

Corporate Social Responsibilities and Firm Value: Exploring the Dual Roles of Innovation

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CORPORATE SOCIAL RESPONSIBILITIES AND FIRM VALUE: EXPLORING THE DUAL ROLES OF INNOVATION

- Abstract:

The study aims to explore the complex relationship between Corporate Social Responsibility (CSR), Innovation, and Firm Value within the context of an emerging market, specifically Vietnam. The empirical analysis uses a panel dataset of 128 Vietnamese listed firms from 2016 to 2023. The study employs Partial Least Squares Structural Equation Modeling (PLS-SEM) with a fixed-effects transformation to analyze the direct and indirect effects of CSR on firm value. The results show that the relationship between CSR and Firm value is U-shaped. Besides, the innovation is found to be a significant mediator in this process, and a positive moderator that amplifies the financial returns of CSR activities, particularly in firms with high innovative capabilities. The study contributes to the literature by providing a more nuanced understanding of the CSR-Firm value nexus, especially by exploring the U-shaped relationship and the dual roles of innovation (mediator and moderator) in an emerging market context. It offers valuable insights for managers and policymakers on how to strategically integrate CSR and innovation to enhance firm value.

Keywords: *Corporate Social Responsibility, Firm Value, Innovation, Quadratic Effect, Dual Role of Innovation, Emerging Market.*

1. INTRODUCTION

Remarkable changes in recent years have been accompanied by an increase in the risk factors facing firms globally, and maintaining its image is vital for firm trying to find a balance between creating income and adapting to the needs of society and the environment (Lu, Ren, He, Lin, & Streimikis, 2019). Besides, Matten (2008) indicated that a firm which is got success by adapting with changing social values such as responsible business, meeting environmental and social standards, building good relationship with stakeholders, etc. These changes showed that corporate social responsibility (CSR) has an essential role of success in each firm. Because conducting CSR is considered as a firm's effort to contribute social development, maintain sustainability environment and bring positive values for corporates (Boccia & Sarnacchiaro, 2018). Firms that have implementation of CSR will help their enhancing competitive advantage, building reputation, connecting easily with stakeholders and effecting on financial performance (Castaldo, Perrini, Misani, & Tencati, 2009; Rindova, Williamson, & Petkova, 2010; Werder, 2008).

Various authors have provided different definition of CSR. In early stage, definitions formulated an influential definition of CSR, stating that it encompasses corporations' actions to earn profits, comply with legal requirements, and contribute to society (Carroll, 1979). Although this is the most-generally acknowledged and utilized in practical and academic studies, it still have questions and confusions on this definition (Han, Yu, & Kim, 2019). M. Porter and Kramer (2011) offered a distinct definition of CSR, positing that social problems can be business opportunities to generate solutions and create competitive advantage.

In several years, arguments are debated in management and finance literature. Some authors advocate the positive relationship between CSR and firm value. They indicated that CSR can help firms gain a competitive advantage (M. E. Porter, Hills,

Pfitzer, Patscheke, & Hawkins, 2011), enhance reputation, reduce labor turnover (Chen, Liu, & Qin, 2019). Further, CSR can anticipate to influence financial conditions and firm value (Rindova et al., 2010). Opposite, several authors considered CSR as a burden on firms. Lee, Faff, and Langfield-Smith (2009) depict CSR as expenditures of corporate. Because CSR activities have accounted on amount of financial expenditures of firms but not bring significant values for corporate. Barnett and Salomon (2012) noted that social activities can represent substantial financial expenditures and may directly burden corporate performance. In recent years, some scholars have discovered that the relationship between CSR and firm value is not linear, but U-shaped (Grassmann, 2021; Wu, Hossain, Teng, & Shen, 2023). Several discussions show that CSR is a problem to decline firm value by burden expenditure to conducting CSR (Barnea & Rubin, 2010; Barnett & Salomon, 2012). However, conducting CSR continuously will help firm improving competitive advantage, building better relationship with stakeholder, enhancing brand image (Chen et al., 2019). Further, the stakeholder will increase financial performance through buying products and services of firm (Rindova et al., 2010). Due to inconsistent findings, some scholars have also proposed the mechanisms can better to explain CSR and firm value (Bahta, Yun, Islam, & Bikanyi, 2021). This means that CSR needs underlying mechanisms to transfer its effect on firm value, that is may disregarded in previous studies and cause bias conclusions (Kraus, Rehman, & García, 2020).

Innovation is described as the development or creation of new procedures, products, and services within organizations that not only improve financial effectiveness but also enhance environmental and social performance (Bos-Brouwers, 2010). According to Tang, Walsh, Lerner, Fitza, and Li (2018), innovation supports organizations in implementing effective policies and building

stakeholder relationship. Further, innovation is considered as ability to gain competitive advantages (Doran & Ryan, 2016). Some studies had argued that innovation could be an underlying mechanism in evaluating the relationship with CSR and firm value (Bahta, Yun, Islam, & Ashfaq, 2020; Sheikh, 2020). Consequently, this is plausible to investigate the underlying role of innovation in CSR and firm value nexus. Grounded on the discussion, three research question are posited.

1. Is the CSR and firm value relationship non-linear?
2. Does Innovation mediate the CSR and firm value relationship?
3. Does Innovation moderate the CSR and firm value relationship?

The results fill the gap and contribute to the literature threefold. First, from a theoretical standpoint, we provide new evidence on testing the relationship between CSR and firm value in Vietnam context, an emerging country. Some studies have conducted recurrently in developed countries such as China (Huang, Shang, Wang, & Gong, 2022; Wu et al., 2023), Western European (D'Amato & Falivena, 2020), Korea (Jeong, Jeong, Lee, & Bae, 2018), United State (Okafor, Adeleye, & Adusei, 2021). Previous studies have a common as conducting in developed countries where have legal systems on CSR. However, in emerging countries, their legislations still have gaps and conducting CSR is volunteer of enterprises. Thus, this problem pursuits to research the CSR activities in emerging countries, specification in Vietnam context.

In recent years, Vietnam have seen various scandals on lacking CSR in enterprises. In the business side, almost enterprises lack of knowledge and resources for CSR activities. In addition, their vision is still looking at profits in short-time. Therefore, CSR is considered as a cost and they hardly ever invest in community, environment, and social activities. However, the CSR picture in Vietnam is very

promising. According to a survey by Nielsen, 73% of Vietnamese respondents are willing to pay more for products made by companies with outstanding CSR practices. Besides, consumers begin strict assessments regarding social issues of firms and see it as vital element for choosing goods. Thus, CSR activities have significant potential to bring profits for enterprises.

Second, we offer the ideal for dual roles of innovation in the relationship between CSR and innovation. By examining these multifaceted roles, this study aims a more comprehensive model to explain how innovation become mechanisms to explain CSR and firm value, responding (Bahta et al., 2021).

Third, by combining the Stakeholder theory and Agency theory, the study suggests a new way to assess the relationship between CSR and firm value as non-linear. Previous studies also single theory to explain the relationship between CSR and firm value (Barnett & Salomon, 2012; Wu et al., 2023). Thus, it leads difficult explain the non-linear relationship. On the other way, the Agency can provide a mechanism to explain why the relationship between CSR and firm value is negative in early stage. In addition, the Stakeholder theory support for the hypothesis that CSR have positive impact on firm value. Combining theories can provide the deeper explain the impact of CSR on firm value.

