BEYOND GOODWILL: EXAMINING THE CORPORATE SOCIAL RESPONSIBILITY-OPERATIONAL EFFICIENCY NEXUS IN THE CONTEXT OF SUSTAINABLE BANKING

Nitashree Barman *

* Department of Accountancy, Pandit Deendayal Upadhyaya Adarsha Mahavidyalaya, Tulungia, Assam, India
Contact details: Department of Accountancy, Pandit Deendayal Upadhyaya Adarsha Mahavidyalaya, Tulungia, North Salmara, Bongaigaon, 783383 Assam, India

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Abstract

The current research explores how corporate social responsibility (CSR) initiatives relate to the performance of Indian banks. With increasing regulatory emphasis on CSR spending, understanding its influence on bank operational efficiency is crucial. The research estimates efficiency levels of 27 National Stock Exchange of India Limited (NSE) listed banks from 2015 to 2020 and explores the CSR-efficiency relationship. For attaining these objectives, the study adopts a two-stage approach. Firstly, the Banker–Charnes–Cooper data envelopment analysis (BCC-DEA) model is employed to evaluate the operational efficiency. Secondly, Tobit regression analysis is considered to estimate the CSR investments' impact on bank efficiency. The research reveals that private sector banks outperform public banks in both CSR engagement and operational efficiency. Tobit results exhibit a positive association between CSR spending and bank efficiency, indicating that CSR enhances intermediation processes and financial outcomes. Based on these findings, the study infers that embedding CSR within fundamental business strategies can deliver a twofold advantage — boosting social impact while also improving financial performance. The study's implications hold significant value for bankers and policymakers in India. Bank managers need to focus on improving scale efficiency to enhance operational efficiency. Policymakers can encourage CSR investment by offering regulatory incentives, benefiting banks, customers, and society.

Keywords: Indian Banks, CSR, Operational Efficiency, DEA, Tobit

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1. INTRODUCTION

Banks, being the dominant financial intermediaries in the financial system, act as a propellant for economic growth. In today's competitive global environment, assessing their efficiency is essential to gauge performance and competitiveness. Traditional goals like profit and shareholder wealth maximization are no longer sufficient for sustainability. To become sustainable, business organizations need to focus on formulating integrated business strategies, considering the benefits of all the stakeholders. This involves aligning economic objectives with corporate social responsibility (CSR). It embodies the principle whereby business houses incorporate environmental and social factors into their operational frameworks and dealings with stakeholders (European Commission, 2001; Kumar & Ganguly, 2024). It emphasizes that businesses thrive only in

a healthy societal and environmental ecosystem, making CSR vital for sustainable development. In India, mandatory CSR provisions under Section 135 of the Companies Act, 2013, supported by the Companies (Corporate Social Responsibility Policy) Rules, 2014 (enacted on April 1, 2014), have spurred increased investments in social initiatives. As per KPMG's 2019 Reporting Survey, Indian companies have shown a growing commitment to CSR since the regulation's implementation (KPMG, 2020).

Banks, as key players in financial markets, have a crucial role in advancing CSR, particularly through their involvement in financing developmental initiatives (Reserve Bank of India [RBI], 2007). Implementing CSR practices offers multiple benefits, including improved economic efficiency, enhanced corporate image, greater employee loyalty, stronger stakeholder engagement, new business prospects, and increased organizational engagement (Mocan et al., 2015; Mahmoud et al., 2024). In India, banks actively engage in diverse CSR activities aimed at uplifting marginalized communities, such as extending financial services to the unbanked, promoting financial literacy, supporting rural development, encouraging self-employment, and alleviating poverty. Additionally, they contribute to national socio-economic development by investing in healthcare, education, infrastructure, and environmental sustainability (Mishra & Sant, 2024; Pasha & Elbages, 2022).

Bank efficiency remains a critical concern for policymakers, regulators, and researchers due to its significant impact on economic growth. Across the last twenty years, Indian banks have become progressively more agile, responding to shifts in both local and global market forces. Key reforms, including bank mergers, demonetization, the implementation of the Goods and Services Tax (GST) Act, and measures to improve asset quality, such as the Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest (SARFAESI) Act, 2002, and the establishment of the National Asset Reconstruction Company Ltd. (NARCL), have reshaped the industry. Technological advancements, especially in artificial intelligence, have further digitized traditional banking operations, transforming products and services. The growing presence of private digital players has intensified competition, leading to a more competitive and evolving banking landscape. Therefore, assessing the operational efficiency of banks is both relevant and necessary in the context of India.

