STOCK MARKET REACTION TO CSR NEWS: EVIDENCE FROM THE DHAKA STOCK EXCHANGE

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Abstract

This paper aims to investigate the stock market reaction in response to news related to corporate social responsibility on the stock prices of listed companies in the Dhaka Stock Exchange of Bangladesh. It analyses 101 news items released from 2017 to 2023, in four CSR dimensions (healthcare, education, environment, and disaster management) using the event study. A [-2, +2] event window is specified to assess the market's perception. The results reveal heterogeneous market responses to different CSR news. Corporate social responsibility News in education and disaster management is well-received by investors and generates positive abnormal returns. This is perceived as value-creating because it aligns with national sustainable goals, builds goodwill, and ensures ongoing social acceptance. Environment-related CSR news generates a strong and significant negative abnormal return. Investors appear to view it as a costly signal of regulatory burdens and eroding short-term shareholder value. Equity market remains indifferent to healthcare-related CSR, with an insignificant negative abnormal return, viewing it as neither a strategic advantage nor a major financial detriment. The theoretical implications of these findings strongly support Signaling theory and Stakeholder theory. This research offers crucial insights for various stakeholders from practical point of view by providing a strategic roadmap for management, establishing CSR news as price-sensitive information for investors and analysts, and advising regulators like the BSEC to develop formal disclosure guidelines to enhance market efficiency and fairness.

Keywords: Corporate Social Responsibility, CSR-Relevant News, Cumulative Abnormal Return, Dhaka Stock Exchange, Event Study.

1. INTRODUCTION

In Bangladesh, Corporate Social Responsibility (CSR) has now become a matter of attention for both firms and investors (Belal & Roberts, 2010; Rahman & Karim, 2020). CSR covers a broad range of undertakings to enhance the well-being of society and to conserve environment, such as support in health, education, environmental protection, disaster management, social welfare, and other activities. CSR practices are not only essential for the betterment of society, but are also considered a strategic imperative that could affect the attitude of investors and stock market performance for listed companies in Bangladesh. In addition, support from other regulators such as the BSEC and Bangladesh Bank also motivated the businesses to disclose and improve their CSR activities (Hossain et al., 2015; Rahman & Sarker, 2024). Positive CSR news may improve reputation and investor sentiment, which directly influences the stock prices. In contrast, the negative CSR news, such as environmental damage, unfair labor practices, and so on, destroy a firm's reputation and lead to lower stock prices.

CSR is an integral part of the company's long-term business and sustainable growth (Javeed & Lefen, 2019). It certainly provides numerous benefits to the company, like brand recognition, positive business reputation, improved sales and customer loyalty, cost savings, reinforcing the relationship with stakeholders, generating a better working environment, etc. (Albuquerque et al., 2018). Therefore, companies are becoming more aware of their responsibility to promote sustainable development. As a result, companies in different sectors are now concerned about conducting corporate activities to pursue business and social goals simultaneously.

CSR-related news means circulated announcements regarding CSR (Oikonomou et al., 2018). The Efficient Market Hypothesis suggests that a company's stock price reacts immediately when such news is released, assuming the market is working efficiently. Therefore, a relationship exists between a firm's share price and CSR-relevant news announcement. Numerous studies in both first world and emerging countries have examined the relationship between corporate social responsibility (CSR) and firm performance (Harjoto & Jo, 2015; Murashima, 2020). Researchers have also analyzed the relationship between firms' performance and CSR-related disclosures in various countries.

There is a dearth of research on how the stock market responds to a company's socially responsible actions or non-actions, even though many companies are actively implementing and improving CSR practices. In recent years, several studies conducted in the United States and Europe have analyzed how CSR-relevant news stimulates firm value (Ender & Brinckmann, 2019; Havlinova and Kukack, 2023; Yang, 2022). In Bangladesh, no study has been conducted on the impact of CSR-related news on the value relevance of listed companies of DSE.

This study aims to examine the effect of CSR-related news relating to four major areas (healthcare, education, environment, and disaster management) on the share prices of companies in Bangladesh. Nowadays, investors are becoming more concerned with social, environmental, ethical, and corporate governance decisions and performance (Bangladesh Bank, 2014). However, it remains an empirical question whether this growing concern actually translates into measurable stock price movements within the unique institutional setting of the Dhaka Stock Exchange.

This study makes a significant contribution to the finance literature by investigating whether CSR news acts as a signal of firm quality in the unique context of an emerging market like Bangladesh which is characterized by high information asymmetry. The results of this paper will guide the company's management to integrate CSR-related announcements as a major component to influence the value of stock in the short run. The study also influences the investment decisions of individual investors, institutional investors, and portfolio managers following the CSR-related announcement. Finally, it contributes evidence on whether CSR acts as a signal of firm quality in an emerging market with high information asymmetry. Dhaka stock exchanges may include this news as additional price-sensitive information in their data archives by considering the significance of such announcements.

The rest of this paper is organized as follows. Section 2 describes the literature, including theoretical perspectives and empirical evidence from both foreign and Bangladeshi contexts. The research framework and hypotheses are presented in Section 3. Section 4 provides a description of the research methodology, including research design, sample and data, sample selection technique, variables, sample timeframe, and model specification. Section 5 discusses the results of the study and the last section concludes the paper with some policy implications and limitations.

2. LITERATURE REVIEW

The effect of CSR disclosures or reporting on financial health of companies has been a central focus in contemporary CSR research, alongside the assessment of the quality of CSR activities. These areas have been extensively studied by academicians across various sectors, time periods, and conceptual frameworks in both developed and emerging countries. However, there is a scarcity of studies focusing on the relationship between CSR news and market prices of stocks.