The remainder of this paper is structured as follows. Section 2 reviews the relevant literature and develops the theoretical framework and hypotheses. Section 3 details the research methodology, including sample selection, variable measurement, and the analytical approach. Section 4 presents the empirical results of our analysis. Finally, Section 5 concludes the paper by discussing the key findings, outlining their managerial implications, and acknowledging the study's limitations while offering directions for future research.

2. LITERATURE REVIEW

2.1. Stakeholder theory and Agency theory

From the perspective of Agency Theory, it is a principle used to explain and resolve issues in the relationship between business principals and their agents. By conducting some governance mechanisms to manage agent (manager) activities in corporates. In the stock companies, the own license is hold by individual or a group underlying stock, namely stockholders, their authorize agents to administer business activities in companies but they do not know whether the agent is working for their or itself (Jensen & Meckling, 1976). Besides, CSR activities is considered as waste of enterprise resources. Because it used financial ability of firms for activities such as charity, supporting community, protecting environment, etc. These activities do not only expend amount of cost but also bring any positive outcomes in financial performance. On the other hand, with managers, it can bring reputation for them. These managers are praised by community. Thus, the CSR can decrease firm value and do not bring any positive outcome for enterprises.

Conversely, according to Stakeholder Theory, CSR can be a valuable corporate resource for enhancing competitive advantage. The Stakeholder theory seeks answers to the companies' commitments and obligations toward their stakeholder (Freeman, 1984). Harrison and Freeman (1999) discussed that companies should not only focus on maximizing their profits but also respond the needs of stakeholders. By addressing necessary of stakeholders, CSR can expect to mitigate conflict between managers and stakeholders. Further, CSR can help firms to build reputation, firm image in community. Consequently, the stakeholder will buy products and services to bring profit for firms.

By combining the Stakeholder theory and the Agency theory, CSR activities are considered as a burden for companies in early stage. It consumes financial conditions but do not bring any value for firms. But if the companies conduct it

continuously, it can bring profits by impact on the relationship with stakeholders. When the relationship between firms and stakeholders is better, they can bring profits for firm through consuming firm's products and services.

We reconcile these conflicting views by proposing a non-linear, U-shaped relationship. At initial, low levels of CSR engagement, the tangible costs outlined by agency theory, such as direct financial outlays for compliance or philanthropic projects, are immediately salient and are likely to outweigh the nascent, undeveloped benefits. However, as a firm's commitment deepens and CSR becomes more strategically integrated, it moves beyond mere cost and begins to cultivate unique, such as superior employee morale, stronger customer loyalty, and process innovations. Once CSR investment crosses a critical threshold, these accumulated benefits start to generate financial returns that eventually surpass the initial costs, causing the performance curve to slope upwards. This dynamic, where initial costs are followed by delayed but ultimately larger gains, underpins the hypothesized U-shaped relationship

2.2 CSR and firm value

Barnea and Rubin (2010) concluded that excessive engagement in CSR may significantly damage firm value. Similarly, Hong, Kubik, and Scheinkman (2012) concurred with this view, suggesting that excessive or misaligned investment in CSR can negatively impact financial factors, thereby decreasing firm value. This is because expenditures on CSR activities are sometimes considered hidden costs (McWilliams & Siegel, 2001). Thus, Barnett and Salomon (2012) asserted that CSR can be a burden to firms. From this viewpoint, enterprises may not prioritize using resources to meet all stakeholder interests if doing so is perceived to decrease firm value.

Some previous empirical studies have indicated a negative relationship between CSR and firm value. Baird, Geylani, and Roberts (2012) found a negative relationship between CSR and firm value in their investigation of 1,153 firms over a seven-year period (2001-2008). Similarly, Peng and Yang (2014) also reported a negative relationship for Taiwanese firms from 1996 to 2006.

The preceding arguments and findings support the hypothesis of a negative relationship between CSR and firm value. Therefore, we presented the following hypothesis:

Hypothesis 1: Corporate social responsibility has a direct negative effect on firm value.

Recent scholarship affirms that addressing the expectations and requirements of stakeholders can yield mutual benefits (Berman, Wicks, Kotha, & Jones, 2017). CSR activities can help in recognizing potential risks to enterprise performance, such as scandals, poor governance, and unethical behavior (Cismas, 2019). Additionally, Jo and Harjoto (2012) concluded that CSR can serve as a mechanism to address manager-stakeholder conflicts and generate greater value for enterprises. Companies committed to CSR can enhance their performance by building strong social networks with stakeholders, including employees, customers, and suppliers (Perrini, Russo, Tencati, & Vurro, 2011). Furthermore, CSR activities can mitigate corporate information asymmetry (Cui, Jo, & Na, 2018), enhance revenue (Flammer, 2015), increase firm value (Jiao, 2010), improve reputation (Servaes & Tamayo, 2013), enhance customer satisfaction (Banker & Mashruwala, 2007).

More recent research has indicated a potential causal relationship between CSR and firm value. For example, Jeong et al. (2018) found a positive relationship between CSR activities and firm value in Korea. Similarly, Qiu, Jiang, Liu, Chen, and Yuan (2021) examined the role of CSR in protecting firm value

among Chinese firms. Their results showed that engaging in CSR activities can increase stock returns. An empirical study by Okafor et al. (2021) of 100 tech companies listed on the S&P 500 from 2017 to 2019 concluded that increased spending on CSR correlated with increased revenue and profitability. Khanchel, Lassoued, and Gargoury (2023) also found that CSR helped mitigate negative impacts on firm value during the COVID-19 crisis among 464 French firms.

From these empirical evidences, the relationship between CSR and firm value have potential become U-shaped. Therefore, we propose:

Hypothesis 2: There is a quadratic relationship between Corporate Social Responsibility and firm value.

2.3. The dual role of innovation: Mediator and moderator

The RBV theory is used to explain the role of innovation in the relationship between CSR and firm value. RBV is developed by Wernerfelt (1984) to analyze factors inside organizations. The Resource-Based View (RBV) posits that a firm's resources, including its knowledge and innovative capabilities, are foundational to sustainable competitive advantage (J. Barney, 1991). For a resource to be a source of sustained competitive advantage, it must be valuable, rare, inimitable, and non-substitutable (VRIN) (J. B. Barney, 1995).

Innovation is a catalyst for CSR impact on firm value. CSR highlight the need of stakeholder whereas innovation is considered as a tool to help firms improve products and services to meet the necessary of customers. By applying innovation to their activities, enterprises can significantly enhance their performance and competitive advantage. In addition, CSR can be viewed as an investment that fosters differentiation in products and services. From these differentiation in products and services, firms can become priority choose than other competitions. Thus, the stakeholders can bring significance profits for firms.

