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Corporate Social Responsibility Investment: Analyzing Its Consequences on the Financial Development of Commercial Banks in Bangladesh

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Abstract:
The prevailing belief of today's society is that companies should participate in developing the economy of society and try to involve themselves in all the responsibility to the communities, as they build their entity's profit by means of societal resources. This sense of duty implies that businesses should be actively involved in corporate social responsibility (CSR) initiatives. This study tries to discover the practice of conducting CSR disbursement on different segments of society and also measuring its power on the financial performance of the companies. In light of this intention, data has been collected from 33 DSE-listed commercial banks from the year 2018 to 2021. The research observed that the Bangladesh Bank provides a framework for the banks for CSR disclosure and necessary instructions have been delivered through government circulars. Also, it was found that the government's suggestions or restrictions have a blow on the actual scenario of CSR expenditure of different segments of the economy. The study considered CSR as the main control variable and Risk, CSR, Tangibility, Growth, Firm Size, and Firmage have been used as the control variable to develop the econometric model in evaluating the impact of CSR on Banks' performance. The study observed that CSR spending and the performance of commercial banks have a noteworthy connection. The outcome of the research suggests that the management of the Commercial Banks of Bangladesh should invest more in CSR following the proper guidelines of Bangladesh Bank considering it as a significant indicator of the financial performance of the banks and carry on to play an important role in advancing the nation's economic development.
Keywords:*Corporate Social Responsibility, Return on Asset, Return on Equity*

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I. Introduction

Corporate Social Responsibility (CSR) is in fact one of the corporate strategies intended to put together various societal considerations into a company's business activities and to uphold ongoing engagement with a diverse range of internal and external stakeholders. It involves a commitment to ethical behavior and contributes to the sustainable growth of society by fulfilling the interests and concerns of a large number of groups, counting employees, investors, shareholders, and customers. CSR initiatives contribute to addressing various social issues, including education, healthcare, poverty alleviation, and disaster relief, while simultaneously tackling environmental challenges such as reducing contamination, managing industrial toxic waste disposal, and safeguarding the company's interests (Degan & Gordon, 1996; Hooghiemstra, 2000; Kolk, 2003).

In research, it is revealed that at present people are not only expecting products and services from the organization, rather they think each entity has a social responsibility and they should work and contribute to escalating the development of the society (Golob & Bartlett, 2007). CSR is a self-motivated term (Garriga& Mele, 2004; Gond & Moon 2011), in general, linked with the firm's operations regarding societal development (Herzig & Jeremy, 2013).

In comparison to developing countries, developed countries are very considerate about their social responsibility, equality, business laws, and regulations and are more concerned about theirstakeholders' rights. (Belal & Owen, 2007; Jamali, 2007). Thus, to fulfill the legal requirements and environmental compliance companies take part in CSR activities focusing on sustainability, resource conservation finally generates sustainable business benefits by creating long-term brand reputation for the company.

Moreover, the world is currently witnessing a groundbreaking evolution in CSR literature. In 2008, approximately 80 percent of the largest 250 global corporations were reported to be acknowledging their social and environmental performance, whereas, just three years prior, this figure stood at 50 percent according to a KPMG report (2008). This trend reflects society's increasing interest in reaping advantages and benefits from these organizations, as noted (Belal, 2001).

Recently Bangladesh Bank the Regulatory body has made CSR mandatory for all banks to participate in CSR activities and a detailed framework has been provided to ensure adequate disclosures, specifying the sectors of the economy in which banks should contribute. Banks invest in CSR to build consumer trust, provide positive customer outreach, and increase employee productivity and engagement.

But it is still a debated issue how much CSR activity is required for the banks. According to economic principles, Managers have the authority to make investment decisions that will improve stockholder wealth. Further sociologists believe that businesses should take social responsibility and contribute to the advancement of humanity. This study aims to reveal the patterns of CSR contribution in different sectors of the economy and also wants to examine the connections between CSR activities and banks' performance.

There has undoubtedly been much research done on the relationship between firm performance and CSR. But in the context of developing nations like Bangladesh, this study is not that old. Still, this is an important issue.