2.1 Theory Perspectives

The three key academic rationales for CSR are the Signaling theory, the Stakeholder theory, and the Resource-Based view. Signaling theory (Spence, 1973) argues that firms signal to the market their quality and their intentions through their actions and disclosures, especially under conditions of information asymmetry. Firms adopt CSR actions to convey to society that they are ethical, socially responsible, and environmentally friendly. Positive CSR news may show that a company's future performance, sustainability, and long-term value creation may be high, and its investors believe that the company is working towards it, and so invests more and increase their stock prices. On the other hand, negative CSR news may indicate potential management or ethics problems, resulting in loss of confidence of investors and decreases in stock prices.

According to Stakeholder theory (Freeman, 1984), companies that are interested in giving attention to their stakeholders, including the community, are expected to experience better long-term performance. This theory argues that companies have obligations beyond simply maximizing profits and should look at the effects their actions have on customers, personnel, shareholders and so on. Such initiatives could promote positive stakeholder relationships, increasing corporate reputation and elevating stock prices. Negative CSR publicity can damage stakeholder relationships, cause work stoppage and lower stock prices. Resource-Based view (Barney, 1991) suggest that corporate social responsibility activities may form unique resources and set a company apart from its rivals. Once introduced, such CSR initiatives can help improve a firm's reputation, customer loyalty and efficiency, and can add to the longer-term competitive positioning and value and share price.

2.2 Empirical Evidence of Foreign Context

Researchers of different countries have conducted numerous investigations to observe how CSR activities affect firm financial performance, firm value, and firm risk. Fauzi (2009) confirms that there is a positive and significant association between CSR and firm value, suggesting that companies with strong CSR programs tend to possess higher market-value valuations. The study indicates that CSR programs help improve corporate reputation and build investors' confidence, which may lead to better financial results.

Becchetti et al. (2012) examine the influence of inclusion and exclusion on firm prices using the Domini 400 Social Index. The sample includes 327 events of entries/exits of Domini 400 for 278 firms and tests the premise that investors track socially responsible firms. The study finds that withdrawing announcements from the Domini Index has a significant negative impact on abnormal return. Lee and Roh (2012) investigate the linkage between CSR and financial health, focusing on South Korea. This research undertakes an analysis of the Korean firms to explore the association between CSR and its effect on firm performance and market value. The authors find a constructive linkage between CSR involvement and company's financial health, which implies that enterprises that commit themselves to implementing socially responsible practices will also have better financial performance.

Malik and Nadeem (2012) analyze the linkage between CSR reporting and the financial performance of firms listed on the Pakistani equity market. The research confirms that CSR positively affects corporate image and investor confidence, resulting in higher financial performance and stock market returns. Harjoto and Jo (2015) investigate a large sample of U.S. companies and examine whether CSR matters for firm performance in the period of the financial crisis. The study concludes that CSR has a positive effect on firm value and that this effect is strengthened during financial unrest.

Capelle-Blancard and Petit (2017) find that firms generally have a 0.1% fall in the market price ahead of three days before the negative news, but no significant change in the market price has been evidenced after the positive news. Ender and Brinckmann (2019) answer to the question whether CSR-relevant news affects the short-term shareholder value of a company. The evidence confirms that CSR-based financial portal news causes a statistically as well as economically significant market reaction as measured by abnormal return and five days' average cumulated abnormal return. Murashima (2020), studying the Japanese context, argues that the inconsistent results between CSR and financial performance can be explained by investor type: individual investors are more sensitive to good CSR-related news, whereas institutional investors are more sensitive to bad news.

Dunbar et al. (2021) study the relationship CSR has on corporate risk in US firms with an examination of the moderation effects of corporate governance. Their results contribute to the knowledge base on the relationship between CSR and firm risk by evidencing that corporate governance quality can strengthen the impact of CSR on risk. Levine et al. (2021) empirically investigate the impact of a corporation's social responsibility on firms' risk in the context of China. The study demonstrates that CSR activities, especially stakeholder and environmental CSR, decrease firm risk by reducing uncertainties of future cash flow and the rate at which future cash flows are discounted.

Lee and Lu (2021) find that the shocks from the COVID-19 outbreak on the Taiwan stock market depend on whether firms are inclined to corporate social responsibility. The authors observe that all the companies experienced significant negative AAR and CAAR after the outbreaks. CSR companies, however, have suffered less and returned to normal conditions faster than non-CSR companies.

Fangzhao et al. (2022) observe the influence of CSR on share market performance, and the moderating function of corporate governance. They conclude that the impact of strategic CSR (which are consistent with core business) on stock market performance is more prominent than of secondary CSR activities. Yang (2022) suggests that being ethical provides only a marginal return to shareholders, and not necessarily immediately. Unethical behavior, however, frequently results in an immediate and substantial drop in stock price.

Amri and Chaibi (2023) study the effect of CSR on stock price volatility in oil and gas industry, show that tax avoidance plays a moderating role. The authors examine 330 observations of 30 companies from 2010 to 2020, and employ the Generalized Least Squares (GLS) estimation strategy. They show that CSR in general reduces stock price volatility, but this negative impact is positively moderated by tax avoidance, indicating that a reduction in volatility is more noticeable for tax avoiders.

Havlinova and Kukack (2023) analyze the influence of CSR on the stock market performance post the global financial crisis for the ESG combined score from Thomson Reuters. The study finds that strategic CSR initiatives of an enterprise have a more positive impact on stock market performance. This paper indicates companies can influence share price favorably through CSR, and to do so, they need to concentrate on the strategic aspect of their actions

2.3 Empirical Evidence of Bangladeshi Context

In recent years, research on related topics has been growing in emerging markets, but the studies in this regard in Bangladesh are rare. Tuhin (2014) examines the influence of CSR on stock performance. The study analyzes whether CSR activities influence the stock prices of listed companies and explores how these practices affect investor perceptions and financial performance. The author further proposes that CSR initiatives positively relate to the stock performance.