In this context, CSR is not merely an obligation but also a source of inspiration for innovation. McWilliams and Siegel (2001) argued for a correlation between CSR and innovation, noting that many dimensions of CSR are similar to those of innovation. Bansal (2005) also underscored the link between CSR and innovation, highlighting that social and environmental problems present significant opportunities for innovation in work processes, products, and services to address existing gaps. Thus, CSR can be viewed as an investment that fosters differentiation in products and services. In addition, Ioannou and Serafeim (2015) described CSR's influence in reducing costs and information asymmetry, thereby facilitating easier access to funding and promoting innovation. For instance, Bocquet, Le Bas, Mothe, and Poussing (2013) explored the relationship between CSR and innovation in Luxembourg firms, providing evidence that firms with strategic CSR profiles demonstrated significant enhancements in both product and process innovation. Another study by Bocquet, Le Bas, Mothe, and Poussing (2019) also found a positive link between CSR and innovation in SMEs from Luxembourg. Broadstock, Matousek, Meyer, and Tzeremes (2020), studying 320 Japanese firms, explored the impact of CSR on firm innovation capacity. Tsang, Wang, Liu, and Yu (2021) explored how integrating CSR criteria into executive compensation can increase the innovation performance of firms across 30 countries.

These findings suggest that enterprises can leverage CSR to enhance innovation activities, such as creating new products and services that address social and environmental problems. Therefore, we propose the following hypothesis:

Hypothesis 3a: Corporate Social Responsibility has a positive effect on firm innovation.

Numerous studies have examined the link between innovation and firm value, generally concluding that innovation is positively associated with firm value. By creating differentiation in products and services, innovation can enhance quality and

help firms gain a competitive advantage in the market. Doran and Ryan (2016) found that innovation is not only used by new companies to catch up with leading enterprises but also serves as a tool for established firms to gain competitive advantages and outperform rivals. Rajapathirana and Hui (2018) concluded that innovation plays a pivotal role in a global economy characterized by intense competition. It directly impacts firm value by enabling companies to respond to evolving consumer preferences, ultimately bolstering cash flow potential (Sood & Tellis, 2005).

Research by Min and Smyth (2016) revealed that the intensity of innovation directly influences firm value in South Korea. Choi and Yoo (2022) also found that technological innovation activities have a significant positive impact on firm value. Khalil, Khalil, and Khalil (2022) conducted a survey of 75 service companies in Thailand to examine the influence of innovation capabilities on firm value. In general, these empirical studies suggested that innovation have positive impact on firm value.

The preceding findings support a hypothesis concerning the positive impact of innovation on firm value. Therefore, we propose:

Hypothesis 3b: Innovation positively affects firm value

On the other hand, the innovation can mediate between CSR and firm value. The firm's innovation capability functions as a critical dynamic capability that determines its ability to convert CSR initiatives into tangible value. CSR activities can create opportunities for value creation, such as identifying unmet social needs or developing eco-efficient processes. However, merely engaging in CSR is insufficient. The firm must possess the absorptive capacity to recognize, assimilate, and exploit the knowledge and opportunities stemming from its CSR engagement. A firm with high innovation capability can effectively translate stakeholder demands

into new products, build competitive advantage from their social strategies. Consequently, the firm can use CSR activities to for enhancing firm value.

Bocquet et al. (2013) found that innovation can become a mechanism through which CSR improves firm performance. The study research 1,348 Luxembourg SMEs, further explored how the interaction between CSR and innovation can affect firm value. Kong, Agyemang, Alessa, and Kongkuah (2023) in a survey of 78 pharmaceutical companies, showed that innovation acts as a mechanism to improve the impact of CSR on firm value. Chouaibi and Chouaibi (2021) aimed to examine the effect of the interaction between CSR and innovation on the firm value of 523 international firms, finding evidence for a positive interplay. This implies that innovation is not just a parallel activity but also an enabler for CSR to achieve its maximum benefits.

The preceding findings support a hypothesis concerning the impact of innovation on the relationship between CSR-firm value. Therefore, we propose:

H4: Innovation positively moderates the relationship between Corporate Social Responsibility and firm value

Based on the above hypothesizes, **Figure 1** demonstrate the research model regarding the relationship among constructs.

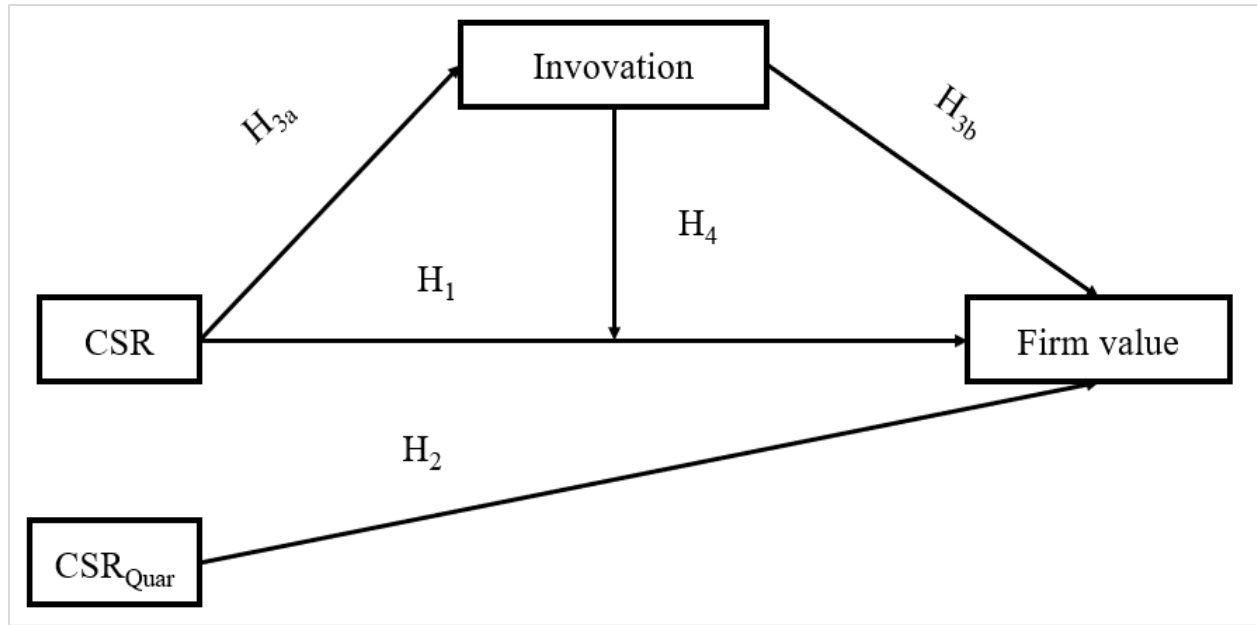


Figure 1. Research model

3. Methodology

3.1. Data and sample

We collected database from 128 Vietnamese listed enterprises of Ho Chi Minh Stock Exchange (HOSE)'s VN30 group in 2016-2023 period. The reason why Vietnamese listed firms in HOSE is selected, has several reasons. Firstly, these listed firms in HOSE have conducted to information disclosure according to Decree 155/2015/TT-BTC. Thus, we can find easily the data from companies' annual reports, financial reports, and sustainability reports. The secondly, listed firms in VN30 group have given excellent assessments rather than listed firms. Because this group present the firms which have high liquidity and good capability index. Thus, these firms have high validity.

We first excluded firms with incomplete financial data for any year in the study period. Subsequently, firms that did not consistently publish annual and sustainability reports were removed. Finally, firms lacking explicit data on Research and Development (R&D) expenditure were also excluded, resulting in a final

unbalanced panel dataset of 128 firms. This timeframe is relevant due to the increasing focus on sustainability disclosure in Vietnam, supported by regulations such as Decree 155/2015/TT-BTC, which required listed firms to report environmental and social information. Data were sourced from companies' annual reports, financial reports, and sustainability reports.