Analyzing the various categories of CSR initiatives within the economic landscape enables banks to assess the effectiveness of regulatory recommendations, particularly in the context of the banking sector in Bangladesh. This research aims to uncover the reasons why banks should give greater consideration to CSR issues. It also explores how the influence of CSR can incentivize banks to enhance their proficiency in managing CSR activities. Additionally, it investigates whether the banking industry in Bangladesh adheres to the guidelines established by Bangladesh Bank. Ultimately, this study seeks to determine whether investing in CSR initiatives contributes to the improvement of bank performance, providing valuable insights for stakeholders as they make decisions regarding their investments in CSR.

II. Regulations by Bangladesh Bank

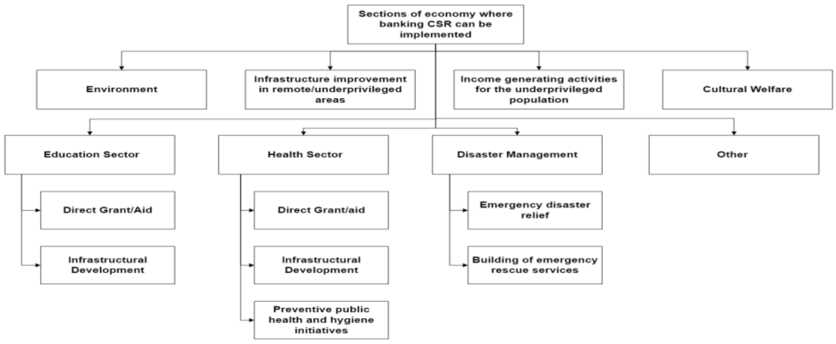
Since early 2000 there has been a significant emphasis on financial disclosure of the firm's financial activities. Just like other central banks from all around the world, Bangladesh Bank has set forth specific requirements for banks operating within Bangladesh, compelling them to participate in certain financial activities to ensure the effective allocation of societal resources. Among these requirements reporting of CSR activities is obligatory, which applies to all scheduled banks and financial institutions in Bangladesh.

Bangladesh Bank has a separate department that makes sure CSR and other sustainable activities are maintained by the Banks and institutions. At first, the Green Banking and CSR Department (GBCSRD) had to ensure the banks were providing adequate disclosure and conducting CSR expenditures according to the rules and regulations set by the regulator. In 2016 the responsibility of ensuring sustainability was transferred to the Sustainable Finance Department (SFD). Currently, SFD ensures that all listed banks of Bangladesh are participating in CSR activities properly and ensuring financial sustainability.

Bangladesh Bank ordered the disclosure of CSR activities in the GBCSRD circular no. 07, dated December 22, 2014. In its circular, the Central bank advised all the scheduled banks and financial institutions to submit a report half-yearly containing a detailed disclosure of CSR activities in the mentioned sectors in a given format within 30 days at the end of every half-year. Accordingly, the first statement as of 30 June 2015 is to be submitted by July 31, 2015(Bangladesh Bank, Green Banking and CSR department Bangladesh Bank. 2015).

The first aspect of the study highlights the theoretical review and explains how the central bank of Bangladesh mandated specifying sectors for CSR activities and mandated half-yearly disclosure for the banks (Bangladesh Bank, Green Banking and CSR department Bangladesh Bank. 2015).

Banks and financial institutions are directed to engage in these designated sectors as per Bangladesh Bank's regulations and are required to submit half-yearly reports to the Bangladesh Bank. In special circumstances, such as the global pandemic COVID-19, Bangladesh Bank issues separate circulars, like Circular Letter No. 4 in 2019, to promote increased CSR involvement in areas like healthcare and other sectors.



Source: Green Banking and CSR Department Bangladesh Bank. 2015

Bangladesh Bank has made it obligatory for banks and financial institutions for certain social projects and community investments to be disclosed in detail.

III. Literature Review

Over the years, there has been a notable lack of examining social contributions made by the banking sector in Bangladesh across different segments of the economy. The aim of this research is to uncover the allocation of Corporate Social Responsibility (CSR) spending across different economic sectors and to assess whether CSR initiatives have a notable contribution to improving the financial indicators of banks.

Related Theoretical Concepts to Firm's CSR Activities

Two conflicting theories, namely the neo-classical theory and stakeholder theory, provide differing interpretations of how corporate social responsibility (CSR) activities affect businesses.

Neo-Classical Theory

This theory asserts that there is no direct linkage between an organization's profitability and its engagement in corporate social responsibility (CSR) endeavors. As per Clarkson (1995), Friedman argued that social responsibilities and other societal concerns fall outside the purview of business responsibilities. Friedman, along with numerous neo-classical economists, contended that business and society are distinct entities, effectively suggesting that CSR is not an essential or legitimate component of business. Consequently, the theory maintains that CSR activities are fundamentally seen as a disruptive doctrine.

