance in the long term (Abu-Mahfouz et al., 2023). Based on these insights, Hypothesis 3 (H3) is established as follows:

H3: IC has a positive direct influence on firm performance.

Empirical studies reveal mixed findings on the relationship between CG and firm performance. For instance, Lipton and Lorsch (1992) recommend that CG, measured by board size (the number of directors), should ideally range between seven and eight members. When board size exceeds ten members, it becomes challenging for directors to voice their opinions and ideas effectively, negatively impacting firm performance. Similarly, Jensen (1993) found that smaller board sizes are associated with better firm performance, as larger boards make it difficult for CEOs to maintain control. Thus, varying board sizes affect firm performance differently, with an optimal board size enhancing monitoring and management control (Althagafi & Alalyani, 2023). Ronoowah & Seetanah (2023) observed that CG does not directly improve financial performance; instead, its positive impact is mediated through IC (Shahwan & Habib, 2020). Traditionally, institutional ownership within a company has been emphasized over individual ownership, as institutions are better positioned to add value through human capital and drive future business performance (Putri et al., 2017). Furthermore, according to RBT, managers can build effective networks with external stakeholders such as suppliers, customers, and communities. These networks can significantly enhance firm performance. Hence, based on these insights, hypothesis 4 (H4) is proposed as follows:

H4: CG has a positive indirect influence on firm performance through IC.

CSR is widely recognized for its ability to benefit shareholders and other stakeholders by improving the company's bottom line, addressing significant environmental challenges, and offering competitive advantages. Literature suggests that companies can gain a competitive edge through CSR initiatives that enhance employee efficiency and promote investment in IC (Suripto & Lucas, 2023). For instance, Huang & Kung (2011) identified that environmental investments contribute to creating a competitive advantage via IC. Furthermore, Lin et al. (2015) highlighted the relationship between social responsibility and IC efficiency, noting its impact on business value as measured by the Return on Assets (ROA) and capital intensity ratios. CSR activities, such as incentivizing employees can also improve financial efficiency by increasing employee engagement (Berniak-Woźny et al., 2023). This study hypothesizes that IC serves as a mediator, linking CSR to firm performance. Based on these findings, hypothesis 5 (H5) is developed as follows:

H5: CSR has a positive indirect influence on firm performance through IC.

Conceptual Framework

RBT asserts that value creation is the ultimate goal for firms that possess intellectual resources (Pulic, 2000). This value creation is achievable through stakeholder involvement, particularly in navigating the complexities of political, economic, technological, and social changes. Stakeholders can contribute to value creation by advising managers on CSR activities, providing guidance on resource accessibility, and connecting managers to external networks. These actions may enable managers to add significant value to their organizations (Barauskaite & Streimikiene, 2021). Consequently, CSR enhances a firm's competitive advantage within the knowledge economy. According to the RBT, IC is a pivotal strategic resource for gaining competitive advantage (Astuti et al., 2023) and driving value creation within a company (Appah et al., 2023). The research framework of this study integrates the agency theory, stakeholder theory, and RBT, to investigate the influence of CG and CSR on firm performance through IC. It is premised on the assumption that IC plays a vital role in coordinating CG, CSR, and firm performance.

The framework is depicted in Figure 1, illustrating the interconnections among CG, CSR, IC, and firm performance.

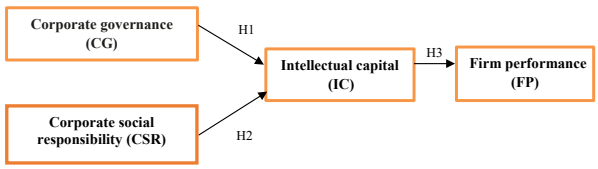

Figure 1. Conceptual Framework

Research Methodology

1. Data Collection

This study utilized secondary data to test the proposed hypotheses. The data was sourced from 436 non-financial companies registered on the Stock Exchange of Thailand (SET). Specifically, the financial report form (56-1) and the notes accompanying financial statements were analyzed for the years 2016 and 2017. In 2016, Thailand introduced the 'Thailand 4.0' initiative, which emphasized the importance of adapting the labor market to the transition toward 'Industry 4.0.' This initiative primarily focused on boosting the country's efficiency, positioning IC as a key concern for businesses. During this time, the International Institute for Management Development (IMD) and the World Economic Forum (WEF) noted that Thailand's competitiveness index was at a notably high level (ThaiPublica, 2018), further solidifying IC as a critical topic for organizations.