3.2. Variable measurement

3.2.1. Dependent variable

Firm value reflects a company's capacity to satisfy its stakeholders through profitable operations conducted within managerial and legal frameworks. A widely accepted measure in accounting, finance, and economics for assessing this value is Tobin's Q, which quantifies the ratio of a firm's market value to the replacement cost of its assets (Gompers, Ishii, & Metrick, 2003). Several previous studies have chosen Tobin's Q as a measurement for firm value (D'Amato & Falivena, 2020; Santos-Jaén, Madrid-Guijarro, & García-Pérez-de-Lema, 2021; Sheikh, 2020). In this paper, Tobin's Q was calculated by taking the sum of market value of equity and the book value of total liabilities, then dividing it by the book value of total assets.

3.2.2. Independent variable

a. Corporate social responsibility (CSR)

This study employs a disclosure-based method to collect data on Corporate Social Responsibility (CSR), primarily due to several contextual and methodological factors. Firstly, within the Vietnamese context, there is a notable absence of established ranking organizations dedicated to assessing the social responsibility of enterprises. Secondly, relying solely on one-dimensional measurement approaches often fails to adequately capture the breadth of social responsibility performance

across diverse firms. As Krippendorff (1980) suggested, CSR disclosure itself plays a significant role in shaping rankings and reputational indices. Furthermore, Carroll (1979) highlighted the multifaceted nature of social structures, rendering single-measure approaches inefficient for evaluating complex constructs like CSR. Consequently, analyzing the content of annual reports through a disclosure approach is deemed a more effective method for examining multifaceted CSR activities. Thirdly, regulatory mandates reinforce this approach. Specifically, Circular 155/2015/TT-BTC requires listed companies in Vietnam to disclose their CSR activities within their annual reports. In evaluating these disclosed activities, this study considers key aspects outlined therein – namely product, employee, communication, and environment – assigning points to each enterprise based on reported actions. Activities mentioned in the report contribute to the score, while unmentioned activities receive zero points. The maximum attainable score (M) under this framework is fourteen (*see Appendix 1 for a detailed list of all 14 disclosure items*).

The utilization of this disclosure methodology aligns with prior research (Harun, Hussainey, Mohd Kharuddin, & Farooque, 2020; NGUYEN & NGUYEN, 2021). Following Harun et al. (2020), CSR is calculated using the formula:

$$CSR = \frac{CSRD}{M} \times 100\% \quad (1)$$

Where:

CSR: Represents Corporate Social Responsibility, calculated as the proportion of the total CSR disclosure score achieved by the corporation relative to the maximum possible score.

CSRD: Denotes Corporate Social Responsibility Disclosure, representing the total points awarded based on CSR activities disclosed in the annual report.

M: Represents the maximum total CSR points possible based on Circular 155/2015/TT-BTC, where $M = 14$.

b. Innovation

In this study, innovation is quantified using a widely accepted financial proxy that reflects a firm's commitment to future growth and technological advancement. Specifically, we measure innovation intensity as the ratio of annual Research and Development (R&D) expenditure to the firm's total assets. This approach normalizes R&D investment by firm size, providing a comparable metric of resource allocation towards innovative activities across different companies. The selection of this particular measure is consistent with established methodologies in the field, aligning with the approach employed by (D'Amato & Falivena, 2020).

3.2.3. Control variable

To mitigate potential biases and enhance the accuracy of the estimated relationship between the independent and dependent variables, this study incorporates several control variables. These variables are selected based on established literature and aim to account for firm-specific characteristics and external factors that could influence corporate performance and valuation (Laeven & Levine, 2008; Servaes & Tamayo, 2013).

Return on Assets (ROA) reflects a firm's profitability and efficiency in utilizing its asset base. Some previous studies used ROA as a control variable (Guo, Hou, & Li, 2020; Sheikh, 2020).

Firm Size is controlled for, measured as the natural logarithm of the company's total assets. Firm Age is also included, calculated as the number of years elapsed between the firm's establishment year and the specific year within the research period. The use of Firm Size and Firm Age as control variables is consistent with previous empirical studies in finance and corporate governance (D'Amato & Falivena, 2020; Hu, Chen, Shao, & Gao, 2018).

3.3. Estimation method

3.2.1. Structural equation modelling

The decision to employ Partial Least Squares SEM (PLS-SEM) is encouraged by PLS-SEM is often favored for studies with a more predictive focus, demonstrates considerable robustness when analyzing complex models with numerous constructs and paths, and is notably less sensitive to violations of distributional assumptions (Sarstedt, Ringle, Henseler, & Hair, 2014).

Besides, PLS-SEM is primarily used by the hypothesized dual function of Innovation within our proposed theoretical model. Specifically, Innovation is conceptualized not only as a potential mediator transmitting the effect of Corporate Social Responsibility (CSR) onto Firm Value but also as a moderator influencing the strength or direction of this relationship. Furthermore, the complex system of anticipated interdependencies among CSR, its potential non-linear effect (represented by CSR Squared, CSR_Sqr), Innovation, and Firm Value inherently constitutes a structural model that necessitates a holistic estimation technique like SEM for accurate parameter estimation and hypothesis testing.

3.2.2. Path model

Figure 2 provides a visual representation of the complete research framework, encompassing both the measurement model (often referred to as the outer model)

and the structural model (the inner model). The path diagram illustrates the hypothesized relationships among the core latent constructs and includes the control variables integrated into the theoretical structure.