Previous studies on the technical or operational efficiency of Indian banks highlight several key insights. These can be summarized as follows: efficiency declined during the post-liberalization period due to overstaffing and rural branch expansion (De, 2000). Despite this, Indian banks still have scope to expand lending to the priority sector without adversely affecting technical efficiency, as non-performing assets are not yet critically high (Arora et al., 2018). Higher variation in efficiency was observed among foreign banks compared to domestic ones (Keshari & Paul, 1994; Phan & Tran, 2025). Public sector banks (PSBs) showed higher efficiency compared to private sector banks (PVTs) (Patra et al., 2023). However, studies suggest that PSBs are less capable of generating substantial income (Ataullah & Le, 2006), with operational efficiency being positively associated with profitability (Trehan & Soni, 2003). Scale efficiency (SE) plays a larger role in overall technical efficiency (Sinha & Chatterjee, 2008), but scale inefficiency (SIE) is a greater cause of technical inefficiency than managerial inefficiency (Maity & Sahu, 2022). Despite numerous studies evaluating bank efficiency in India, the extent to which adherence to CSR principles contributes to that efficiency remains a relatively less focused area.

Despite many studies linking CSR to enhanced bank performance, the direct effect of CSR on banking efficiency remains largely underexplored. Moreover, although CSR has been extensively examined in various contexts, there exists a notable paucity of research focusing on its effects within the Indian banking industry, especially during the 2015–2016 to 2019–2020 timeframe. Thus, this study aims to bridge the gap and seeks to answer two research questions.

RQ1: Which group of Indian banks demonstrates higher investment in CSR activities?

RQ2: To what extent do CSR initiatives positively and significantly affect the operational efficiency of Indian banks?

Accordingly, the study is conducted to achieve the following two objectives:

1) To estimate the operational efficiency of banks in India.

2) To analyze how CSR relates to operational efficiency in the context of Indian banks.

In three essential dimensions, this research extends the body of work on CSR and bank efficiency. First, it moves beyond the conventional focus on CSR's impact on financial performance and reputation, offering novel empirical evidence on its influence on operational efficiency, an underexplored dimension in the context of Indian commercial banks. Second, it conducts a comparative analysis of CSR investment between PSBs and PVTs, thereby highlighting the role of ownership structure in shaping CSR engagement. Third, by anchoring the analysis in stakeholder theory, the study positions CSR as a strategic tool that enhances operational efficiency through improved stakeholder engagement, employee motivation, customer trust, and reputational gains. These insights are especially significant in the context of India's regulatory CSR framework, where the link between mandatory CSR and bank efficiency has not been sufficiently investigated.

The paper is structured into six sections. Section 1 introduces the study by outlining its background, research gap, objectives, conceptual framework, hypotheses, and key contributions. Section 2 synthesizes the relevant previous studies. Section 3 outlines the methodology adopted in the study. Section 4 presents the data analysis results. Section 5 offers a discussion of the findings. Section 6 concludes by highlighting limitations of the study and proposing directions for future research.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

The CSR-financial performance nexus has emerged as a key topic in both academic research and policy debates, especially within the banking industry. As financial institutions come under growing scrutiny from stakeholders to act responsibly and sustainably, CSR has transitioned from a secondary consideration into a strategic imperative. This review section synthesizes evidence from various global

and institutional settings to examine the extent to which CSR enhances bank performance in emerging and developed markets, and based on these insights, the study formulates its hypotheses.

There exist two contrasting theoretical perspectives underpinning the CSR literature: the shareholder approach (Friedman, 1970) and the stakeholder approach (Freeman, 1984; Carroll, 1991; Wood, 1991). The shareholder theory suggests that a business entity holds the foremost responsibility of maximizing the value of its shareholders. The theory advocates that a company primarily aims to generate profits for its shareholders. In this context, CSR initiatives may be considered as discretionary or only reasonable if they explicitly lead to the enrichment of shareholder wealth. Conversely, the stakeholder theory presents the notion that a company should prioritize the concerns of all its stakeholders. This theory highlights that businesses have a greater responsibility beyond simply maximizing the financial gain of shareholders and must function in a way that considers the welfare of all stakeholders. The present study integrates stakeholder theory into the analysis of bank efficiency and provides empirical evidence of how CSR initiatives enhance bank efficiency through the alignment of stakeholder interests.