2. Definition of the Variables

Corporate Governance (CG)

This study aims to develop comprehensive internal CG indexes designed to improve intellectual capital. Although prior studies has suggested that the board characteristics encourage IC efficiency, findings remain inconclusive due to the wide variability in board structures, which result in differing firm performances (e.g., Ho & Williams, 2003; Appuhami & Bhuyan, 2015; Said et al., 2018; Tran et al., 2020). The existing literature highlights diverse approaches to measuring CG. For example, Nsour & Al-Rjoub (2022) evaluated CG based on board and audit committee characteristics, whereas Waheed & Malik (2019) focused on ownership structure and CEO compensation. In this study, CG is measured using the following components: (1) board characteristics, (2) audit committee characteristics, (3) ownership structure, and (4) managerial remuneration. The specifics of each variable's measurement are detailed in Table 1

Table 1 Descriptions and Measurements of CG

Variable	Abbreviations	Measures
1) Board Characteristics (BOARD)		
1.1 Board Size	BSIZE	The total number of directors serving on the company's board.
1.2 Independence of the Board of Directors	BIND	The proportion of independent directors in relation to the board size. Independent directors are non-executive members who are not part of the management team and do not participate in the daily operations, ensuring objective governance and oversight.
1.3 Board of Directors Meetings	BMEET	The total number of board meetings held annually.
1.4 Duality	DUAL	The separation of roles between the chairperson of the board and the chief executive officer (CEO). If the chairman and the CEO are the same individual, the variable is assigned a value of "0"; otherwise, it is assigned a value of "1."
2) Audit Committee Characteristics (AC)		
2.1 Audit Committee Size	ACSIZE	The number of members on the audit committee.
2.2 Independence of Audit Committee	ACIND	The ratio of independent members to the total audit committee members.
2.3 Audit Committee Meetings	ACMEET	The number of audit committee meetings held annually.
2.4 Expertise of the audit committee	ACEXP	The number of audit committee members with knowledge and expertise in accounting or finance.
3) Ownership Structure (OWN)		
3.1 Managerial Ownership	MOWN	The percentage of shares held by management in relation to the total number of shares.
3.2 Government ownership	GOWN	The percentage of shares held by government entities in relation to the total number of shares.
3.3 Foreigner Ownership	FOWN	The percentage shares held by foreign investors in relation to the total number of shares.
4) Managerial Remuneration (MREM)		
4.1 Compensation in Shares	EQUITY	Indication for whether the firm has stock-based compensation policy. If implemented, the dummy variable is coded as "1"; otherwise, it is coded as "0."
4.2 Short-Term Cash Compensation	CSHORT	The amount of compensation paid in cash for short-term periods.
4.3 Long-Term Cash Compensation	CLONG	The amount of compensation paid in cash for long-term periods.

Corporate Social Responsibility (CSR)

Table 2 presents the CSR dimensions implemented by various organizations and international standards. It highlights that Thailand's Securities and Exchange Commission (Thailand SEC) aligns its CSR practices with those set by other international standards and institutions.