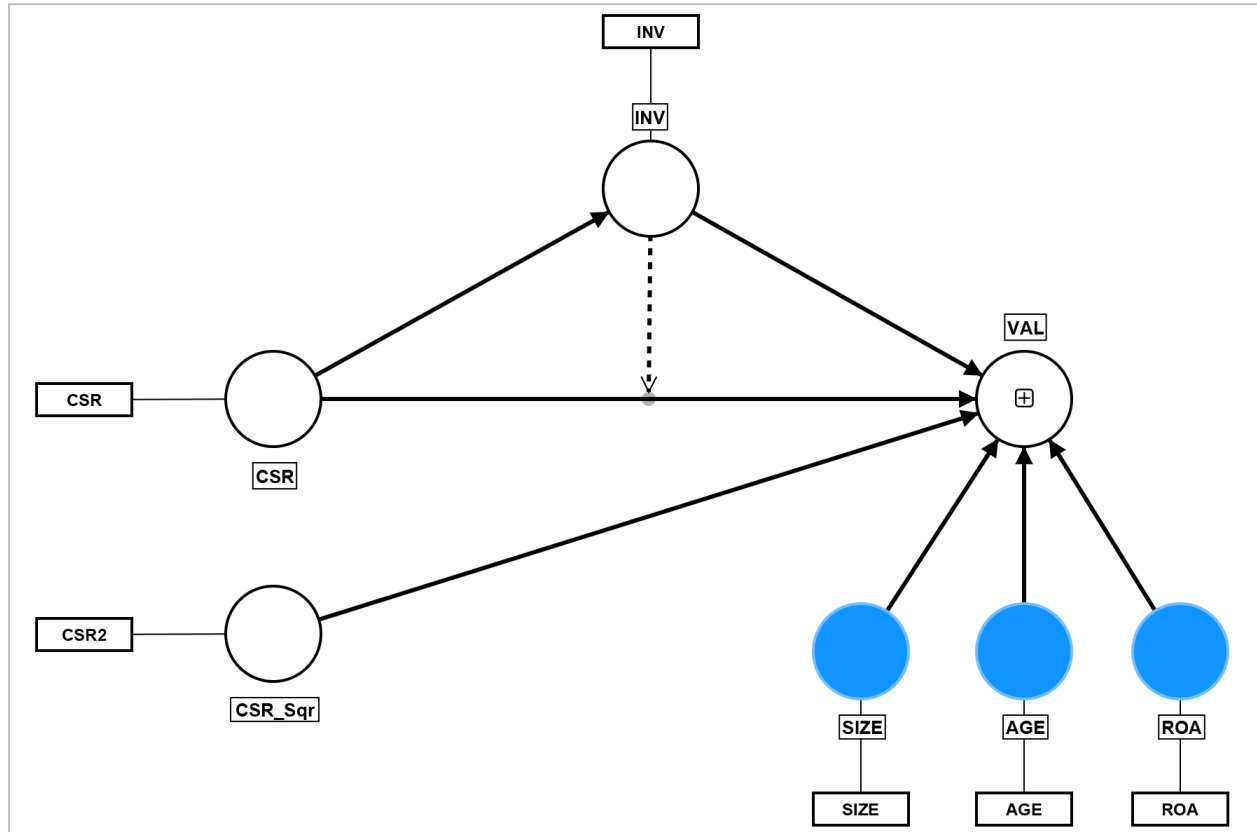


Figure 2. Structural model and measurement model

3.2.3. Panel data in an SEM model

To address potential endogeneity arising from unobserved, time-invariant firm characteristics (e.g., managerial culture, brand equity) that could correlate with the model's independent variables, this study employs a two-stage approach. This approach integrates the strengths of panel data econometrics within the PLS-SEM framework.

In the first stage, we apply a fixed-effects (FE) transformation, also known as "demeaning," to the entire dataset. This technique removes all time-invariant

heterogeneity by converting each variable into its deviation from the firm-specific time-series mean (Wooldridge, 2015). The original equation (2) is specified as:

$$Y_{it} = \beta X_{kit} + u_i + \alpha_t + e_{it} \quad (2)$$

After the transformation, the equation becomes (3), where the firm-specific, time-invariant effect (u_i) is eliminated:

$$(Y_{it} - \bar{Y}_{it}) = \beta(X_{kit} - \bar{X}_{ki}) + (\alpha_t - \bar{\alpha}) + (e_{it} + \bar{e}_i) \quad (3)$$

In the second stage, this transformed (demeaned) dataset is used as the input to estimate the path model using PLS-SEM. This method ensures that the regression coefficients (β) reflect the impact of within-firm variation over time, rather than between-firm differences (Thanh & Ha, 2019). This approach therefore mitigates the risk of omitted variable bias, yielding more robust and causally meaningful estimates.

4. Findings

4.1. Descriptive statistics

Table 1 shows the descriptive statistics of the variables used in the study including the independent variable, dependent variable, and controlled variables:

Table 1. Descriptive statistics of the variables

Variables	Mean	Standard deviation	Min	Max
TOBINQ	1.121	0.242	0.236	5.462
CSR	33.821	21.252	10	100
INV	0.051	0.041	0.021	0.124
ROA	0.097	0.013	0.011	0.121
SIZE	10.571	0.668	9.393	12.184

AGE	23.25	12.58	3	53
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Table 1 presents the descriptive statistics for the key variables utilized in this study:

Tobin's Q (TOBINQ) has a mean of 1.121 and a standard deviation of 0.242. The values range from a minimum of 0.236 to a maximum of 5.462, indicating considerable variation in market valuation relative to asset replacement costs among the sampled firms, with the average firm having a market value slightly above its asset replacement cost proxy.

Corporate Social Responsibility (CSR) shows a mean score of 33.821, with substantial variability as indicated by a standard deviation of 21.252 and a range spanning from 10 to 100.

Innovation intensity (INV), measured as the ratio of R&D expenditure to total assets, averages 0.051, suggesting that R&D investments constitute about 5.1% of total assets on average. INV ranges from 0.021 to 0.124 with a standard deviation of 0.041.

Return on Assets (ROA) exhibits a mean of 0.097 (9.7%) and ranges from 0.011 to 0.121, with a low standard deviation of 0.013, indicating relatively consistent profitability levels within this range.

Firm Size (SIZE), measured by the natural logarithm of total assets, has a mean of 10.571 and a standard deviation of 0.668, with values ranging from 9.393 to 12.184.

Firm Age (AGE) averages 23.25 years, with a standard deviation of 12.58, ranging from 3 to 53 years, indicating the inclusion of both relatively young and mature firms in the sample.

4.2. Structural model assessment

According to Hair Jr, Howard, and Nitzl (2020), there are three main aspects of the structural model that need to be evaluated, including: multicollinearity between constructs, explanatory power, and predictive power. After completing the assessment of these three aspects, the study will evaluate impact effects such as: direct effect, mediating effect, moderating effect, and quadratic effect. Figure 3 depicts the structural estimation results.