Stakeholder Theory

In accordance with this theory, a firm's activities should not solely revolve around its operations but should also aim to benefit its stakeholders, indicating a positive direction between a firm's CSR investment and its financial performance (Akisik and Gal, 2017).

Legitimacy theory

Legitimacy theory posits that companies must consistently ensure that their activities align with societal norms and boundaries. As suggested by (Olateju et al., 2021), organizations should put their CSR policies into practice to gain legitimacy, which, in turn, can reduce organizational risks and enhance profitability.

Institutional theory

This theory deals with how individuals adapt to an organization's norms, practices, rules, and conventions through social processes. It implies that managerial standpoint acts as a moderating factor in implementing the way of CSR practices and therefore affects firm performance (Ng & Colleagues, 2022)

Empirical Research

In a free society, a well-known perspective on CSR holds that the sole societal obligation of a business is to effectively manage its assets by focusing on generating sustainable profit, adhering to regulations, and thriving in competitive environments without resorting to fraud. According to Friedman (1970), CSR is seen as detrimental to a company's performance because it diverts resources away from owners, employees, and clients. He advocates a strong emphasis on profit generation, as he believes businesses cannot survive without it. Aupperle et al. (1985) did not get any connection between CSR and the firm's growth.

However, in today's modern business landscape, a different viewpoint prevails. In 1924, Shelton laid the foundation for CSR and argued that an organization's primary duty is to safeguard societal interests while pursuing profitability. Bichta (2003) & Frederick (1960) asserted that companies should enhance socio-economic welfare to meet society's expectations.

In Bangladesh, many empirical research had been done in a variety of sectors to identify the factors that influence CSR (Muttakin& Khan, 2014; Belal & Owen, 2007; Riantani &Nurzamzam,2015; Rouf, 2011; Kolsi, 2012; Waluyo,2017; Wang et al, 2013) and found that firm size, firm age, independent directors, institutional ownerships has a significant connection with CSR. However, very few studies identified that worked with the investment in CSR and financial performances, especially in the banking sectors are neglected.

In summary, several studies have revealed that CSR can have a positive impact on a firm's financial metrics, especially in specific sectors. One such study, which examined data from 125 Chinese pharmaceutical companies spanning 2010 to 2016, aimed to assess the significance of CSR in improving a firm's financial performance. The study evaluated a firm's performance across five distinct CSR dimensions: shareholders, employees, customers and suppliers, environmental practices, and society. The Hexun rating system, widely recognized, was used to assess a firm's CSR performance concerning different stakeholders. Financial performance was measured using various metrics, including Tobin's Q, return on assets (ROA), return on equity (ROE), and earnings per share (EPS).

The findings from panel-based regression models demonstrated a positive and significant relationship between the overall CSR score and a firm's financial indicators. Moreover, while all dimensions of CSR were positively correlated with firm performance, the environmental aspect of CSR had the most significant impact, followed by customers suppliers, and employees. In contrast, the shareholders and social dimensions had a relatively smaller influence on firm performance. These results suggest that Chinese pharmaceutical companies should prioritize optimizing each aspect of their CSR performance, as it can not only enhance their reputation among various stakeholders but also contribute to sustainable financial performance.

Numerous research studies have delved into the connection between CSR practices and their impact on a company's financial well-being. However, this particular study aims to offer an all-encompassing assessment of the benefits of participating in CSR initiatives concerning company performance, with a specific focus on the banking sector in Bangladesh.

IV. Hypothesis Development and Methodology

In developing nations, regulatory authorities have imposed stringent regulations mandating CSR participation to promote societal well-being. Banks and financial institutions are required to allocate resources to various sectors in accordance with directives from Bangladesh Bank, as this is crucial for the betterment of society. However, questions arise regarding the distribution of CSR spending across these eight sectors. Do financial institutions allocate equal amounts to each sector? Is there a shift in this allocation pattern in response to natural disasters, pandemics, or other contingencies? Another facet of our research pertains to the blow of these regulatory requirements: while companies engage in CSR activities due to these regulations, do these initiatives have any influence on their overall performance? Therefore, the main variable of the study is CSR, and the study inquiries the present state of CSR spending across various sectors of the economy and tries to figure out whether CSR practices of commercial banks have contributed to their financial improvement.