Regarding empirical studies, Sweeney (2009) concluded that CSR is directly connected to financial performance, largely due to better access to capital and an improved business reputation. Attig et al. (2013) empirically discovered evidence of the interrelationship between CSR and firms' credit ratings. Djalilov et al. (2015) found that CSR positively impacts bank performance across 16 European countries. Girerd-Potin et al. (2014) advocated that socially responsible banks experience a lower cost of equity because investors demand supplementary risk premiums for stocks that do not adhere to social responsibility. Gangi et al. (2018) found that CSR enhances financial performance, reinforcing the idea that reputational capital serves as a protective buffer during challenging situations. Mohamud (2018) also observed that CSR positively and significantly impacts financial performance, especially East African commercial banks' return on assets. Boussaada et al. (2023) revealed that CSR engagement can mitigate the adverse effects of non-performing loans. On the other hand, Tandelilin and Usman (2023) identified a persistent negative relationship between financial performance, CSR disclosure, and social performance of banks in ASEAN nations, evident in both accounting-based and market-based measures.

Besides, some studies explored the association between bank efficiency and CSR. For example, Belasri et al. (2020) asserted that CSR positively impacts bank efficiency in 41 countries with elevated levels of investor safeguarding and an emphasis on all stakeholders' interest. Forgione et al. (2020) also investigated the same in 22 countries from 2013–2017. Confirming the agency arguments of CSR, the study concluded that activities carried out in the context of CSR could potentially impede the bank's efficiency. Shahwan and Habib (2023) observed that the adoption of CSR initiatives significantly enhanced the bank's efficiency in Egypt. Pham et al. (2024) examined Vietnamese listed banks and found that environmental responsibility disclosure and government-related CSR spending positively influence financial performance. Conversely, community-focused CSR activities were associated with lower financial efficiency, potentially signaling a misalignment with profit objectives. Employee-related CSR efforts showed no immediate financial impact, implying that such investments may yield long-term intangible benefits rather than short-term gains.

In the Indian context, several studies have explored the CSR–bank performance relationship extensively. Narwal (2007) observed that the Indian Banking Industry adopts a comprehensive approach of integrating CSR to ensure customer satisfaction. Furthermore, regardless of geographical location, the type of CSR initiatives undertaken by the industry remains consistent. Bihari and Pradhan (2011) observed the CSR's positive effect on both performance and image of the major Indian banks. Again, Saxena and Kohli (2012) depicted that CSR exerts a favorable influence on the sustainability of the banking industry. Maqbool and Zameer (2018) empirically tested and confirmed the CSR's positive effects on Indian banks' profitability and stock returns. Kumar (2024) identified that higher CSR expenditures correlate strongly with financial metrics. George et al. (2023) found that CSR expenditure positively influenced bank profitability. However, CSR spending showed no significant association with market returns. Singh et al. (2013) observed that CSR has been prioritized by all banks irrespective of their ownership. Sharma and Mani (2013) astutely noted the active involvement of Indian banks in the CSR domain. Their study also shed light on the role played by PSBs in this sphere, as compared to their foreign counterparts, who appeared to be less engaged. Chowdhury et al. (2024), analyzing banks in Bangladesh and India, found that minimal CSR investment provides no marginal benefits and instead raises costs. Conversely, optimal levels of CSR investment positively enhance bank performance, suggesting a threshold effect where balanced CSR engagement maximizes financial returns.

Drawing on stakeholder theory and empirical evidence, this study examines how CSR influences bank efficiency in the Indian context and thus offers insights into the mechanisms through which socially responsible practices enhance operational performance. Figure 1 presents the conceptual framework underlying the study. Particularly, the research investigates two key areas.