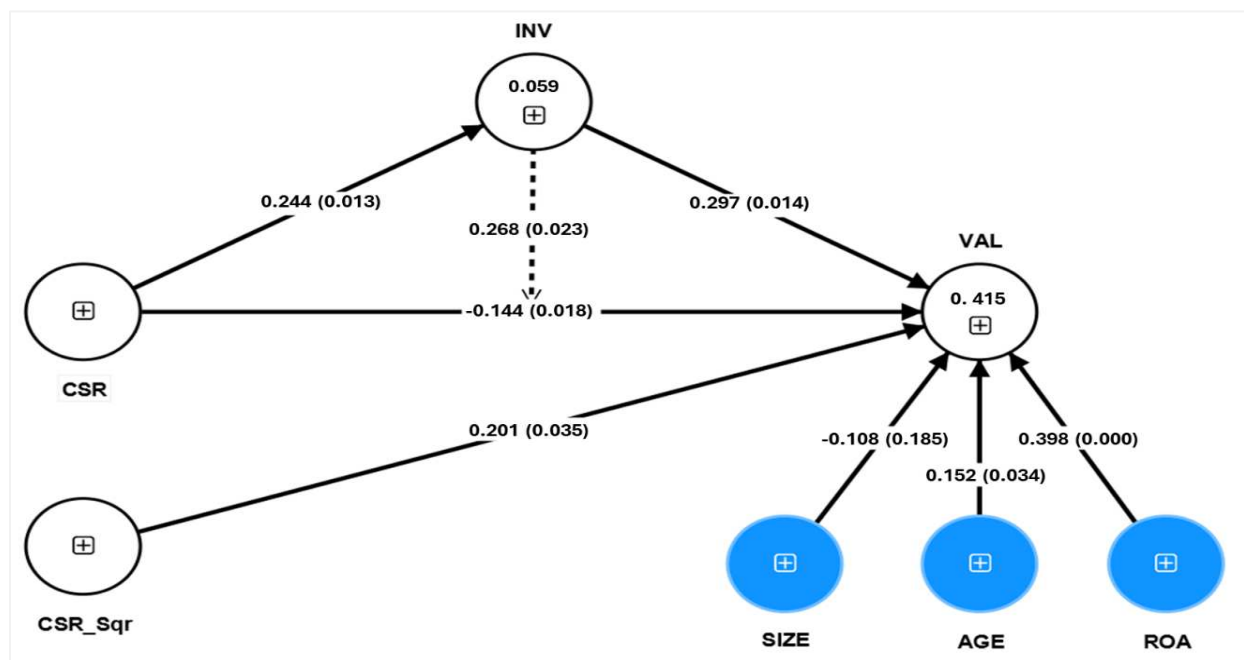


Figure 3. Estimated results of the structural model

(i) Multicollinear assessment

Table 2. Multicollinear matrix results

	VIF
CSR -> INV	1.000
CSR -> VAL	4.136
CSR_Sqr -> VAL	4.222
INV -> VAL	1.177
IVN×CSR -> VAL	1.236
SIZE -> VAL	1.177
AGE -> VAL	1.003
ROA -> VAL	2.110

In Table 2, we assessed multicollinearity for the predictors of each endogenous variable. As all VIF values are below the conservative threshold of 5, multicollinearity is not a significant concern in our model.

(ii) Explanatory power assessment

The model's explanatory power, as indicated by the R-squared values, shows that 5.9% of the variance in the endogenous construct INV is explained by its predictor (CSR). Furthermore, the predictors for the endogenous construct VAL collectively account for 41.5% of its variance. These R-squared values provide insights into the explanatory strength of the structural model for these specific dependent variables.

The f-squared values in Table 3 assess individual effect of predictors on endogenous constructs. CSR has a small to medium effect on INV ($f^2 = 0.059$). For VAL, ROA demonstrates the largest impact with a medium effect size ($f^2 = 0.164$). Other predictors like CSR_Sqr ($f^2 = 0.142$), INV ($f^2 = 0.137$), CSR ($f^2 = 0.124$), the

interaction INV×CSR ($f^2 = 0.126$), and AGE ($f^2 = 0.113$) exhibit effects approaching medium, while SIZE has a very small effect on VAL ($f^2 = 0.012$). These values quantify each predictor's contribution to the R-squared of the dependent variables.

Table 3. f-square results

	INV	VAL
AGE		0.113
CSR	0.059	0.124
CSR_Sqr		0.142
INV		0.137
ROA		0.164
SIZE		0.012
INV×CSR		0.126

(iii) Predictive power assessment

The two main evaluation metrics applied are $Q^2_{predict}$ and RMSE, which are described in Table 4.

Table 4. $Q^2_{predict}$ and RMSE

	Q²predict	PLS-SEM_RMSE	LM_RMSE
INV	0.025	1.321	1.377
TOBINQ	0.028	1.301	1.341

The PLS-predict analysis assessed the model's out-of-sample predictive relevance. The $Q^2_{predict}$ values for the indicators INV (0.025) and TOBINQ (0.028, measuring construct VAL) are positive, suggesting some predictive capability. Importantly, for both indicators, the PLS-SEM_RMSE (INV = 1.321; TOBINQ = 1.301) is lower than their respective LM_RMSE benchmarks (INV = 1.377;

TOBINQ = 1.341), indicating that the PLS-SEM model yields smaller prediction errors than the linear model for these key constructs.

(iv). Effect assessment

The results in Table 5 indicate several significant direct effects. CSR positively influences INV ($\beta = 0.244$, $p = 0.013$) but negatively impacts VAL ($\beta = -0.144$, $p = 0.018$). INV, in turn, has a positive effect on VAL ($\beta = 0.297$, $p = 0.014$). The interaction term INV x CSR ($\beta = 0.268$, $p = 0.023$), CSR_Sqr ($\beta = 0.201$, $p = 0.035$), AGE ($\beta = 0.152$, $p = 0.034$), and ROA ($\beta = 0.398$, $p = 0.000$) all demonstrate significant positive effects on VAL. The effect of SIZE on VAL is not statistically significant ($p = 0.185$). Furthermore, a significant positive indirect effect of CSR on VAL, mediated by INV, is observed ($\beta = 0.072$, $p = 0.039$).

Table 5. Direct and indirect effects

	Coefficients	P values	2.50%	97.50%
Direct effects				
CSR -> INV	0.244	0.013	0.118	0.423
CSR -> VAL	-0.144	0.018	-0.351	-0.036
INV -> VAL	0.297	0.014	0.007	0.453
INV x CSR -> VAL	0.268	0.023	0.078	0.376
CSR_Sqr -> VAL	0.201	0.035	0.071	0.483
AGE -> VAL	0.152	0.034	0.021	0.282
ROA -> VAL	0.398	0.000	0.155	0.563
SIZE -> VAL	-0.108	0.185	-0.243	0.128
Indirect effect				
CSR -> INV -> VAL	0.072	0.039	0.005	0.112

4.2. Discussions

(i) The direct effect of CSR

The empirical results reveal a statistically significant negative direct effect of Corporate Social Responsibility (CSR) on Firm Value (VAL) ($\beta = -0.144$, $p = 0.018$). This finding lends support to Hypothesis 1 (H1), which posited that CSR has a direct negative impact on firm value.

This outcome aligns with the perspective of Agency Theory, CSR activities can be perceived as an additional cost or an agency problem, wherein managers might engage in CSR initiatives for personal reputational benefits rather than for maximizing shareholder wealth (Barnea & Rubin, 2010). The resources allocated to CSR, such as charitable contributions, community projects, or implementing standards exceeding regulatory requirements, might divert funds from more directly profitable investments, thereby potentially eroding firm value, at least in the short term (Barnett & Salomon, 2012).

Our finding is consistent with previous empirical studies that reported a negative association between CSR and firm value or financial performance (Baird et al., 2012; Brammer, Brooks, & Pavelin, 2006; Peng & Yang, 2014), suggesting that, for the sampled firms, the immediate financial burdens of CSR activities may outweigh their direct contributions to firm value when considered in isolation.

(ii) The quadratic effect of CSR

Interestingly, while the linear effect of CSR on Firm Value is negative, the analysis also uncovers a significant positive coefficient for the squared term of CSR (CSR_Sqr) on Firm Value ($\beta=0.201$, $p=0.035$). This result supports Hypothesis 2 (H2), which proposed a quadratic (non-linear) relationship between CSR and firm value.

$$VAL = -0.144CSR + 0.201*CSR^2$$

The combination of a negative linear term ($\beta = -0.144$ for CSR $\rightarrow$ VAL) and a positive quadratic term ($\beta = 0.201$ for CSR_Sqr $\rightarrow$ VAL) suggests a U-shaped relationship between CSR and firm value. This implies that as a given firm increases its CSR engagement from a low base, its firm value may initially decline due to the immediate salience of costs. However, as the firm continues to deepen its CSR commitment beyond a certain threshold, the strategic benefits begin to materialize and outweigh the costs, leading to a subsequent increase in its value.