Table 2 CSR Dimensions

CSR dimensions	UNGC	OECD	ISO	GRI	Thailand SEC
1 Good practice		✓	✓	✓	✓
2. Environment	✓	✓	✓	✓	✓
3. Science and technology		✓			
4. Consumer protections		✓	✓	✓	✓
5. Fair business practices	✓	✓	✓		✓
6. Human rights	✓	✓	✓	✓	✓
7. Labor standards	✓	✓	✓	✓	✓
8. Community and society			✓	✓	✓
9. Innovation					✓
10. Anti-corruption	✓	✓	✓		✓
11. CSR Strategies, policies, and reporting					✓

Source: Adapted from Prayukvong and Olsen (2009).
Note: UNGC: The United Nations Global Compact; OECD: The Organization for Economic Co-operation and Development; ISO: The International Organization for Standardization; GRI: Global Reporting Initiative.

In this study, CSR is measured based on the disclosure level across 8 dimensions, as outlined in Table 3. Content analysis, as suggested by Cormier et al. (2005), was applied to assess CSR. For measurement purposes, a dummy variable is utilized, where the value of "1" indicates that the company has disclosed information regarding a specific CSR dimension, and the value of "0" signifies the absence of such disclosure. The details of the CSR scale are shown in Table 3. The CSR score for each dimension was individually determined. Subsequently, the overall level of CSR disclosure for each firm was calculated using the following formula:

$$\text{Firm's CSR disclosure} = \frac{\text{Total score of CSR's dimensions disclosed}}{50}$$

Table 3 CSR Scale

CSR dimensions	Number of items	Maximum Value Coded	Minimum Value Coded
Good practice (CSR1)	5	5	0
Business fairness and anti-corruption (CSR2)	5	5	0
Human rights and fair labor standards (CSR3)	12	12	0
Consumer Protections (CSR4)	5	5	0
Community and society (CSR5)	6	6	0
Caring for the environment (CSR6)	8	8	0
Innovation (CSR7)	3	3	0
CSR strategies, policies, and reporting (CSR8)	6	6	0
Total	50	50	0

Intellectual Capital (IC)

Literature highlights various methods for measuring IC. In this study, the "value-added intellectual coefficient (VAIC)" method, proposed by Pulic (1998),

is employed. VAIC was chosen for its reliability and widespread application in research (Clarke et al., 2011; Gupta et al., 2020). It evaluates a firm's IC by measuring the efficiency of three components: human capital, structural capital, and relation capital. Human capital refers to employees' knowledge and skills that contribute to enhancing the company's value. Structural capital includes the company's internal systems, such as policies, processes, organizational culture, and operational frameworks. Relation capital involves the company's relationship with external parties, such as suppliers, customers, and investors, which can generate value through elements like brand loyalty, corporate reputation, etc. VAIC is calculated using Equation 1, with the necessary data extracted from the financial reports and accompanying notes of the financial statements of the firms under study.

VAIC = HCE+ SCE + CEE……..…… (1)

Where HCE is human capital efficiency, SCE is structural capital efficiency, and CEE is relation capital efficiency.

HCE is measured by Equation 2: HCE = VA/ HC ……..……...…..(2)

SCE is measured by Equation 3: SCE = SC/VA……..…… (3)

CEE is measured by Equation 4: CEE = VA/CE……... (4)

Where VA is value-added, HC is human capital, SC is structural capital, and CE is capital employed.

VA is measured by Equation 5: VA = OP+EC+DA……..……(5)

Where OP is the operating profit, EC is employee cost, and DA is depreciation and amortization.

HC is measured by Equation 6: HC = Total Salaries + Benefits……..…….(6)

SC is measured by Equation 7: SC = VA- HC ……..... (7)

CE is measured by Equation 8: CE = Total assets – Current liabilities ..… (8)

Firm Performance

Firm performance was assessed in two key dimensions: financial performance and marketing performance. Financial performance is measured by using ROE and ROA. ROE is calculated as net profit divided by equity, providing insights into how efficiently the company utilizes capital invested by shareholders. ROA, defined as net income divided by the total assets, evaluates the effectiveness of utilizing all company resources within a fiscal year (Farooq & Manzoor, 2019). Marketing performance is represented by Tobin's Q ratio (TOB), calculated as the sum of stock market price and liabilities divided by total assets. Shahzad et al. (2021) suggested that these three metrics collectively reflect short- and long-term firm performance. Specifically, ROE and ROA are used for measuring short-term performance (Jing et al., 2018), whereas Tobin's Q reflects long-term performance (Butt et al., 2023).