To investigate the current CSR spending scenario of banks listed on the DSE in Bangladesh, researchers center their attention on various segments of the economy outlined by Bangladesh Bank.

Explanation of the Dependent and Independent Variable

The investigation took Return on Assets (ROA) and Return on Equity (ROE) as substitute variables to measure a firm's financial proficiency or economic prosperity. A wide range of research established a strong link between a Firm's age, size, growth, tangibility, and a firm's CSR investment with its financial prospects. To enhance the reliability of the results, the study included risk, bank age, bank size, growth, and tangibility as control variables.

Drawing from relevant literature, the study selected explanatory variables to develop the regression model, with CSR as the primary variable of interest. Empirical theories offer differing perspectives on the influence of CSR activities on firm performance. Some assert that CSR activities significantly affect firm performance, while others argue there is no substantial relationship between CSR activities and firm performance. In this section, the study introduces and provides a rationale for the explanatory variables incorporated into the model; furthermore, it provides a rationale for how they are connected to the exposed variable. The selection of variables in empirical research is intricately linked to theoretical determinants, and the following key determinants in our research—Bank Size, Bank Age, Risk, Tangibility, Growth, CSR, and Profitability—are discussed as follows:

The investigation measures bank age by considering the number of years since a bank's incorporation. Previous studies have suggested a correlation between a bank's age and its financial performance across various sectors. It is indicated that smaller and less experienced banks may experience lower profits due to a lack of reputation and experience, as highlighted by Loderer & Waelchli (2010) and Dvouletý & Blažková (2022).

An earnings per share (EPS) growth is a crucial factor influencing various decisions for banks. Many researchers, including Lima (2009), and Buferna et al. (2005), have used growth rates to signify their impact on economic progress, revealing a notable influence. Lazar (2016) studied Romanian listed companies from 2000 to 2011, finding a significant impact of growth rates on a firm's earnings.

Tangibility refers to the quantity of physical assets owned by a company, and a higher tangible asset ratio can provide several advantages. Esteemed researchers such as Lima (2009), Buferna et al. (2005), Lazar (2016) have demonstrated the substantial impact of tangibility on a firm's success.

Empirical studies have consistently shown a significant connection between a bank's size and its economic performance. Smaller companies, constrained by limited financial resources, often exhibit lower profits, as indicated by D'Amato & Falivena (2019) and Opeyemi (2019) in their respective research projects. Maja & Josipa (2012) found a weak positive impact on firm profitability in their examination of the relationship between firm size and business success, while Becker-Blease et al. (2010) did not find any correlation between profitability and size.

Literature has shown a strong connection between risk and a firm's performance. Ahmed et al. (2012); Jacinta, Mahfuzur, Selvam (2018), Lima, M, (2009), Hossain (2016); studied the effect of risk on firms' profitability, stating that long-term debt is positively related to profitability. Again Siddik et al (2017), Rahman et al (2020), and Jahan &Tumpa (2020) find an inverse effect between a firm's performance and risk in their empirical examination.

Hossain (2000); Naser and Hassan (2013); Tang, Hull, and Rothenberg (2012); and Ali, Frynas, and Mahmood (2017) have found that firms have a direct economic effect at the level of CSR disclosure. On the other hand, Reverte (2009) found that a company that faces a lower return becomes aware to disclose more and more information voluntarily to hold its image in society. Riantani and Nurzamzam (2015) and Reverte (2009) did not find any significant profitability in CSR disclosure.

Therefore the study includes CSR, Bank age, Bank size, tangibility, and growth in the regression model considering CSR as the key variable. Hence the general hypothesis becomes,

H_1: There is no significant link between the Bank's CSR expenditure and economic Performances

Regression Model

The study formulated the following econometric model to obtain the contribution of CSR practices on the financial progress of commercial banks in Bangladesh.

$$(ROA)_{it} = \beta_0 + \beta_1(risk)_{it} + \beta_2 (Bage)_{it} + \beta_3(Growth)_{it} + \beta_4(Tang)_{it} + + \beta_5(BSize)_{it} + B_6 (CSR)_{it} + \epsilon_{it} \quad \ldots(1)$$

$$(ROE)_{it} = \beta_0 + \beta_1(risk)_{it} + \beta_2 (Bage)_{it} + \beta_3(Growth)_{it} + \beta_4(Tang)_{it} + + \beta_5(BSize)_{it} + B_6 (CSR)_{it} + \epsilon_{it} \quad \ldots(2)$$