As H2, while initial CSR activities require substantial resources without immediate financial returns, sustained and more extensive CSR engagement may "gradually impact firm value by improving brand image, enhancing customer trust, and ultimately increasing product and service purchases." The quadratic finding indicates that firms may need to reach a critical mass of CSR investment and integration for these positive impacts to materialize and overcome initial costs. Our finding is consistent with previous studies of Grassmann (2021) and Wu et al. (2023).

(iii) The mediating effect of INV

The results provide evidence for a significant positive indirect effect of CSR on Firm Value (VAL) through Innovation (INV) ($\beta = 0.072$, $p = 0.039$). This finding is a composite result stemming from the significant positive effect of CSR on INV ($\beta = 0.244$, $p = 0.013$, supporting **H3a**) and the significant positive effect of INV on VAL ($\beta = 0.297$, $p = 0.014$, supporting **H3b**). This mediating pathway suggests that one of the mechanisms through which CSR influences firm value is by fostering innovation.

However, it is important to interpret this mediating pathway with caution. The model's R-squared value for innovation was modest ($R^2 = 0.059$), suggesting that

while CSR is a statistically significant driver, it only explains a small portion of the variance in firm innovation. This implies that other factors, not included in this model, are more critical drivers of innovation, and the practical significance of this specific mediation path, though statistically present, may be limited. The result provides a difference view with previous studies of Bahta et al. (2020) and Sheikh (2020) when these studies showed innovation play as a vital mediator in the relationship between CSR and firm value.

(iv) The moderating effect of INV

Table 6 has analyzed further reveals a significant positive moderating effect of Innovation (INV) on the relationship between CSR and Firm Value (VAL) (INV x CSR $\rightarrow$ VAL: $\beta = 0.268$, $p = 0.023$). This result provides support for Hypothesis 4 (H4), which contended that innovation positively moderates the CSR-firm value relationship, such that the impact of CSR on firm value is stronger in firms with higher levels of innovation.

Table 6. The value calculation matrix for VAL

		VAL		
		Low	Medium	High
INV	Low	0.115	-0.297	-0.709
	Medium	0.144	0.00	-0.144
	High	0.173	0.297	0.421

This finding suggests that innovation is not just a mediator but also a crucial contextual factor that shapes the effectiveness of CSR initiatives in generating firm value. As discussed in **H4**, the interaction between CSR and innovation can create synergistic effects. While CSR alone might have a complex (U-shaped) direct impact

on firm value, the presence of strong innovative capabilities appears to amplify the positive aspects of this relationship or mitigate the negative ones more effectively.

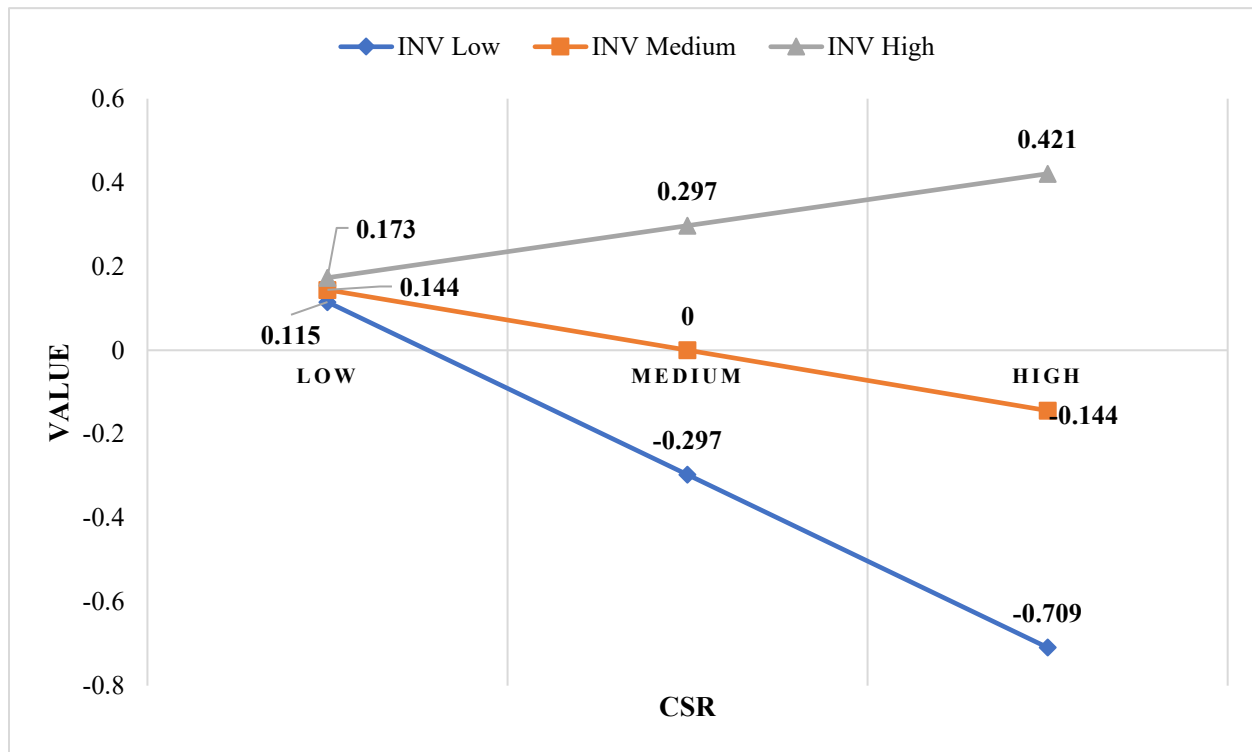


Figure 4. Slope analysis

The slope analysis in Figure 4 further elucidates this interaction. It indicates that the effect of an increase in a firm's CSR activities on its firm value becomes more positive (or less negative) when that firm simultaneously possesses a higher level of innovation. For a highly innovative firm, a strategic increase in CSR is more likely to translate into enhanced firm value. This implies that innovation become a bridge to adapt stakeholder requirements whereas generating financial returns to firm through integrating CSR principles into their core business strategies effectively (Padgett & Galan, 2010; Wagner, 2010).

Conversely, firms with low innovation capabilities might struggle to transform CSR investments into value-creating activities. Their CSR efforts might

be more superficial, less integrated with their strategy, or unable to overcome the initial costs associated with social and environmental initiatives. Consequently, CSR efforts might indeed become a burden (Barnett & Salomon, 2012).

The positive moderating effect of innovation, therefore, underscores the argument that for CSR to be a "value driver," it needs to be coupled with a firm's capacity to innovate. This finding highlights the strategic imperative for firms to cultivate innovation if they wish to maximize the financial returns from their CSR investments. It implies that simply engaging in CSR may not be sufficient; firms also need the innovative prowess to convert these social commitments into a competitive advantage and, ultimately, enhanced firm value (Bocquet et al., 2019; Kong et al., 2023).

4.3. Theoretical contributions

The study contributes to the literature by refining the theoretical understanding of how CSR can influence firm value. Previous studies have used Stakeholder theory or Agency theory to explain the impact of CSR on firm value. While the Agency theory describes CSR as a burden for firm due to its activities hardly ever bring any positive value immediately. Opposite, Stakeholder provide the different view based on serving society ability of enterprises that fulfil stakeholder's expectations. Consequence, previous results provide various empirical evidences. Thus, researchers debated on the role of CSR whether to increase or to decrease firm value.