In this study, firm performance data were collected from the annual reports spanning 2016 to 2017.

Control Variables

The purpose of control variables is to ensure that the relationship between the independent variable and dependent variable is not affected by external factors that are beyond the scope of the study. In this research, three control variables have been included detailed below:

1) Business size (SIZE): Larger companies often demonstrate stronger financial performance compared to smaller companies due to their ability to achieve greater operational efficiencies, such as reduced costs, enhanced purchasing power (Gelles & Mitchell, 1996). Zaiane & Ellouze (2022) discovered that larger firms tend to adopt symbolic CSR practices, whereas small firms are more likely to implement substantive CSR actions. In this study, business size is measured using the natural logarithm of a firm's total assets, which reflects the organization's capacity to maximize resource utilization and capitalize on optimal opportunities (Shahzad et al., 2021).

2) Business age (AGE): The total number of years a firm has been in operation is used as a measure of its age (Boulhaga et al., 2023). In this study, the AGE of companies determined based on their operational period from registration until 2016. Prior studies indicate that firms with a longer operational history tend to perform better than newer firms, as they have greater experience in conducting business and adapting to changes to stay competitive.

3) Leverage (LEV): Leverage reflects financial risk faced by a company. In this study, financial risk is measured using the ratio of liability variation (total debt) to total assets. Typically, firms that actively engage in CSR-related activities are generally better managed and exhibit lower levels of financial risk (Wang & Yan, 2022).

Data Analysis

This research aimed to empirically test the mediating effect of IC. Structural equation modeling (SEM) was deemed an appropriate method as it allows for the inclusion of latent variables and facilitates the analysis of both direct and indirect relationships within a complex model. In contrast, path analysis is best suited for evaluating direct and indirect relationships in simpler models that do not incorporate latent (unobserved) variables (Deng & Yuan, 2023). To predict the results, the Partial Least Squares-SEM (PLS-SEM) method was employed. PLS-SEM is advantageous because it does not require the assumption of a normal distribution (Hair et al., 2019). Moreover, PLS-SEM is

capable of handling small sample sizes, accommodating multivariate measurement dimensions, and analyzing both reflective and formative indicators (Wolds, 1975).

In this study, a reflective measurement model was developed. The latent constructs include fourteen variables related to CG, eight variables pertaining to CSR, three variables representing IC—namely, human capital efficiency, structural capital efficiency, and relational capital efficiency—and six organizational performance measures, which include ROE in the year 2016 (t), ROE in the year 2017 (t+1), ROA in the year 2016 (t), ROA in the year 2017 (t+1), Tobin's Q in the year 2016 (t) and Tobin's Q in the year 2017 (t+1)).

The measurement model was tested to ensure accuracy and to evaluate the reliability of the observed variables linked to each latent construct (Waqar et al., 2023). Consistency in measurement was determined by the standard component weight (standardized outer loadings). The model meets the requirement of standardized outer loadings equal to or greater than 0.30 (Hair et al., 2010). In addition, composite reliability and Cronbach's alpha were measured to validate the accuracy and consistency of the structural equation model. Both parameters returned values greater than 0.6, which are considered acceptable thresholds.

Average variance extracted (AVE) is a key measure used to assess the validity of the model (Hair et al., 2013). The acceptable threshold for AVE is generally not lower than 0.5. If AVE falls below 0.5, composite reliability (CR) is considered, with CR values above 0.6 deemed acceptable (Fornell & Larcker, 1981). Moreover, the model's discriminant validity was evaluated using the Fornell-Larcker Criterion. This involves comparing the square root of the average extracted variance (√AVE) for each latent variable to its correlation with other latent variables within the model. If the √AVE of a latent variable exceeds its correlation with other latent variables in the quadratic model, the measurement is considered adequate for proper classification (Lowry & Gaskin, 2014).