Description of Each Variable by Table

Table 1: Explanation of Dependent and Independent Variables with Empirical Evidence

Determinants	Proxy Variables	Symbols	Empirical Studies
Corporate Social Responsibility	Ln(Total annual CSR activity of the firm)	CSR	Hossain (2000); Naser & Hassan (2013); Reverte (2009)
Bank Size	Ln(Total asset)	BS	(D'Amato &Falivena, 2019)
			Maja &Josipa (2012)
Bank's Age	(Annual Report year-Year of Incorporation)	BA	
			Loderer&Waelchli (2010), Dvouletý&Blažková (2022)
Risk	(Long-term loans and advances /	Risk	(Jahan & Tumpa,2020; Rahman et al 2020
	Total assets)		Jacinta, Mahfuzur, Selvam (2018), Lima, M, 2009, Hossain (2016);)
Growth	[EPS (t) - EPS (t-1)] / EPS (t-1)	Growth	(P & Ahmad Busru, 2021)
Tangibility	(Net fixed assets / Total assets)	Tang	(Lima, M, 2009, Buferna et al, 2005; Lazar, 2016; Jahan &Tumpa, 2020
Profitability	(profit after tax / Total assets)	ROA	
(Dependent variable)			
	(profit after tax / Total equity)	ROE	

Source: Authors Compilation

If a rise in profitability plays a crucial role in determining Corporate Social Responsibility (CSR) expenditures, it aligns with Stakeholder, Legitimacy, and Institutional Theory, indicating a positive relationship. Conversely, if profitability has a minimal impact on CSR expenses, it corresponds with Neo-Classical Theory, suggesting a negative association.

Data Source and Sample Size

The banking sector significantly contributes to the economic development of Bangladesh, and according to Bangladesh Bank's guidelines, banks are mandated to be involved in CSR activities to promote economic growth in key sectors. This investigation's main goal is to identify the linkage between a firm's financial achievement and its CSR operation, along with exploring the patterns of CSR expenditure in a range of sectors of the economy. To conduct this study, the author collected data from 33 banks listed on the Dhaka Stock Exchange from 2018 to 2021, resulting in a panel data set of 132 observations. The information was gathered from a variety of secondary resources, for instance, audited company annual reports, semi-annual CSR reports published by Bangladesh Bank, internet websites, and more. To analyze the patterns of CSR expenditure in the financial industry, the study used detailed CSR reports that contained information about CSR exposé by the banks and the current state of CSR expenditure in different segments of the economy, as published by Bangladesh Bank. The list of banks considered in this study is provided in Appendix 3, and a comprehensive breakdown of the percentage of CSR contributions by banks in a variety of segments of the economy is enclosed in Appendix 5. An Excel file has been created to gather the collected information and analyze it by applying Stata software.

Robustness tests

The research considered a combination of cross-section and time series data sets that formed a balanced panel. At the very first we run pooled regression, assuming constant variances and zero autocorrelation. But Panel data have to satisfy no link between two contemporaneous correlations for correct estimation of the parameters of the econometric model. Therefore, the study used modified Wald test statistic to test the Heteroscedasticity; the Wooldridge test for identifying serial correlation; the unit-root test for testing the Stationarity; the Kao test for testing cointegration; and the Pesaran CD test to estimate the contemporaneous correlation of the data set. If the results fail to satisfy the above assumptions the study will use different tools that can resolve the problem.

V. Results and discussion

Data Analysis

This section begins by presenting the average CSR expenditures within the 8 specified sectors as outlined by Bangladesh Bank. Following this, we provide a summary of the statistics pertaining to all variables included in the proposed models. Our data analysis is structured in two phases: the first involves an examination of the CSR investment scrutinized by the commercial banks, and then does an econometric analysis to explore relationships between repressor and regressed variables.

Examining CSR Activity Scenarios in Various Economic Segments

Bangladesh Bank has outlined a specific reporting format for CSR activities, with half-yearly reporting required as per the GBCSRD Circular Letter No. 06. This format designates 8 distinct sectors for CSR activities. The table belowpresents the average CSR expenditures across these 8 different segments of the economy by DSE-listed commercial banks in Bangladesh.