Masum et al. (2019) examine whether there is an influence of CSR disclosure on CSR performance in different dimensions of CSR, including employee, environment, community services and social, customer, and product. A three-scale content analysis is adopted to evaluate the CSR disclosure practices of 196 DSE listed companies. The authors find that environment and employee-related CSR disclosure are significantly related to firm performance, and product-related, customer-related and social and community service related, have no significant impact on firm performance.

Hossain (2019) demonstrates that commercial banks based on Islamic Sharia law may benefit financially from being more transparent about their CSR efforts. Rahman et al. (2020), examining the relationship between CSR reporting and value relevance of conventional and Shariah-based banks listed in DSE during the period 2009 to 2017. The results also state that CSR reporting has a beneficial effect on share price. Consequently, the more CSR information, the higher the market value of the equities.

Sufian (2022) state finds that greater gender diversity on boards significantly improves a firm's stock performance, supporting the view that female directors help protect stakeholder interests. Conversely, the presence of independent directors has a significant negative effect on stock performance. Zang et al. (2022) finds that greater corporate social responsibility disclosure (CSRD) leads to significantly higher productivity for banks in Bangladesh. However, this positive relationship is moderated by factors such as higher debt levels, which reduce productivity, and varies based on bank characteristics. Specifically, the positive impact of CSRD on productivity is stronger in banks that follow GRI guidelines, those without political connections, and conventional banks compared to their Islamic counterparts.

The review of literature confirms that a rising trend of corporate involvement in CSR activities across both developed and developing countries. However, with a few notable exceptions, there is limited empirical research on this issue, particularly in terms of CSR-related news. Several studies have been conducted demonstrating the linkage between a company's financial health and CSR reporting or disclosure in Bangladesh (Hossain, 2019; Masum et al., 2019; Rahman et al., 2020) and also in other countries. To the best of the knowledge of the researcher, no study has been conducted on this topic in Bangladesh yet. This paper contributes to the literature to close this research gap by tracking the investors' reaction following the CSR related news release of companies listed on the Dhaka Stock Exchange in Bangladesh.

3. RESEARCH FRAMEWORK AND HYPOTHESES DEVELOPMENT

Signaling theory, stakeholder theory, and resource-based view provide a foundation for understanding the market response to CSR-related news. The history of CSR disclosure practices began in Bangladesh in 1990, and academic research on CSR has grown dramatically over the years (Mobin et al., 2017). Corporate social responsibility relevant news offers an opportunity to assess the response of capital market considering multi-dimensions of CSR activities such as environment, human rights, and community involvement (Chollet & Cellier, 2011). Based on an examination of the core elements in recent CSR definitions, most of the researchers used three important elements of CSR: environmental, social, and economic dimensions (Fangzhao et., 2022; Havlinova and Kukack, 2021). Most of the CSR practices for organizations including local and multinational corporations operating in Bangladesh mainly focus on CSR issues including poverty alleviation, environment, health, education, culture, youth development, women empowerment, disaster management, fighting corruption, sports and music etc. (Roy et al., 2017). News related to four major dimensions of CSR practices, which are environment, healthcare, education and disaster management has studied separately based on signaling theory, stakeholder theory and resource Based view as well as empirical evidence of the listed companies of DSE in Bangladesh. Different companies in Bangladesh are involved in different categories of CSR activities like, healthcare, education, art and culture, sports, disaster management, women empowerment, environment and so on. Among all the categories of CSR expenditures, most of the companies maintain a major share in healthcare, education, environment and disaster management (Bangladesh Bank, 2014). Therefore, news on each of these four dimensions, namely, healthcare, education, environment and disaster management has been considered as the independent variables to influence the stock price. The figure 1 shows the theoretical framework of the study.
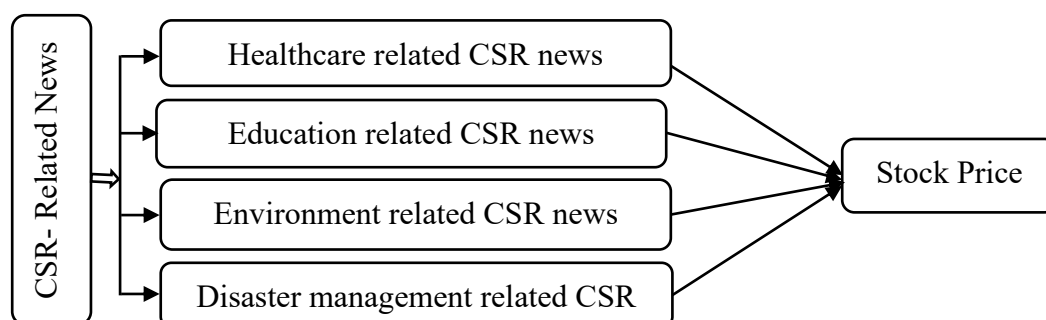

Figure 1: Research Framework

3.1 Healthcare related CSR news

Corporate Social Responsibility (CSR) in healthcare can enhance their reputation and trustworthiness among stakeholders, potentially leading to improved financial performance (Freeman, 1984). The relationship between healthcare-related CSR and share prices is diverse and triggered by the nature of the CSR activities, stockholder perceptions, and broader market conditions. Spence (1973) state that CSR initiatives related to patient care, ethical practices, and community health can signal a firm's devotion to social welfare, which may positively influence stock prices. Similarly, Servaes and Tamayo (2013) conclude that companies involved with CSR related activities, particularly in the healthcare sector, experienced higher stock returns. CSR initiatives in the healthcare sector generally serve as positive consequences as they tend to improve the overall corporate reputation and trust, and as a result, positively affect stock prices over the long term (Grewal & Riedl, 2018; Jones & Brown, 2021; Williams, 2021). However, the influence is not uniform and can vary based on the context and execution of CSR-healthcare initiatives. Kruger (2015) suggests that in some cases, CSR activities could lead to negative change in stock price, particularly if investors perceived the activities as costly or as a sign of potential agency problems. If CSR initiatives are seen as diverting resources from core operations, they might negatively impact stock prices. This study, therefore, posits the following hypothesis:

H₁: Healthcare related CSR news is associated with the stock price of the listed company in DSE.