After validating the measurement model for aspects such as validity, reliability, collinearity, and outer loadings of the indicators, the structural model was assessed. The evaluation focused on examining the significance of path coefficients and the R^2 level to determine whether the assumptions of SEM were satisfied (Hair et al., 2014).

Measures of The Model Fit

In Partial Least Squares Structural Equation Modeling (PLS-SEM), the R^2 (coefficient of determination) serves as a crucial metric for assessing model fit. It quantifies the proportion of variance in endogenous variables that is explained by the exogenous variables within the model.

R^2 measures range from 0 to 1, where 0 means that the exogenous variables do not explain any variance in the endogenous variable and 1 means that the exogenous variables explain all of the variance in the endogenous variable. The closer the R^2 value is to 1, the better the model's explanatory power. (Draper & Smith, 1998; Kutner, Nachtsheim, Neter, & Li, 2004)

In PLS-SEM, R^2 is typically categorized into three levels of explanatory power: (1) substantial explanatory power when R^2 is 0.75 or higher, (2) moderate explanatory power when R^2 is from 0.50 to 0.74, and (3) weak explanatory power when R^2 falls between 0.25 and 0.49.

Even though R^2 is a fundamental measure for assessing the model's explanatory power in PLS-SEM, it should be complemented with other fit indices to provide a comprehensive view the model's performance. In PLS-SEM, R^2 values can be less than 0.25, particularly in exploratory research or when the model incorporates numerous exogenous variables that collectively explain a small proportion of the variance in the endogenous variable. While R^2 values below 0.25 are considered to indicate weak explanatory power, they are not necessarily indicative of poor model fit. The interpretation of R^2 depends on the study's context, the complexity of the model, and the research objectives. In exploratory studies, lower R^2 values may still be acceptable, as PLS-SEM is often employed to develop new theories or models where high explanatory power is not always anticipated.

Results

Descriptive Statistics

Table 4 presents the sample descriptive statistics. The data reveals that the distribution of some variables is not normal. Consequently, PLS-SEM was chosen for hypothesis testing, as it does not rely on the assumption of normal distribution (Hair et al., 2019).

Table 4. Descriptive Statistics of the Observable Variables

Variables	Mean	SD	Skewness	Kurtosis
Corporate Governance (CG)				
Board characteristics (BOARD)				
Board Size (BSIZE)	10.27	2.47	0.91	1.18
Independence of the Board of Directors (BIND)	4.18	1.29	1.73	4.80
Board of Directors Meetings (BMEET)	7.63	3.56	1.26	1.80
Duality (DUAL)	0.73	0.45	-1.02	-0.96
Audit committee characteristics (AC)				
Audit Committee Size (ACSIZE)	3.15	0.52	-2.18	48.67
Independence of Audit Committee (ACIND)	3.15	0.41	2.95	11.70
Audit Committee Meetings (ACMEET)	5.78	2.74	1.89	3.56
Expertise of the audit committee (ACEXP)	1.38	0.75	2.86	15.23
Ownership structure (OWN)	Percentage	Percentage		
Managerial Ownership (MOWN)	18.11	22.23	1.00	-0.25
Government Ownership (GOWN)	0.83	6.26	8.98	84.02
Foreigner Ownership (FOWN)	7.48	14.02	3.19	11.83
Managerial Remuneration (MREM)				
Compensation in Shares (EQUITY)	0.08	0.27	3.16	8.01
Short-term Cash Compensation (CSHORT) (Note: Baht is Thai currency)	Baht 41,386.09	Baht 48,103.76	3.40	15.56
Long-term Cash Compensation (CLONG) (Note: Baht is Thai currency)	Baht 2,563.15	Baht 17,098.70	19.16	386.30
Corporate Social Responsibility (CSR)				
Good Practice (CSR1)	4.71	0.86	-3.28	10.79
Business Fairness and Anti-Corruption (CSR2)	4.48	0.91	-2.34	6.20
Human Rights and Fair Labor Standards (CSR3)	9.08	1.99	-0.95	1.65
Consumers Protection (CSR4)	2.85	1.42	0.01	-1.12
Community and Society (CSR5)	3.50	1.43	-0.06	-0.58
Caring for the Environment (CSR6)	5.65	1.77	-0.84	0.57
Innovation (CSR7)	1.43	1.21	0.14	-1.54
CSR Strategies, Policies, and Reporting (CRS8)	5.43	1.24	-2.23	4.18
Intellectual Capital (IC)				
Human Capital Efficiency (HCE)	2.32	3.50	-1.00	33.15
Structural Capital Efficiency (SCE)	-0.98	29.65	-20.77	433.06
Capital Employed Efficiency (CEE)	0.17	0.36	-12.37	233.10
Value Added Intellectual Capital (VAIC)	1.51	29.99	-20.31	420.24
Firm Performance (FP)				
Return on Total Assets in Year t (ROAt)	6.70	10.66	-0.45	8.78
Return on Total Assets in Year t+1 (ROAt+1)	5.79	9.67	-0.44	11.78
Return on Equity in year t (ROEt)	6.47	26.21	-5.03	44.93
Return on Equity in Year t+1 (ROEt+1)	5.87	22.78	-4.49	40.03
Tobin's Q in Year t (TOBt)	2.02	3.23	9.14	102.84
Tobin's Q in Year t+1 (TOBt+1)	1.96	3.19	9.67	112.01