Table 3:Average CSR Expenditures in 8 Different Segments of the Economy

Variable	Mean	Std. dev.
Education	5.1972	20.5266
Health	4.4	9.4963
Disaster Management	9.0526	12.3152
Environment	0.6437	2.9643
Culture	1.3716	2.9548
Infrastructure	0.2577	1.4714
Income-generating activities for the underprivileged population	0.0106	0.0435
Others	2.8574	4.5758

Source:Author's Compilation

The Table 3 of average CSR expenditures in diversified sectors declares that the average top CSR expenditure was on Disaster Management (9.0526) with a standard deviation (12.3152) followed by the Education and Health sectors over the years 2018-2021. The invested amount of different sectors is not the same every year. The core intention of this study is to unveil the diversity of investment amounts in different sectors.

Banking CSR expenditures on different Sections of the economy

Bangladesh Bank publishes a half-yearly report containing detailed information about CSR activities conducted by the Banks functioning in Bangladesh. The report summarizes the CSR expenditure conducted by banks in four segments and the amounts are disclosed using percentages. The most expensive sectors are respectively Education, Health, Environment, and Disaster Management Sector. The tableshows that the CSR expenditures inthese sectors are increasing gradually after the year 2019.

Table 4: Banking CSR Expenditures on Different Sections of Economy

Different Sector	2018	2019	2020	2021
Average of Environment	0.0694	0.9827	0.7076	0.8154
Average of Disaster Management	9.5336	7.136	11.7163	7.8245
Average of the others	2.7	2.6333	4.7215	1.3736
Average of Health	1.3881	1.9845	4.9321	9.2954
Average of income-generating activities for the underprivileged population	0.0242	0.00015	0.00151	0.0153
Average of Culture	1.2706	0.0378	0.2566	0.7121
Average of Infrastructure	0.0242	0.0378	0.2566	0.7121
Average of Education	11.3233	5.1915	2.7115	1.5624

Source: Authors Analysis

In 2018, the education sector received the highest investment, with Disaster Management following closely behind. Subsequently, in 2019 and 2020, Banks allocated the most substantial contributions to the Disaster Management sector. However, a shift occurred in 2021, with the Health sector witnessing the highest expenditure, followed by the Disaster Management sector. The primary focus of the study is to investigate the impact of Banks' CSR expenditure on their financial performance and identify the driving forces behind the shifts in CSR activities.To conduct this analysis, the study examines the CSR reports published by the central bank and analyzes the trends or patterns in CSR activities across different sectors as reported by the Bangladesh Bank.

Summary Statistics of the Variable

Table 4 provides descriptive statistics for both the explanatory and explained variables across a balanced panel of 33 commercial banks in Bangladesh over the period 2018-2021, totaling 132 observations. These statistics reveal that, on average, the DSE-listed banks in Bangladesh have an average risk factor of 69.78%, with a limit of 0.1370 to 0.8394. The average bank size is 26.41%, the bank age is 24.4, and the level of participation in CSR activities by the banks is, on average, 18.60%. The banks exhibit an average growth rate of 4.49% and a tangibility level of 1.46%.The average ROA and ROE are at 0.058%, and 9.8% respectively with a standard deviation of 0.0078 and 0.0416.

Table 5:Summary Statistics of the Variables

Variable	Sample Size	Mean	Std. dev.	Minimum Value	Maximum Value
Risk	132	0.6967	0.1057	0.137	0.8393
B size	132	26.4105	0.7558	23.1427	28.1232
Fage	132	24.4393	10.6651	5	62
CSR	132	18.6042	1.7665	9.2103	21.7575
Growth	132	0.0449	1.4763	-12.8929	9.5
Tang	132	0.0145	0.0062	0.0022	0.0323
ROA	132	0.0058	0.0078	-0.0424	0.0175
ROE	132	0.098	0.0416	0.0008	0.182

Source: Author's Compilation

Analysis of Regression Assumptions

The study employed an econometric analysis to analyze panel data which is a combination of both the cross-sectional and time-series dimensions and investigate whether CSR is a significant indicator to measure the financial improvements of banks. We initiated our analysis by conducting a pooled regression to assess the significance of Banks' CSR activities on their performance. Subsequently, we performed both the Wald test and the Breusch-Pagan Lagrange Multiplier test (LM) to determine the most suitable model among the pooled regression, fixed effect, and random effect models. The test results indicated that both the fixed effect and random effect models are more appropriate than the pooled regression model. In particular, the Hausman (1978) specification test results of chi-square test value for ROA and ROE are respectively 83.703 and 37.903 with p value 0.00. The p-value of the test results led us to reject the null hypothesis and opt for the fixed effect model, which revealed a correlation between error terms and explanatory variables.