3.2 Education related CSR news

The contribution of CSR in education includes activities or projects that look forward to efforts to enhance opportunities for education, improve the quality of education, and facilitate the development of individuals, whether through formal or informal educational institutions. Barney (1991) argues that CSR can help firms develop valuable resources, such as corporate reputation and human capital. Through education, industry can build a more prepared workforce and encourage innovation, which can potentially provide a competitive edge and greater stock prices. Corporate social responsibility actions taken in the area of education are considered investments into human capital for future workforces and potentially long-term growth and stability, with corresponding impact on share price (Hernandez, 2022). Kim et al. (2015) studied CSR and its impact on share prices. They discovered a positive influence on investors perception and stock-return through an education-oriented CSR implementation. They argue that such initiatives align with the long-term benefits for the firm and its shareholders. Positive CSR news related to educational initiatives tends to improve market perception and investor sentiment, potentially leading to higher stock price (Garcia & Martinez, 2021). Similarly, Wang and Qian (2011) find that the impact of education-related CSR on stock prices is contingent on factors such as the firm's visibility and the perceived sincerity of the CSR efforts. High-visibility firms with a history of genuine CSR engagement observe more significant positive impacts on stock prices. Contrary, Kruger (2015) suggest that CSR activities related to education, can lead to negative stock price response if investors perceived them as costly or distracting from core business activities. Therefore, the study formulates the following research hypothesis:

H₂: Education related CSR news is associated with the stock price of the listed company in DSE.

3.3 Environment related CSR news

Environment-related CSR can enhance a company's reputation, lead to cost savings, and attract socially conscious investors. However, the effectiveness of these initiatives in influencing stock prices depends on how they are perceived by investors and other stakeholders. Spence (1973) states that environment-related CSR activities signal to investors and other stakeholders that a company is forward-thinking and committed to long-term sustainability. This positive signal can improve investor perception, potentially inducing higher stock prices. Similarly, Clark et al. (2015) observe that companies participating in robust environmental CSR practices experienced higher stock returns. Strong environmental CSR records increase the value of the brand and the loyalty of customers; as a result, they lead to higher financial stability and share prices eventually (Parker, 2023). Conversely, Kruger (2015) argues that environmental CSR actions may, in some cases, prompt negative stock price reactions, provided investors believed them to be expensive and/or as a side issue to the principal business. However, Flammer (2013) also shows that environmental CSR announcements have a positive effect on stock prices, which is weaker for firms with bad environmental records, and the following relationship is thus devised.

H₃: Environment-related CSR news is associated with the stock price of the listed company in DSE.

3.4 Disaster management related CSR news

Corporate Social Responsibility (CSR) in disaster management involves initiatives aimed at supporting disaster preparedness, response, and recovery efforts. These activities can include donations, employee volunteerism, logistical support, and more. Stakeholder theory (Freeman, 1984) posits that companies have responsibilities to a wider set of stakeholders, such communities influenced by disasters. By disaster management CSR, firms may improve their reputation, develop stronger community bonds, and satisfy ethical liabilities that may influence firm financial performance. Muller and Kraussl (2011) examine the impact of corporate disaster relief on stock prices and find that firms that quickly respond to disasters with substantial support have seen a positive effect on their stock prices. Positive CSR news related to disaster relief often leads to immediate stock price increases. Investors typically respond favorably to companies demonstrating social responsibility in times of crisis (Johnson, 2021). Long-term involvement in disaster preparedness and resilience can enhance a company's risk profile, leading to sustained stock price appreciation (Williams, 2023). Kruger (2015) suggests that in cases

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where disaster management CSR activities are seen as opportunistic or insincere, the market response could be negative. The study also indicates that authenticity and genuine commitment are crucial for positive investor perceptions. This study, therefore, hypothesizes that:

H₄: Disaster Management related CSR news is associated with the stock price of the listed company in DSE.

4. RESEARCH METHODOLOGY

4.1 Research Design

This study is considered to be a causal research. It analyzes how CSR-related news influences the corresponding firms' stock price that are listed in the stock exchanges of Bangladesh. The relationship has been tested using a quantitative approach in this study.

4.2 Sample Design

This study analyzes all news related to corporate social responsibility initiatives performed by listed companies in Bangladesh. The sampling elements are 25 companies from 7 different industries, listed on the DSE. The sampling units are the news related to CSR activities in four major dimensions (healthcare, education, environment, and disaster management) performed by the companies selected as sampling elements. Therefore, the data for this study encompass 101 CSR-related news items from 2017 to 2023. A judgmental sampling technique has been used to collect the data, as the selection of samples has depended on the availability of news. The table 1 depicts the number of CSR-related news items taken as sampling units in the four dimensions from 2017 to 2023.

Table 1: Number of CSR-related news of four dimensions

Dimensions	Number of CSR news							
	2017	2018	2019	2020	2021	2022	2023	Total
Healthcare	6	1	2	6	6	1	5	27
Education	2	1	3	3	2	7	8	26
Environment	1	2	1	2	5	4	3	18
Disaster management	4	2	1	10	6	2	5	30
Total	12	7	7	21	19	14	21	101

4.3 Sources and reporting the data

This study investigates data from companies listed on the Dhaka Stock Exchange (DSE) over a seven-year period, from 2017 to 2023. All data have been collected from secondary sources. Information on CSR news has been gathered from CSR Window, Google News, and the CSR archives of selected companies. Daily closing stock prices have been obtained from the Dhaka Stock Exchange DataStream. When announcements of dividends or stock splits occur on the same date as CSR-related news, that specific CSR news has been excluded from the analysis. Statistical analysis is performed by using MS Excel and Stata 14. The outcomes of this process are intended to fulfill the research objectives.