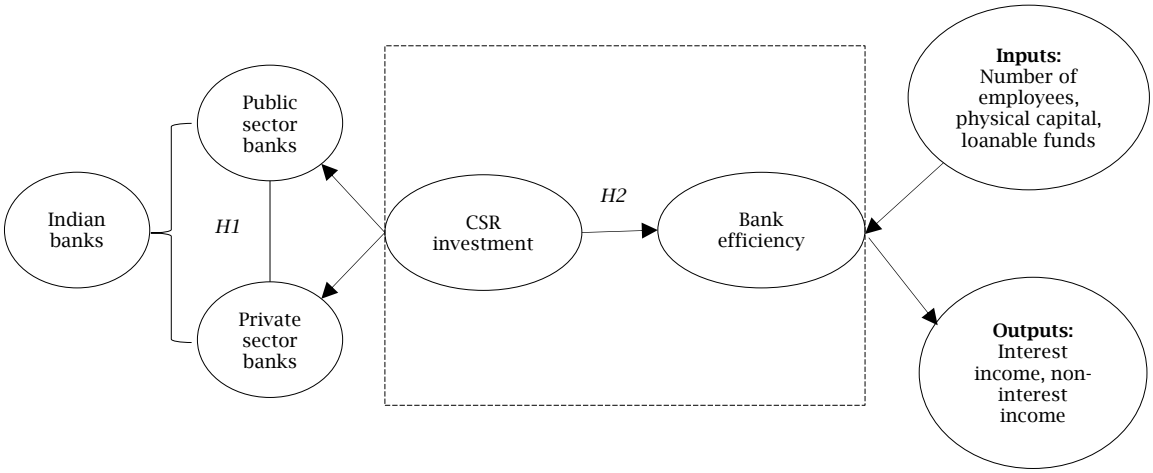
First, the study examines whether PSBs and PVTs differ significantly in their levels of CSR investment. Given that PSBs are government–owned, they are expected to undertake more extensive CSR initiatives due to regulatory mandates and public welfare obligations. Conversely, PVTs may focus on strategic CSR activities aligned with their business objectives, potentially resulting in differing investment patterns (Mishra & Suar, 2010; Kumar & Prakash, 2019).

H1: The difference in CSR investment between PSBs and PVTs in India is significant.

Second, the study explores whether higher levels of CSR engagement positively influence bank efficiency. Drawing on stakeholder theory, CSR initiatives are expected to enhance operational efficiency by improving corporate reputation, fostering customer loyalty, and boosting employee morale (Porter & Kramer, 2007; Turker, 2009; Mishra & Suar, 2010; Albarq, 2023; Mayuri-Ramos et al., 2023).

H2: CSR significantly and positively relates to bank efficiency.

Figure 1. Formulation of hypotheses on the interrelationship between CSR and bank efficiency in Indian banks



Source: Author's elaboration.

3. RESEARCH METHODOLOGY

3.1. Sample and data sources

To estimate the empirical relationship between operational (technical) efficiency and CSR, the study considers a sample of 27 Indian banks, comprising 11 PSBs and 16 PVTs. These banks are among the top 500 companies listed on the National Stock Exchange of India Limited (NSE) by market capitalization as of March 31, 2020. Data has been collected from the Reserve Bank of India's (RBI) official website (www.rbi.org.in), annual reports, and the websites of the respective banks for the period 2015–2016 to 2019–2020. Descriptive statistics such as mean and standard deviation are used to summarize the variables. The Mann-Whitney U test is also used to assess the significance of disparities in efficiency scores between PSBs and PVTs.

3.2. Measurement of bank efficiency

Bank efficiency in the literature is commonly measured using either parametric or non-parametric techniques. The parametric approach often employs stochastic frontier analysis (SFA), which specifies a functional form and decomposes deviations into inefficiency and random error, while the non-parametric method typically uses data envelopment analysis (DEA), which constructs an empirical efficiency frontier with multiple inputs and outputs through linear programming without assuming a specific production function. Given its flexibility in not requiring a predefined functional form and flexibility in considering multiple variables, DEA is adopted in this study to estimate bank efficiency.