To assess multicollinearity among the independent variables, we conducted a correlation test and employed the Variance Inflation Factor (VIF) test. The average VIF of 2.01 for both the explained variable ROA and ROE revealed no significant correlation among the independent variables.

Additionally, the study conducted several post-estimation tests on the econometric model to address potential issues. A modified Wald test was performed to identify groupwise heteroscedasticity in the residuals, yielding a Chi-square value of 81.38 with a p-value of 0.0000.

To investigate serial correlation in the panel data, a Wooldridge test was applied for both the model taking dependent variable ROA and ROE and resulting in F(1, 32) statistical values of 18.657 and 4.836 respectively with a p-value of 0.0001 and 0.035. We also conducted Pesaran's cross-sectional dependence test, confirming the existence of contemporaneous correlation with a Pesaran's test of cross-sectional independence value of 6.289 and a p-value of 0.0000. The test results reject the null hypothesis indicating the presence of first-order autocorrelation and contemporaneous correlation in the data set.

Table 6: Correlation between Explanatory Variables

Variable	Risk	Bage	B size	CSR	Growth	Tang
Risk	1					
Bage	-0.0719	1				
B size	-0.2937	0.2856	1			
CSR	0.0541	0.7893	-0.0485	1		
Growth	-0.0324	-0.0084	-0.2784	-0.0186	1	
Tang	-0.2708	0.2433	0.1002	0.1425	0.1018	1

Source: Author's Compilation

Subsequently, we examined the presence of unit roots of the variables individually. The test results indicated that most of them had unit roots, and the variables in the regression were not co-integrated. To address the issues of heteroscedasticity, serial correlation, contemporaneous correlation, and non stationary, appropriate remedial measures are needed.

It is typically considered that a correlation of 0.8 or higher between independent variables indicates a strong correlation among those variables. The table reveals negative correlations between Firm Size and Risk, Firm Assets and Risk, CSR and Firm Assets, Tangibility and Risk, as well as negative associations with Growth and other variables. While the correlation between Firm Size and Firm Assets is somewhat elevated, none of the variables in the dataset exhibit a notably high correlation. In essence, there is no evidence of substantial correlation among the variables.

The Variance Inflation Factor (VIF) is commonly used to assess the presence of severe multicollinearity. If the VIF falls within the range of 1 to 5, it suggests a low to moderate level of multicollinearity. However, if the VIF exceeds 5, it indicates a significantly high level of multicollinearity.

Table 7:Variance Inflation Factor of ROA and ROE

Variable	VIF	1/VIF
B size	3.93	0.254445
CSR	3.51	0.284611
Bage	1.68	0.595603
Risk	1.19	0.841671
Tang	1.16	0.864976
Growth	1.15	0.868643
Mean VIF	2.1	

Source: Author's Compilation

The variation inflation factor table exposed that there is no correlation between the explanatory variables, as the value of VIF is 2.10 for both the dependent variables respectively, which is less than 5.

Panel Correlated Standard Errors Regression Model

The econometric analysis finds heteroscedasticity, autocorrelation, contemporaneous correlation, and nonstationary problems in the regression model. Thus to fix the problem in the econometric model the study employed panel-correlated standard errors (PCSE) to estimate panel data. The PCSE model considers that there exists a correlation among the errors and the error terms are heteroscedastic and contemporaneously correlated across panels.