4.4 Variables to be used in the study

CSR-related news in four dimensions, namely healthcare, education, environment, and disaster management, serves as the independent variable in this study. Abnormal return, measured by movements in share prices, serves as the dependent variable.

4.5 Model Specification

Bowman's model of event studies has been used to guide the process of implementation and assessment. The relationship between financial events and the pricing of securities is examined in event studies. Calculating unexpected returns for various events, such as the release of CSR-related news, is a component of this approach. Most of the empirical researches on the effect of CSR-related announcements on stock prices have used the event study approach to determine if the news is related to abnormal or excess returns.

In this study, five steps have been executed, which are demonstrated in the following table (Bowman, 1983). In step one, the event has been selected, and the hypotheses has been established in step two. In step three, the abnormal return has been calculated, and they have been cumulated in step four. In step five, an analysis of the data has been made. The event study process has been summarized in table 2.

Table 2: Event study process

Methodological framework for the systematic conduct of an event study	
1.	Selection of event
2.	Establishment of hypotheses
3.	Calculating the average abnormal returns
4.	Calculating cumulated average abnormal returns

5.	Analysis of the results

Day t_0 is defined as the announcement date of a particular news item. The event window spans from 2 days before the event (denoted as t-2) to 2 days after the event (denoted as t+2). McWilliams and Siegel (2000) suggest that short window lengths for event studies help reduce the confounding effects of other factors. The event window and the estimation period of the study are illustrated in the figure below.
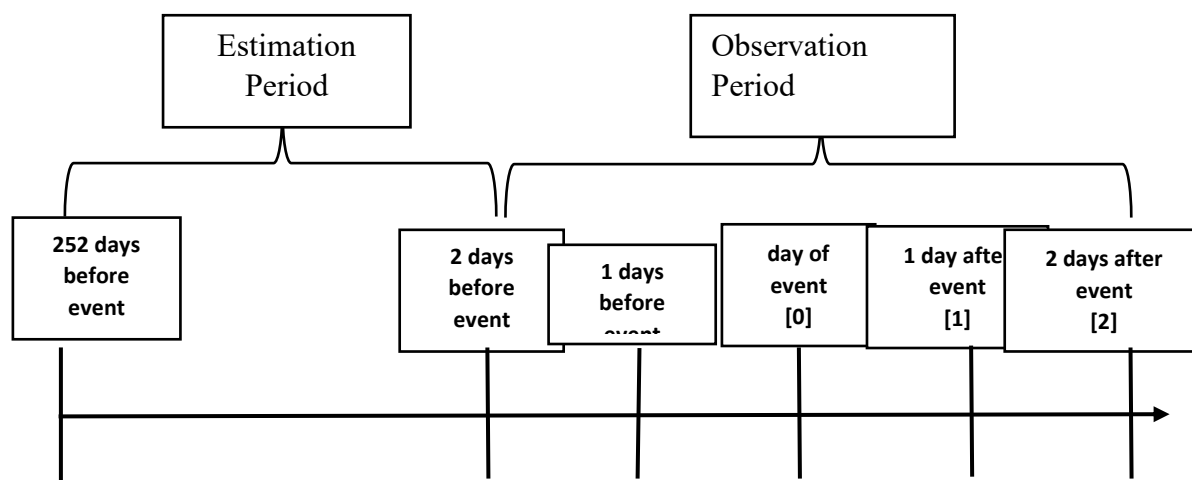

Figure 2. Time window of the study.

The following four figures are measured within the [-2, +2] day event window surrounding the announcement of CSR news (Kliger & Gurevich, 2014).
- o   AR: Abnormal Return
- o   AAR: Average Abnormal Return
- o   CAR: Cumulated Abnormal Return
- o   CAAR: Cumulated Average Abnormal Return

In order to calculate the abnormal return, the normal return needs to be subtracted from the actual returns of the stocks. The normal return represents the expected return without the event. Discrete and logarithmic methods may be used to determine the actual returns of the stock. Since logarithmic returns tend to follow a normal distribution, they are easier to analyze. The logarithmic returns on the stock price are calculated as follows:
$R_{it}= Ln (P_{it}/P_{it-1})$

Where R_{it} is the daily return of the individual firm (i) on day (t); Ln is the natural logarithm; P_{it} denotes the stock price of firm (i) on day (t); and P_{it-1} is the stock price of firm (i) on the previous day.
Thus, the AR of stock (*i*) at time (*t*) is computed by subtracting the expected return (*K*) from the realized return (*R*) (Kliger & Gurevich, 2014). The following equation shows this calculation:

$AR_{it}=R_{it} – K_{it}$

The market model is used to determine the expected, or normal return (K) by comparing a stock's return with a reference market return. The index return is calculated using the index value, and this index return serves as the market return. For this purpose, the price index of the Dhaka Stock Exchange is used. According to Kliger and Gurevich (2014), the expected return(K_{it}) of a stock (i) is the intercept (α_i) of the regression line plus the product of the slope of the regression line (β_i) and the observed market return (R_{mt}) at time (t).
$$AR_{it}=R_{it} – (\alpha_{i +} \beta_i \ X \ R_{mt}) \tag{1}$$

The expected return is derived from the actual returns of the 252 trading days before the event window. Therefore, the computation incorporates the previous year's observed returns (Morris, 2014). The statistical significance of the abnormal returns has been determined using a t-test**.** The t-value is calculated by dividing the abnormal return by the standard deviation (σ) of the regression data. Using the t-table, the significance of the result is then determined. As this is a two-tailed test, it is not necessary to divide the alpha value by two.
$$\text{t-value}_{AR} = \frac{ARit}{\sigma}$$
In addition, the average abnormal return is computed. To do this, the abnormal returns for all firms are added on a single day (t) and then divided by the sample size (N).

$$AAR = \frac{1}{N} \sum_{t=1}^{N} AR_{it} \qquad (2)$$

The t-value for the average abnormal return (AAR) is calculated by multiplying the result of (AAR / σ_AAR) by the square root of the number of events (Kothari and Warner, 2008).