The individual banks of the study being evaluated for their efficiency are called Decision Making Units (DMUs). An output-oriented Banker–Charnes–Cooper data envelopment analysis (BCC-DEA) model assuming variable returns to scale has been considered for the measurement of bank efficiency. The study has used the intermediation approach to select inputs and outputs of the model. Following Kumar and Gulati (2008), under the study, operational or technical efficiency measures the bank's capacity to produce maximal output defined as interest and non-interest income from a given set of inputs, namely, the number of employees, physical capital, and funds available for loans (i.e., the sum of deposits and borrowings). Technical efficiency comprises two components: pure technical efficiency, which reflects managerial effectiveness in implementing production plans, and scale efficiency, which measures the appropriateness of the scale of operations. These components are closely interconnected and essential for achieving optimal technical efficiency. Thus, the technical efficiency and its components can be expressed as follows:

$$Operational\ Efficiency\ (OE) OR\ Overall\ Technical\ Efficiency\ (OTE) = Pure\ Technical\ Efficiency\ (PTE) \times Scale\ Efficiency\ (SE) \quad (1)$$

The output-oriented DEA efficiency estimation model is as follows:

Max (1–θ) subject to:

$$\sum_{j=1}^{n} \lambda_j y_{rj} \leq (1-\theta) y_{ro} \qquad r = 1,2,\ldots,m \quad (2)$$

$$\sum_{j=1}^{n} \lambda_j x_{ij} \leq x_{io} \qquad i = 1,2,\ldots,s \quad (3)$$

$$\sum_{j=1}^{n} \lambda_j = 1 \ (for\ variable\ returns - to - scale; BCC\ model) \quad (4)$$

$$\lambda_j \geq 0, \qquad j = 1,2,\ldots,n \quad (5)$$

where, x_{io} implies quantity of input i used by DMU_o; y_{ro} means volume of output r produced by DMU_o; λ_j is the intensity variable or weight assigned to peer DMU_j; θ shows inefficiency score (in output-oriented model, minimizing θ means maximizing outputs); m, s and n indicate number of outputs, inputs, and DMUs, respectively.

3.3. Regression model specification

This study employs the Tobit regression model to analyze the relationship between CSR and bank efficiency, as the dependent variable, technical efficiency scores derived from an output-oriented BCC-DEA model, is bounded between 0 and 1, representing a classic case of censored data (Tobin, 1958; McDonald & Moffitt, 1980). The Tobit model is particularly appropriate in this context because it accounts for the natural limits of efficiency scores, which cannot fall below zero or exceed one, a constraint that would violate the assumptions of standard ordinary least squares (OLS) regression (Greene, 2012).

The model assumes that the underlying latent variable follows a normal distribution, exhibits homoscedasticity, and maintains a linear relationship with the independent variables. These assumptions were carefully considered during model specification, and preliminary diagnostics were conducted to ensure approximate normality and reduce heteroskedasticity through robust standard errors where necessary.

Despite its suitability, the Tobit model has certain limitations. Notably, it does not distinguish between observations at the upper bound (i.e., efficiency = 1) due to genuine performance versus those arising purely from data censoring, which may affect the accuracy of the estimated coefficients (Amemiya, 1984). Additionally, the model assumes that the censoring mechanism is independent of the explanatory variables, a condition that may not always be fully met in real-world banking data. Furthermore, while the Tobit model effectively handles censored outcomes, it does not inherently address potential endogeneity between CSR and efficiency, such as reverse causality or omitted variable bias. Although this limitation is acknowledged, addressing it via instrumental variable approaches or panel-based fixed effects models (Wooldridge, 2010) is beyond the current scope but offers a valuable direction for future research.

Unlike developed countries, in India, the performance of the banks concerning CSR disclosure practices is inadequate. In this context, Kumar and Prakash (2019) empirically found that adopting sustainability reporting practices is much slower in Indian banks. Additionally, Sethi (2013) expressed the need for Indian Banks to engage in both mandatory and comprehensive CSR reporting. Due to inadequate and inconsistent data on area-specific CSR investments in the annual reports of the respective banks, this study approximates CSR performance using the total amount of investment in CSR activities. The model can be expressed as follows:

$$OE_{it} = \beta_0 + \beta_1 CSR_{it} + \varepsilon_{it} \quad (6)$$

where, OE_{it} stands for operational efficiency for a specific bank i (1, 2,..., 27) at a particular time t (1,2,...,5); CSR_{it} represents the CSR of bank i at time t; β_0 and β_1 are coefficients that represent the intercept and slope of the linear relationship between OE and CSR; ε_{it} is the error term, representing the random variability or unexplained factors affecting OE that are not accounted for in the model.