By combining Stakeholder and Agency theories, the research has extended a view on the impact of CSR on firm value through examining in the two stages. In early stage, aligning with the perspective of Agency Theory, CSR activities can be perceived as an additional cost or an agency problem (Barnett & Salomon, 2012),

because these activities is charity or supporting community projects. Thus, CSR activities often spend amounts of resources whereas it can't earn any financial values decline firm value (Barnea & Rubin, 2010). Furthermore, managers might engage in CSR projects for personal reputational benefits rather than for maximizing financial benefits. However, if the firms carried out CSR activities yearly, it will become the firm's strategic for sustainability development. It can improve reputation (Servaes & Tamayo, 2013), increased customer loyalty (Castaldo et al., 2009), improve employee morale and attraction (Chen et al., 2019), risk mitigation (Lee et al., 2009). Furthermore, CSR can change cognition of stakeholders on a firm. Thus, they can become customer by purchasing products and services of firm. Consequently, they can improve financial conditions and firm values (Rindova et al., 2010).

The result discovers a different way to consider mechanisms of CSR that may impact on firm value. The relationship between CSR and firm value is non-linear. This research provides a interested evidence and contributes theoretical understanding of how CSR can influence firm value. Besides, the study provides an evidence that Stakeholder theory is collaborated with Agency theory to explain complex mechanisms of CSR to impact on firm value.

4.4. Practical implication

This research offers some valuable advice for business leaders and policymakers on how to use Corporate Social Responsibility (CSR) and innovation to make companies more valuable.

Firstly, for managers who pursue strategic and sustained CSR investment. Managers should focus on the trajectory of their firm's CSR engagement, aiming to achieve a significant increase in maturity to a level where the associated benefits can be fully realized. This inherently requires integrating CSR into the core business strategy rather than treating it as a peripheral activity.

Secondly, with innovation, it should be considered carefully before combining with CSR activities. For a firm has limited resource, the managers should assess firm resources before using innovation and CSR activities to improve firm value. Opposite, with a firm has high innovation capability, CSR is an opportunity to connect with stakeholders, whereas innovation conducted function to exchange the stakeholders needs to products and services.

Finally, by combining the Stakeholder and the Agency theories, the study can explain the complex impacts of CSR. Previous the study provides an empirical evidence regarding the U-shaped relationship on CSR and firm value. In early stage, CSR activities is expenditure which firms must be spend, but it doesn't bring any profits for enterprises. In that time, by conducting CSR activities, firms can build brand image, reputation, and the customer's trust. However, firms must conduct CSR activities continuously years. It gradually builds firm's position in the mind of customer. In fully trust, they will buy firm's service and products and bring profit for firms.

Based on several managerial implications, firms can choose CSR as a strategy to aim for enhancing firm value. By using CSR activities, firms can build brand image, reputation, and customer's trust. But it will spend amount resources and time of firms. However, with firms have innovation capability, they can use innovation as tool to enhancing CSR activities. But the firm must be considered using innovation, because if they don't have any innovation capability, it could bring more risk than financial performance.

5. Conclusion and limitation

5.1. Conclusion

This paper sheds light on the research questions regarding the relationship between CSR, innovation and firm value. The analyses are carried out dataset from 128 Vietnamese listed enterprises of Ho Chi Minh Stock Exchange (HOSE)'s VN30 group in 2016-2023 period.

The results show that the relationship between CSR and firm value is U-shaped. It implies that, in early stage, the CSR activities are spent amount expenditures of enterprises. But it didn't bring any profits for firms and decline firm value. Opposite, with managers, it brings their reputation, individual image, and the respect of community immediate. Thus, CSR could be seen as a burden, and hardly ever conducted in enterprises projects. However, if the firms carried out CSR activities yearly, it will become the firm's strategic for sustainability development. It can improve reputation (Servaes & Tamayo, 2013), increased customer loyalty (Castaldo et al., 2009), improved employee morale and attraction (Chen et al., 2019), risk mitigation (Lee et al., 2009). Furthermore, CSR can change cognition of stakeholders on a firm. Thus, they can become customer by purchasing products and services of firm. Consequently, they can improve financial conditions and firm values (Rindova et al., 2010).

Besides, the study also examines the dual roles of innovation. In mediator role, the innovation is discovered that could drive the impact of CSR on firm value. But it is not essential factor and may other factors have more critical drivers of innovation. In Vietnam context, enterprises seem fewer take care of innovation. Because, managers consider innovation as expensive activities similar as CSR. Building both CSR and innovation capabilities will become the challenger extreme risk, unless the firms have high financial capabilities. Thus, firms hardly ever conduct CSR and innovation activities in the same time, it could be danger in financial performance in enterprises. In moderator role, if a firm have high degree

of innovation, the CSR is considered as dynamic to improve firm value. Because, through CSR activities, firms not only build the relationship with stakeholders, but also understand their needs. Combining with innovation capability, enterprises can create products and services adapt the stakeholder's necessary. Consequently, firms also need the innovative prowess to convert these social commitments into a competitive advantage and, ultimately, enhanced firm value (Bocquet et al., 2019; Kong et al., 2023).

5.2. Limitations and future research

The study acknowledges several limitations, including the sample being specific to listed firms in Vietnam, which may affect generalizability. We suggest future research could explore other countries, unlisted firms, small and medium enterprises or different institutional contexts. Additionally, we admit the limitations on measuring CSR and innovation. Using disclosure method doesn't have provide exactly a metric regarding CSR and innovation activities of enterprises. Because several firms can public "perfect annual reports" whereas they hardly ever contribute resources toward social. In the future, we expect that future research can use the dataset on CSR and innovation activities, created by NGO or other organizations.

DECLARATIONS

Ethical Approval and Consent to Participate

Ethical approval and consent to participate were not required for this study, as it does not involve human participants, human data, or human tissue.

Consent for Publication

Consent for publication was not required, as this study does not contain any identifiable individual data.

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Data availability

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Appendix

Appendix table 1. Social responsibility indicators in section 6 of the sustainability report

No.	Aspect	Evaluation criteria
1	Production	<ul style="list-style-type: none"> - The total amount of materials used to manufacture and package the organization's products and services during a year (1). - Report the percentage of materials recycled, used to produce the organization's key products and services (2).
2	Employee	<ul style="list-style-type: none"> - Number of employees, the average worker salary (3). - Labor policy to ensure employees' health, safety, and welfare of employees (4). - Labor training activities: Average training hours per year, by the employee, and by employee type (5). Skills development and continuous learning programs to support employees to secure employment and develop careers (6).
3	Community	<ul style="list-style-type: none"> - Other community investment and community development activities, including financial support to serve the community (7).
4	Environment	<ol style="list-style-type: none"> 1. Energy Consumption <ul style="list-style-type: none"> - Direct and indirect energy consumption (8). - Consumption of energy through energy efficiency initiatives (9). - Energy-saving initiative reports (10). 2. Water consumption <ul style="list-style-type: none"> - Water supply and water usage (11). - Percentage and the total amount of recycled and reused water (12) 3. Environmental Compliance

		<ul style="list-style-type: none"> - Number of times sanctioned for failing to comply with environmental laws and regulations (13). - Total amount in fines for noncompliance with environmental laws and regulations (14).
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