$$\text{t-value }_{AAR} = \sqrt{N} \ X \frac{AAR}{\sigma_{AAR}}$$

Subsequently, the cumulative abnormal return (CAR) is determined, which is the sum of the five individual abnormal returns (AR) over the event window (Godfrey et al., 2009).

$$CAR\ (t_{-2}, t_2)\ =\ \sum_{t=t_{-2}}^{t_2} AR_{it} \qquad (3)$$

As indicated previously, the event window ranges from two days before the event (t-2) to two days after the event (t+2). A t-test is used to examine the significance of the CAR. This is calculated by dividing the CAR value by the product of the square root of the cumulative abnormal return variance and the length of the event window (L) (Kothari & Warner, 2007).

$$\text{t-value }_{CAR} = \sqrt{N}\ X \frac{CAR\ (t_{-2}, t_2)}{\sqrt{L \times \sigma_{CAR^2}}}$$

The final metric is the CAAR. This value is determined by dividing the sum of all CAR within a category by the number of events in that category (Kliger & Gurevich, 2014).

$$CAAR = \frac{1}{N}\ \sum_{t=1}^{N} CAR\ (t_{-2}, t_2) \qquad (4)$$

The final t-value is obtained by first dividing the CAAR by its standard deviation (σ CAAR) and then multiplying the result by the square root of the sample size (N) (Kothari & Warner, 2007).

$$\text{t-value }_{CAAR} = \sqrt{N}\ \times \frac{CAAR}{\sqrt{\sigma_{CAAR}}}$$

5.0 RESULTS AND DISCUSSION

News sentiment exerted a powerful yet heterogeneous effect on investor behavior across the healthcare, education, environment, and disaster management sectors, as measured by Average Abnormal Returns (AAR) and Cumulative Average Abnormal Returns (CAAR) over a 21-day event period. Table 3 demonstrates the AAR and CAAR for the healthcare sector, revealing a significant market reaction to relevant news events.

Table 3: AAR and CAAR for the 21-Day Event Period of Healthcare-Related CSR News

Days	AAR	CAAR	t-test of AAR	t-test of CAAR
-10	-0.0022	-0.2146	-0.0030	-0.2955
-9	0.0072	0.6947	0.0049	0.4801
-8	0.0141	**1.3719****	0.0213	**2.0667**
-7	-0.0032	-0.3146	0.0109	1.0573
-6	-0.0031	-0.3058	-0.0064	-0.6204
-5	0.0008	0.0745	-0.0024	-0.2313
-4	0.0043	0.4192	0.0051	0.4937
-3	-0.0049	-0.4756	-0.0006	-0.0564
-2	0.0036	0.3456	-0.0013	-0.1300
-1	-0.0544	**-5.2810*****	-0.0508	**-4.9354**
0	0.0699	6.7873	0.0155	1.5062
1	-0.0464	**-4.5103****	0.0234	**2.2770**
2	0.0522	5.0763	0.0058	0.5660
3	0.0064	**0.6232*****	0.0587	**5.6995**
4	0.0049	0.4848	0.0114	1.1080
5	0.0007	0.0647	0.0057	0.5496
6	0.0016	0.1549	0.0023	0.2196
7	-0.0045	-0.4343	-0.0029	-0.2794
8	-0.0032	-0.3079	-0.0076	-0.7422
9	0.0085	0.8215	0.0053	0.5137
10	-0.0011	-0.1062	0.0074	0.7154
Note: t-value associated with test are ***, **, * at 1%,5% and 10 % respectively.				

Average Abnormal Returns (AAR) shows considerable stock price movement in the days immediately surrounding the event day (day 0). Notably, there is a sharp negative AAR of -5.44% on day -1, followed by a strong positive spike of 6.99% on the event day itself and another negative move of -4.64% on day +1. However, the t-test results indicate that none of the individual daily AAR values are statistically significant. This means the observed daily fluctuations could be due to random market noise rather than a definitive reaction to the event.

On the other hand, the CAAR provide a more powerful measure of the total impact of the event by aggregating the daily abnormal returns. The CAAR reveals statistically significant market reactions on specific days, such as day -1 and day +1. This suggests a strong negative cumulative effect around the event. Significant reactions are also observed on day -8 and day +3, indicating early anticipation and delayed adjustments,

respectively. Although the peak CAAR occurs on day 0 (6.7873), the t-test for this day is not significant, suggesting the spike may not be statistically reliable.

Table 4: AAR and CAAR for the 21-Day Event Period of Education-Related CSR News

Days	AAR	CAAR	t-test of AAR	t-test of CAAR
-10	-0.0072	-0.0168	-0.6977	-1.6298
-9	**-0.0515*****	**-0.0586*****	**-5.0014**	**-5.6991**
-8	**0.0386*****	-0.0129	**3.7473**	-1.2541
-7	-0.0128	**0.0257****	-1.2453	**2.5020**
-6	0.0026	-0.0102	0.2542	-0.9911
-5	-0.0001	0.0025	-0.0101	0.2441
-4	-0.0006	-0.0007	-0.0627	-0.0728
-3	0.0042	0.0036	0.4103	0.3476
-2	-0.0007	0.0036	-0.0641	0.3461
-1	0.0012	0.0006	0.1201	0.0559
0	0.0083	0.0096	0.8096	0.9296
1	0.0159	**0.0242****	1.5426	**2.3522**
2	0.0035	**0.0194***	0.3426	**1.8852**
3	-0.0043	-0.0008	-0.4168	-0.0741
4	0.0152	0.0109	1.4739	1.0571
5	0.0044	**0.0196***	0.4268	**1.9007**
6	-0.0099	-0.0055	-0.9618	-0.5349
7	0.0049	-0.0049	0.4816	-0.4801
8	0.0078	0.0128	0.7595	1.2411
9	-0.0006	0.0071	-0.0631	0.6963
10	-0.0072	-0.0005	0.0011	-0.0619
Note: t-value associated with test are ***, **, * at 1%,5% and 10 % respectively.				