Table 5 Construct Correlations and the Square Root of Average Variance

Constructs	Cronbach's alpha	Correlations and Square Root of Average Variance Extracted.						
		Board	**AC**	**Own**	**MREM**	**CSR**	**IC**	**FP**
Board characteristics	0.5644**	**0.7510**						
Audit Committee	0.5799***	0.4198	**0.7463**					
Ownership structure	0.8990***	0.3288	0.1432	**1.000**				
Managerial Remuneration	0.7196***	0.3316	0.1713	0.0509	**0.8239**			
Corporate social responsibility	0.6614***	0.1944	0.1790	0.0401	0.1196	**0.6003**		
Intellectual capital	0.7909***	0.1050	0.1076	0.0181	0.1153	0.2113	**0.7790**	
Firm performance	0.8217***	-0.0020	0.0220	-0.0318	0.1343	0.0699	0.5313	**0.7106**

Note: 1. *** denotes statistical significance at 0.01.
3. ** denotes statistical significance at 0.05.
3. Boldface values in the diagonal show the square roots of AVE.
4. All numbers below the diagonal are correlation.

Measurement Model

Table 5 shows that Cronbach's alpha values of all constructs exceed 0.5, confirming the reliability of all variables, as recommended by Kline (2011). In addition, the square root of the average variance extracted (AVE) for each construct surpasses the variance shared with the remaining constructs (Henseler et al., 2009). These results affirm that the measures utilized in this study are both valid and internally consistent.

Structural Model Assessment

The results of the SEM analysis are illustrated in Figure 2, and Table 6 outlines the findings from the hypothesis tests. The analysis demonstrates that CG positively affects IC, supporting Hypothesis 1, and CSR positively influences IC, supporting Hypothesis 2. Notably, the impact of CSR on IC is stronger than the effect of CG on IC. Furthermore, CG and CSR do not have a direct impact on FP as measured by ROA, ROE, and Tobin's ratios. Instead, IC fully mediates the relationship between CG and FP, as well as CSR and FP. Hypothesis 3 is also supported, as IC positively affects FP in both current and future years. Specifically, the impact of IC on firm performance, as measured by ROA, is more pronounced than its effect on ROE and Tobin's ratios. Additionally, CG and CSR indirectly influence FP through IC, supporting Hypothesis 4 and Hypothesis 5. However, the three control variables examined in this study were found to be insignificant.