Table 8: Regression Results of CSR on ROA & ROE

		ROA				ROE		
Variable	**OLS**	**FE**	**RE**	**PCSE**	**OLS**	**FE**	**RE**	**PCSE**
LnFS	0.002	-0.005	.004***	.004**	-.023**	0.005	-0.005	-0.006
	(0.001	-0.004	-0.001	-0.002	-0.009	-0.038	-0.011	-0.007
Risk	-.013***	0.001	0.001	-0.006	0.013	0.042	0.035	.041**
	-0.004	-0.005	-0.005	-0.005	-0.034	-0.051	-0.038	-0.018
LnFA	-.005***	0.005	-.006***	-.006***	0.001	-0.025	-0.006	-0.003
	-0.001	-0.007	-0.002	-0.001	-0.008	-0.068	-0.012	-0.003
CSR	0.003***	0	.001**	.002***	.016***	-0.001	.007*	.009***
	0	-0.001	0	-0.001	-0.004	-0.005	-0.004	-0.003
GROWTH	-.001*	0	0	0	-0.002	0.001	0	0.001
	0	0	0	0	-0.002	-0.002	-0.002	-0.002
TANG	-0.005	-0.098	-0.05	-0.002	-0.628	-0.215	-0.793	1.074***
	-0.075	-0.104	-0.084	-0.074	-0.577	-1.018	-0.674	-0.407
_cons	-.066***	0.134	-.105***	-.118***	.409**	0.029	0.103	0.074
	-0.022	-0.085	-0.029	-0.032	-0.172	-0.834	-0.221	-0.119
Observations	132	132	132	132	132	132	132	132

Source: Author's Compilation

The PCSE regression analysis assumes ROA and ROE as dependent variables and Risk, Firm size, firm's age, CSR, Growth, and tangibility as the independent variables and runs a separate regression model. The analysis finds that CSR is significant at a 1% level of significance for both models (both for ROA & ROE). The coefficient of CSR is 0.002 and 0.003 implies that CSR acts positively on banks' performance. Thus if the Banks contribute more to different socialsectors itwill impact positively on their ROA and ROE. In the case of model 1, the study finds that the bank size, bank age, and CSR have significant contributions to enhancing the firm performance ROA.

Further in the PCSE analysis of model 2 that is in the case of ROE the results are different. To improve the ROE firms should take care of Risk, CSR, and tangibility. The Bank age & tangibility have an inverse relation toBanks' ROA and ROE respectively. A direct significant relationship also has been found between bank size, Risk, and CSR activities conducted by the firm. The positive coefficient concluded that an increase in CSR contribution enhances the performance of banks.

Discussion

This study collected data from 33 DSE-listed banks for the years 2018 to 2021, resulting in a panel dataset comprising 132 observations. The analysis is divided into two parts: the first part examines CSR expenditure practices by banks and finds that the sectors most contributed to in the last four years are Health, Disaster Management, and Education. During the COVID-19 pandemic, Bangladesh Bank issued special circular instructing banks to increase their contributions to specific segments to address the crisis. This led to a significant change in the pattern of CSR activities over the years.

The study discovered that expenditure in the education sector was initially the highest. However, after the pandemic struck and under the guidance of Bangladesh Bank, spending in the Health sector increased significantly. These CSR expenditures played a crucial role in helping the government financially combat the pandemic and handle critical situations more effectively.

In the second section, applying statistical software the study finds that CSR works as a positive indicator on both the firm performance indicator ROA and ROE at a 1% significance level for the DSE-listed commercial banks of Bangladesh. These findings support a similar report (The Business Standard) that CSR spent by banks rose in 2022 in Bangladesh by almost 50% in the last three years.

VI. Conclusion

This study was meant to understand the patterns in CSR behaviors of commercial banks conducted by the banking sector and assess the impact of CSR expenditure on firm performance based on observations from 2018 to 2021, drawing connections with relevant theories and considering the regulations set by the regulatory authority of the banking sector in Bangladesh, Bangladesh Bank.

The study used ROA and ROE as proxy variables to assess a firm's profitability and the study concluded that the key variable CS drives a firm's economic growth notably and keeps a substantial impact on the economy. During the COVID-19 crisis, Bangladesh Bank's instructions to increase CSR expenditure in the health sector through a separate circular helped the government to handle the crisis more effectively. The outcome of the study will help the executives to make investment decisions in CSR as the study reveals that companies with functioning strong CSR practices have a significant contribution to a firm's financial benefit. Therefore to achieve long-term, sustainable, and resilient business success, management of the companies and policymakers can makedecisions smoothly regarding the investment of CSR through sustainable and eco-friendly CSR practices, can create a customer trustworthy positive brand image by demonstrating social well-being, employee satisfaction by executing employee oriented organization culture and finally contribute the overall betterment of the country.

The study used information from DSE-listed commercial banks only. Future research should aim to encompass the entire banking sector in Bangladesh to provide a broader perspective on CSR activities and their contribution. The study could do comparative research to accumulate information from other countries for comparison and assess the impact of CSR in a global context.

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