Table 4 presents the AAR and CAAR for a 21-day event window, which reveals a market reaction to education-related CSR news announcement. A notable and sharp negative reaction is observed on day -9, with an AAR of -5.15% which is highly significant. This was immediately followed by a significant positive correction on day -8, with an AAR of 3.86%. This high volatility in the pre-event period suggests intense and mixed investor anticipation or potential information leakage.

On the other hand, the cumulative effect, measured by the cumulative average abnormal return, provides a clearer view of the overall stock return. The significant negative CAAR on day -9 confirms the strong adverse cumulative effect of the early news. However, this negative impact was gradually offset in the post-event period. The CAAR becomes significantly positive on day +1, day +2, and again on day +5, indicating a sustained positive adjustment following the event.

Table 5: AAR and CAAR for the 21-Day Event Period of Environment-Related CSR News

Days	AAR	CAAR	t-test of AAR	t-test of CAAR
-10	0.0134	**-0.0190***	1.3001	**-1.8486**
-9	0.0084	**0.0218****	0.8161	**2.1162**
-8	0.0029	0.0114	0.2899	1.1060
-7	0.0163	**0.0193***	1.5831	**1.8730**
-6	-0.0035	0.0 127	-0.3448	1.2382
-5	-0.0091	-0.0127	-0.8922	-1.2371
-4	**0.0215****	0.0123	**2.0864**	1.1942
-3	0.0092	**0.0307*****	0.8944	**2.9808**
-2	0.0013	0.0105	0.1284	1.0228
-1	**-0.0334*****	**-0.0322*****	**-3.2540**	**-3.1256**
0	-0.0125	**-0.0340*****	-0.0511	**-3.3051**
1	-0.0087	-0.0091	-0.8398	-0.8909
2	-0.0005	-0.0091	-0.0517	-0.8916
3	**0.0346*****	**0.0341*****	**3.3642**	**3.3125**
4	**-0.0338*****	0.0009	**-3.2791**	0.0851
5	0.0012	**-0.0326*****	0.1128	**-3.1664**
6	0.0117	0.0128	1.1321	1.2449
7	0.0118	**0.0235****	1.1486	**2.2807**
8	0.0003	0.0122	0.0330	1.1817

9	0.0019	0.0023	0.1872	0.2202
10	0.0134	**-0.0190***	1.3001	**-1.8486**
Note: t-value associated with test are ***, **, * at 1%,5% and 10 % respectively.				

Table 5 shows the AAR and CAAR for a 21-day event window, which reveals a market reaction to environment-related CSR news announcement. The pattern of both AAR and CAAR indicates a period of large stock price movement and a strong adverse investor response. Notable negative reactions occurred on day -1 and day 4, while significant positive spikes has been observed on day -4 and day 3. This indicates intense, day-specific volatility that is unlikely to be random, suggesting the market is actively processing information related to the event.

The cumulative returns show a powerful and significant trend. Highly significant CAAR values are evident both before and after the event. The significant pre-event CAAR is observed on day -10, day -9, day -7, day -3, and day -1. This strong pre-event significance, especially the negative CAAR on day -1, strongly suggests information leakage and anticipatory market movement well before the official event. The significant post-event CAAR continues on day 0, day 3, day 5, and day 7. This indicates the market continued to digest the implications of the event for several days, leading to a sustained and non-random cumulative adjustment in company valuations.

Table 6: AAR and CAAR for the 21-Day Event Period of Disaster Management-Related CSR News

Days	AAR	CAAR	t-test of AAR	t-test of CAAR
-10	0.0061	0.0069	0.5887	0.6730
-9	-0.0095	-0.0034	-0.9224	-0.3338
-8	-0.0056	-0.0151	-0.5410	-1.4633
-7	-0.0045	-0.0100	-0.4333	-0.9742
-6	-0.0062	-0.0106	-0.6041	-1.0374
-5	**0.0284***	**0.0222****	**2.7612**	**2.1572**
-4	0.0085	**0.0369***	0.8246	**3.5858**
-3	-0.0015	0.0070	-0.1423	0.6823
-2	0.0071	0.0056	0.6886	0.5463
-1	0.0026	0.0097	0.2519	0.9405
0	**0.0222****	**0.0248****	**2.1559**	**2.4079**
1	-0.0139	0.0082	-1.3519	0.8039
2	-0.0041	**-0.0180***	-0.3985	**-1.7505**
3	0.0024	-0.0017	0.2286	-0.1699
4	0.0054	0.0077	0.5218	0.7503
5	0.0064	0.0117	0.6194	1.1412
6	0.0052	0.0115	0.5005	1.1199
7	0.0051	0.0102	0.4922	0.9926
8	0.0024	0.0075	0.2320	0.7242
9	0.0044	0.0068	0.4261	0.6581
10	-0.0013	0.0030	-0.1308	0.2953
Note: t-value associated with test are ***, **, * at 1%,5% and 10 % respectively.				

Table 6 presents the AAR and CAAR for a 21-day event window, which reveals a market reaction to disaster management-related Corporate Social Responsibility (CSR) news announcements. The daily AAR values show modest fluctuations, the t-test results confirm that the strong positive returns observed on day -5 and on the event day itself, day 0, are statistically significant. This indicates strong positive investor sentiment both in anticipation of the news and on the day of the announcement.

In contrast, the CAAR, which aggregates the daily returns to show the total effect, shows a significant positive trend. The t-test results indicate that the cumulative returns are statistically significant on several key days, including day -5, day -4, and day 0. This pattern confirms a sustained and non-random market adjustment beginning several days before the event and continuing afterward. Interestingly, a significant negative CAAR is observed on day +2, suggesting a minor correction or profit-taking shortly after the event.