Table 6 The Results of Hypothesis Testing

Hypothesis	Path Analysis	Effect		Total	Result
		Direct	Indirect		
Hypothesis 1	CG -> IC	0.093**		0.093**	Accept
Hypothesis 2	CSR -> IC	0.161***		0.161***	Accept
Hypothesis 3	IC -> FP	0.567***		0.567***	Accept
Hypothesis 4	CG->IC->FP	0.020	0.053**	0.073*	Accept
Hypothesis 5	CSR->IC->FP	-0.024	0.091**	0.067*	Accept

Note: *** denotes statistical significance at 0.01, ** denotes statistical significance at 0.05, * denotes statistical significance at 0.10

It can be concluded that IC is a crucial factor for business operations and serves as a full mediator in this study. Therefore, firms should prioritize activities that strengthen IC, as doing so will genuinely improve business performance in both short and long term, particularly for organizations emphasizing CG and IC. Furthermore, to evaluate the quality of the instrument, the model's predictive power is presented in Table 7.

Table 7 Predictive Power of the Model

Constructs	R^2
Corporate Governance (CG)	0.3124
Corporate Social Responsibility (CSR)	0.0810
Intellectual Capital (IC)	0.0549
Firm Performance (FP)	0.2823

Table 7 shows that the predictive power of CG is the highest, followed by FP. Both variables demonstrate a moderate prediction accuracy. In contrast, CSR and IC exhibit a lower predictive power compared to FP. These low predictive powers may be attributed to the presence of multiple indicators associated with CSR and IC. Saleh et al. (2019) noted that such issues are generally encountered in behavioral or social sciences research.

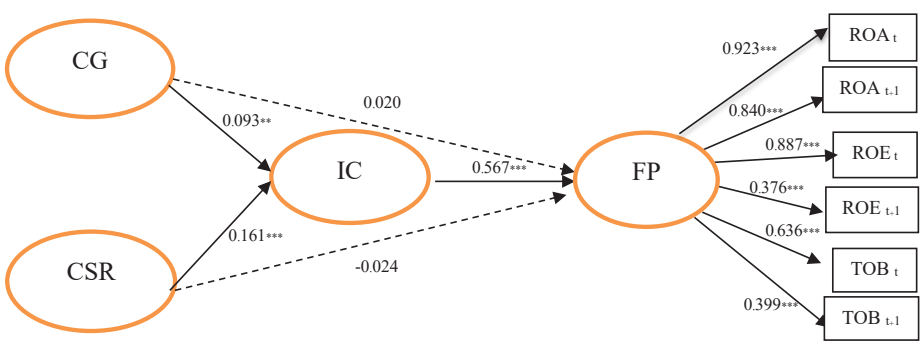

Figure 2 Result of SEM Analysis
Note: *** denotes statistical significance at 0.01, ** denotes statistical significance at 0.05, denotes significant relationships, denotes insignificant relationships.

Discussion

The relationship between CG, CSR, and firm performance has been a focal point for both academics and practitioners. However, previous literature has not provided clear evidence regarding these relationships, and practical implications for management remain limited. This study addresses these gaps by introducing "IC" as the new latent variable, to examine its mediating effect. Specifically, the study investigates how CG and CSR influence firms' financial and marketing performance while testing the mediating role of IC.

The results suggest that CG and CSR do not have a direct impact on firm performance; rather, their influence is mediated through IC. This highlights the full mediating effect of IC on the relationship between CG and FP as wells as CSR and FP. The findings also reveal that CSR has a greater impact on IC than CG, particularly when focusing on IC efficiency. As a result, managers are encouraged to prioritize initiatives that enhance innovation, improve product quality, and address community problems, as these efforts can optimize internal processes and subsequently increase firm value. Regarding CG factors, firms should concentrate on the characteristics of the audit committee and the board of directors, including board size, board independence, and the frequency of meetings per year. Additionally, ownership structure and executive remuneration should also be key areas of focus. These factors are the critical drivers of financial and marketing performance, both in the present and for the future. In addition, CG and CRS are key drivers enabling firms to attract new capabilities, employees, and resources (IC), ultimately enhancing firm performance, as outlined by the agency and stakeholder theories. Firms can strengthen employees' skills and retain IC through the implementation of effective CSR policies, as supported by Mukaro et al. (2023). Moreover, firms that emphasize motivating their IC with well-designed CG frameworks will achieve improved firm performance; aligning with the findings of Abuaddous et al. (2023). This study also highlights that IC has a direct impact on return on assets (ROA), consistent with the findings of Ting et al. (2018). Additionally, IC shows a direct effect on the ROE, as evidenced by Chen & Rahman (2023).