4. RESULTS

4.1. Bank efficiency in India during 2015–2016 to 2019–2020

The study starts with estimating efficiency score using BCC-DEA model, and the annual mean efficiency score of Indian commercial banks across the bank ownership groups from 2015–2016 to 2019–2020 is presented in Table 1. It is derived from the table that the overall technical efficiency (OTE) score of the industry of 0.912 in 2015–2016 declined to 0.796 in 2019–2020. Thus, the level of overall technical inefficiency (OTIE) has increased to the extent of 11.6 per cent. Similarly, the level of pure technical inefficiency (PTIE) and SIE scores also increased to 10.7 per cent and 1.5 per cent. On average, the OTE score has yielded a value of 0.859, accompanied by a standard deviation of 0.41. This score is a product of the PTE score of 0.899, which is characterized by a standard deviation of 0.040, and the SE score of 0.956, which exhibits a standard deviation of 0.016. In other words, the combined effect of the managerial inefficiency level of 10.1 per cent and the SIE level of 4.4 per cent has caused the banks' inability to produce the optimal output as measured by technical inefficiency to the extent of 14.1 per cent. Thus, the OTIE has escalated in the industry basically due to a higher level of PTIE compared to SIE, by an extent of 5.7 per cent.

With regard to the bank group-wise analysis, it shows that the average OTE score of PSBs results in 0.811 with a standard deviation of 0.061. In contrast, the efficiency score is 0.907 in the case of PVTs with a standard deviation of 0.035. Further, the average PTE and SE scores are 0.853 and 0.952 for the PSBs. On the other hand, PVTs, on average, obtained a PTE score of 0.944 and a SE score of 0.961. Thus, in both the bank groups, it is the PTIE that is evident as the primary source of technical inefficiency. The Mann-Whitney test further substantiates the finding that the difference between the two bank category groups concerning their efficiency metrics is indeed significant, as indicated by the test's p-value falling below the critical threshold of 0.05.

4.2. CSR and bank efficiency in India during 2015–2016 to 2019–2020

In this section, following the measurement and analysis of bank efficiency scores, the empirical association between CSR and the efficiency of sample banks is examined. Table 2 provides year and bank group-wise actual amount expended on CSR activities by the Indian commercial banks. The table shows that on average, PSBs spent INR 144 million with a standard deviation of INR 55 million, which is less than that of PVTs of INR 624 million with a standard deviation of INR 148 million. Further, the PSBs' total amount of CSR investment ranges from INR 82 million to INR 192 million, while the amount ranges from INR 450 million to INR 848 million in the case of PVTs. Moreover, in contrast to their public sector counterparts, the PVTs have shown a consistent upward trajectory in the allocation of funds towards CSR initiatives during the time period examined in the study.

Table 1. Average efficiency score during 2015–2016 to 2019–2020

Year	Overall technical efficiency			Pure technical efficiency			Scale efficiency		
	PSBs	PVTs	Full sample	PSBs	PVTs	All banks	PSBs	PVTs	Full sample
2015–2016	0.903	0.925	0.912	0.945	0.970	0.956	0.955	0.954	0.954
2016–2017	0.816	0.915	0.860	0.875	0.945	0.906	0.933	0.968	0.948
2017–2018	0.809	0.928	0.868	0.857	0.956	0.906	0.945	0.971	0.958
2018–2019	0.794	0.922	0.861	0.808	0.943	0.879	0.985	0.978	0.981
2019–2020	0.734	0.846	0.796	0.782	0.905	0.849	0.942	0.936	0.939
Average	0.811	0.907	0.859	0.853	0.944	0.899	0.952	0.961	0.956
Std. Dev.	0.061	0.035	0.041	0.063	0.024	0.040	0.020	0.017	0.016
Mann-Whitney test	-7.421*			-6.589*			-4.143*		

*Note: * indicates significant at 0.01.*
Source: Author's analysis.

Table 2. Average CSR investment across bank groups based on ownership and efficiency scores

Bank group	2015–2016	2016–2017	2017–2018	2018–2019	2019–2020	Mean	Std. Dev.
Based on bank ownership							
PSBs	180	192	178	82	86	144	55
PVTs	450	553	608	662	848	624	148
Based on the OTE score							
Poorly inefficient banks	68	211	144	102	297	164	92
Fairly inefficient banks	306	342	437	331	112	306	119
Moderately inefficient banks	375	332	104	137	366	263	131
Efficient banks	166	657	786	1119	1139	774	399

Note: INR in million.
Source: Data compiled and analyzed by the author from financial statements of the respective banks for the relevant years.