Results of event window [t−2, t+2]

The market's reaction is measured using CAAR, which aggregates the abnormal returns over a specific event window. An abnormal return is the difference between a stock's actual return and its expected return, making it a direct proxy for measuring the news's influence on share price. The chosen event window is t−2, t+2, capturing market activity from 2 days before the official news announcement (t=0) to 2 days after. This five-day window is designed to account for potential information leakage before the announcement and the market's subsequent delay in incorporating this information. The statistical significance of these returns is determined by a t-test. A significant result (indicated by *** and high absolute T-values) means the observed CAAR is very unlikely to

be due to random chance, confirming a genuine market reaction. The results for each CSR category are interpreted in table 7:

Table: 7 Sum of all cumulated abnormal returns of the four dimensions of the event windows **[t-2, t+2]**

Dimensions	CAAR	t-value
Healthcare related-CSR News	-0.0074	-0.7163
Education related-CSR News	**0.0573 *** **	**5.5692**
Environment related-CSR News	**-0.0740 *** **	**-7.1903**
Disaster management related-CSR News	**0.0303*** **	**2.9482**
Note: t-value associated with test are ***, **, * at 1%,5% and 10 % respectively.		

The CAAR for healthcare-related news is slightly negative (-0.74%) and, crucially, statistically insignificant. The t-value is below common thresholds for significance. The market does not exhibit a clear positive or negative reaction to healthcare-related CSR news. The result is contradicting with the finding of (Grewal & Riedl, 2018; Jones & Brown, 2021). They argue that CSR initiatives in healthcare sector serve as positive influence on stock price. Investors may view these activities as neutral, neither generating significant goodwill nor representing a major financial burden. It could also suggest that this type of news is already expected by the market and is therefore quickly absorbed without impacting prices.

The CAAR for education-related news is positive (5.73%) and highly significant, representing the strongest positive reaction among all four categories. Education-focused CSR is received very positively by investors. A similar result is found by (Garcia & Martinez, 2021). This is likely because investing in education is viewed as contributing to the nation's long-term human capital development, which aligns with broader national goals. The market likely perceives this as a highly reputable and impactful form of CSR that builds substantial stakeholder trust and goodwill, directly translating into increased firm value.

The CAAR for environment-related news is negative (-7.40%) and highly statistically significant which is similar with the finding of Kruger (2015). This indicates that announcements in this category are associated with a strong, negative market reaction. The market perceives environment-related CSR news as value-destroying or a signal of risk. This could be because such news is interpreted as the company incurring significant costs without immediate financial benefit, or it may be linked to negative events (e.g., a company responding to an environmental fine or accident). For investors in the DSE, this suggests that environment-focused CSR disclosures may lead to a short-term decline in shareholder wealth. So, this study confirms that environment-related CSR announcements generated a strong, negative, and definitive cumulative loss for shareholder value in the short term.

The CAAR for disaster management-related news is positive (3.03%) and statistically significant. This result aligns with the findings of Johnsons (2021). The market reacts favorably to these initiatives. CSR efforts in disaster management are likely seen as strong signals of good corporate citizenship and community engagement. This enhances the firm's goodwill, which investors may translate into a positive reassessment of the company's value and brand equity in the long run, inducing a rise in stock price.

7. Conclusion, Implications, and Limitations

This study set out to empirically investigate the impact of CSR-related news announcements on the stock prices of companies listed on the Dhaka Stock Exchange (DSE) in Bangladesh. By the employment of a rigorous approach of event study over a seven-year period from 2017 to 2023, the research provides compelling evidence that the market does not respond to CSR as a monolithic concept; instead, investor reaction is highly differentiated and critically dependent on the specific category of CSR activity.

The core findings, measured by CAAR over a five-day event window [t-2, t+2], reveal a clear picture. CSR initiatives in education and disaster management are received exceptionally well by the market, generating significant positive abnormal returns. This indicates that investors perceive these activities as value-creating, likely because they align with long-term national sustainable development goals, play a role in building substantial goodwill and reputation, and contribute to a stable social license to operate. Conversely, environment-related CSR news elicits a strong and significant negative market reaction, which suggests investors interpret such announcements as signals of high cost, potential regulatory burdens, or as a response to negative incidents, thereby eroding shareholder value in the short term. Notably, the market remains indifferent to healthcare-related CSR, with an insignificant negative return, viewing it as neither a strategic advantage nor a major financial detriment.

The theoretical implications of these findings strongly support signaling theory and stakeholder theory. CSR news acts as a powerful signal to the market, but the interpretation of that signal varies. Positive news in certain categories enhances investor confidence and stakeholder relationships, while negative or costly-seeming news can trigger a sell-off. The study also contributes to the existing body of knowledge by filling a significant

research gap in the Bangladeshi context, moving beyond studies on CSR news to focus on the market's immediate reaction to specific news events.

From a practical standpoint, this research offers crucial insights for various stakeholders in different way. First, the results provide a strategic roadmap for corporate management. To enhance shareholder value, companies should prioritize and strategically communicate their CSR engagements in education and disaster management. They must also be cautious and transparent with environment-related initiatives to avoid negative market perceptions. Second, CSR news, particularly in the high-impact categories identified, should be treated as material, price-sensitive information and incorporated into investment analysis and decision-making models by investors and security analysts. Third, this study underscores the need to develop formal guidelines for disclosing CSR activity for Regulators and Stock Exchanges (BSEC & DSE). Classifying certain types of CSR news as mandatory disclosures would improve market efficiency and ensure a level playing field for all investors.

The research has been constrained by the limited public availability of CSR news, relying on sources like company archives, CSR window, and Google News, which may not capture all events. Future research could expand the sample size, incorporate longer-term performance measures, and use qualitative methods to explore the precise reasons behind the starkly different investor reactions to each CSR category. Despite these limitations, this study unequivocally confirms that in the context of Bangladesh's capital market, CSR-related news is a significant determinant of short-term stock price movements.

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