Specifically, the findings of this study demonstrate that IC positively influences Tobin's Q, aligning with the results of prior research by Appah et al. (2023). However, the findings contradict the study by Thamprasart and Phajongwong (2018), which asserted that IC measured by VAIC does not correlate with market-based firm performance (as measured by Tobin's Q) in Thailand.

The differing results may stem from the different periods analyzed in these studies. Thamprasart and Phajongwong (2018) examined data from 2008 to 2012, a period when the IC in Thailand was not as widely implemented compared to 2016 and 2017, which are the years covered by this study. In 2016, the World Economic Forum recognized Thailand for achieving high competitiveness scores (ThaiPublica, 2018). The following year, Thailand embraced the "Thailand 4.0" initiative, a strategic era focusing on the development of human and community potential. This government-led concept prioritized innovation, skill enhancement, and community growth, aligning with the advancement of IC during that period.

In conclusion, IC—encompassing human capital efficiency, structural capital efficiency, and capital employed efficiency—plays a vital role in enhancing firm performance, particularly in companies implementing CG and CSR. Effective investment in IC is fundamental to achieving and developing outstanding firm performance. This result resonates with Tran and Vo (2020), whose study identified human capital efficiency as the aspect of IC that most significantly influences investors' returns. In addition, Nhon et al. (2020) emphasized the strategic plan that human capital could be developed as part of strategic management. Therefore, the companies listed on the Thailand Stock Exchange should strive to effectively manage human capital to ensure sustained improvement in firm performance over the long term. Although this study focuses on Thai-listed firms, and the results are applicable to other countries in the same economic context as Thailand.

Practical Recommendations

The findings of this study highlight the importance of implementing effective CG to develop IC. Essential governance measures include maintaining an optimal board size, ensuring board independence, and conducting regular audit committee meetings. These practices create a strong foundation that enables IC to thrive, ultimately acting as a catalyst for improving performance. Additionally, companies should adopt CSR in order to foster IC and overall firm performance, driving long-term value creation. CSR must not be treated as a standalone business function. Instead, organizations should adopt a

comprehensive CSR strategy that aligns with robust good governance frameworks. This integrated approach addresses stakeholder expectations while fostering IC, resulting in mutually reinforcing benefits that contribute to sustained improvements in firm performance.

It is essential to recognize that IC serves as a pivotal element in the relationship between CG, CSR, and firm performance. Consequently, firms should prioritize IC development as a strategic business priority. This involves allocating resources to human capital development, implementing effective knowledge management systems, and nurturing external relationships with key stakeholders. By focusing on IC, organizations can effectively harness their intangible assets, ensuring sustained success and a competitive edge over the long term.

Suggestions for Future Research

The current study relies on secondary data. Future research should consider incorporating qualitative methods, such as in-depth interviews with key stakeholders (e.g., managers, board members, or CSR specialists), to gain deeper insights into the practical applications of corporate governance (CG), corporate social responsibility (CSR), and intellectual capital (IC). Additionally, case studies could offer a more nuanced understanding of IC development, exploring how firms interpret and implement CG and CSR practices in real-world settings. While this research focuses on financial metrics such as ROA, ROE, and Tobin's Q, future studies could benefit from incorporating non-financial performance measures. These could include indicators such as environmental impact, employee satisfaction, or social impact, providing a more holistic view of firm performance.

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