Further, to have greater insight into the CSR investment, banks have been classified into four groups based on OTE score, viz., poorly inefficient bank (OTE < 0.80), fairly inefficient bank (0.80 ≤ OTE < 0.90), moderately inefficient bank (0.90 ≤ OTE < 1), and efficient bank (OTE = 1). With regard to the CSR investment of the banks classified based on their overall technical efficiency score, Table 2 depicts that, on average, efficient banks spent the highest amount of INR 774 million with a standard deviation of INR 399 million, followed by fairly inefficient banks (INR 306 million). On the other hand, poorly inefficient banks spent the lowest INR 164 million with a standard deviation of INR 92 million, followed by moderately inefficient banks (INR 263 million). Further, the year-wise analysis shows that except for 2015–2016, the efficient banks made the highest investment in CSR activities. However, no such consistency is witnessed in the case of inefficient bank groups.

4.3. Mann-Whitney test

The result of the statistical test, as presented in Table 3, reveals a significant difference in CSR investment between the two bank groups, as depicted by the value of the Mann-Whitney test, which is significant at $p < 0.01$. It implies that strong statistical proof exists to refute the null hypothesis of the absence of a significant difference in CSR investment between the public and private bank groups.

Table 3. Result of the Mann-Whitney test for CSR investment across bank ownership groups

Pair-wise bank group	Test statistic
PSBs vs. PVTs	-3.639*

*Note: * indicates significant at 0.01.*
Source: Author's analysis.

4.4. Tobit regression

The Tobit regression results presented in Table 4 confirm that CSR significantly impacts the operational efficiency of Indian listed banks. The null hypothesis (H_0), which states that CSR does not significantly influence the technical efficiency of Indian commercial banks, is rejected at the $p < 0.10$ level ($p = 0.077$). This statistically significant finding demonstrates a substantial correlation between CSR initiatives and banking efficiency in the Indian context.

Table 4. Result of the empirical relationship between bank efficiency and CSR

Explanatory variable	Coefficient	Std. error	Z	p-value	Log likelihood
Constant	0.8680509*	0.0214097	40.54	0.000	80.368323
CSR	0.0003916***	0.0002217	1.77	0.077	

*Note: * and *** indicate significant at 0.01 and 0.10.*
Source: Author's analysis.

5. DISCUSSION

The test result (Table 3) confirms *H1*, indicating a significant difference in CSR investments between PSBs and PVTs in India, with PVTs investing more. This disparity can be attributed to several factors. PVTs are generally more agile in adopting CSR practices, driven by their focus on innovation and competitive advantage (Mishra & Suar, 2010). Their CSR investments are strategically directed toward high-impact areas such as healthcare, education, and environmental sustainability (Kumar & Prakash, 2019). Scholars such as Bhattacharya et al. (2008) and Porter and Kramer (2007) emphasize that CSR initiatives build trust, loyalty, and shared value, enabling PVTs to expand their market presence while addressing stakeholder expectations. On the other hand, PSBs often face bureaucratic

constraints and limited autonomy in decision-making, which restrict their ability to invest heavily in CSR activities. They tend to view CSR as a regulatory obligation rather than a strategic opportunity for long-term value creation or meaningful community engagement. Their CSR activities are largely influenced by legal mandates, such as the CSR spending rules outlined in the Companies Act, 2013, rather than being driven by strategic goals like enhancing brand image or cultivating customer loyalty (Kumar & Prakash, 2019). Moreover, the present study highlights that PVTs demonstrate higher operational efficiency compared to PSBs, enabling them to allocate more resources toward CSR initiatives.

The regression result (Table 4) shows that CSR investment has a significantly positive impact on the efficiency scores of Indian banks. This finding substantiates *H2*, which posits that CSR is significantly and positively related to bank efficiency. The outcome aligns with empirical evidence and stakeholder theory, as demonstrated by studies such as Belasri et al. (2020), who reported that CSR investments enhance bank efficiency by improving stakeholder relationships and mitigating environmental, social, and governance (ESG) risks. Similarly, Mishra and Suar (2010) emphasized that CSR boosts customer satisfaction and employee morale, leading to improved organizational performance. Furthermore, this research supports the notion that efficient organizations not only enhance their reputations through CSR but also strengthen market competitiveness by managing stakeholder expectations. This dual pursuit of profit and social performance fosters stronger stakeholder relationships, reinforcing the firm's competitive position (Husted & Salazar, 2006; Mai et al., 2021; Wu & Li, 2024). From the perspective of stakeholder theory, CSR may enhance bank efficiency through multiple channels as follows:

Customer trust and loyalty: Banks that actively engage in CSR initiatives, such as supporting green financing, or funding community development projects, promoting financial literacy, strengthen relationships with their customers. This leads to higher customer satisfaction and retention, reducing acquisition costs and enhancing operational efficiency. Freeman and McVea (2006) argued that addressing stakeholder needs creates organizational value, while Mishra and Suar (2010) found that CSR-driven customer satisfaction improves financial performance. Albarq (2023) and Mayuri-Ramos et al. (2023) further demonstrated that banks with strong CSR reputations experience lower marketing costs and higher customer loyalty, contributing to efficiency gains.

Employee engagement and productivity: CSR significantly improves employee engagement and productivity, directly impacting operational efficiency. Employees working for socially responsible organizations exhibit higher commitment and motivation, resulting in lower turnover rates and increased productivity. CSR practices, such as promoting diversity, work-life balance, and ethical workplace standards, enhance employee morale. Turker (2009) highlighted that CSR boosts employee loyalty and organizational commitment, while Galbreath (2009) demonstrated that CSR initiatives reduce attrition and increase productivity. This positive link between CSR and employee satisfaction translates into fewer errors, faster service delivery, and better customer experiences, all of which contribute to greater operational efficiency.

Risk mitigation and stability: CSR plays a pivotal role in risk mitigation and stability, which enhances bank efficiency. By addressing ESG risks, banks reduce exposure to reputational damage, regulatory fines, and legal disputes. Gangi et al. (2019) noted that CSR-oriented banks adopting ESG practices mitigate environmental and social risks, strengthening reputation and customer trust. This leads to greater financial stability and profitability over time, ensuring smoother operations and reduced disruptions.

Sustainable practices and cost optimization: CSR-driven sustainable practices enhance operational efficiency by lowering costs and optimizing resource utilization. Banks implementing eco-friendly measures, such as digitization, energy-efficient branches, and paperless banking, reduce operational expenses while promoting sustainability. Galbreath (2009) demonstrated that CSR-related sustainability initiatives result in significant cost savings, directly improving bank efficiency. Hart and Milstein (2003) further argued that sustainable business practices create long-term value by reducing waste and enhancing operational processes.

Strengthened stakeholder relationships and regulatory support: CSR strengthens stakeholder relationships and regulatory support, both of which contribute to bank efficiency. Banks with strong CSR reputations are viewed more favorably by regulators, resulting in fewer compliance issues and faster approval processes. This reduces regulatory costs and enhances stability. CSR also fosters stronger community ties, reducing public backlash or disruptions. Cornett et al. (2016) concluded that banks with robust CSR practices demonstrate better regulatory compliance and face fewer controversies, reducing legal risks and associated costs. Porter and Kramer (2007) emphasized that CSR strengthens relationships with local communities, promoting trust and stability, which translates into operational efficiency.

6. CONCLUSION

Efficiency is a relative performance measure relevant to business sustainability in the competitive market. The competitive business strategy relating to the financial and non-financial dimensions of operations is instrumental to sustaining the business in the long run. The study mainly aims to conduct an empirical examination of the interrelationship between the DEA frontier efficiency measure and CSR in the context of Indian banks. The analysis has determined that SE is the primary contributor to OTE. This finding is in alignment with the revelations of Sinha and Chatterjee's (2008) study. Thus, operational inefficiency in banks within the Indian scenario has primarily stemmed from widespread managerial inefficiency during the study period. There is empirical evidence of being superior in technical efficiency and CSR investments by the private players. Throughout the evaluation period, efficient banks made more CSR investments than inefficient banks. The present study has witnessed the evidence of a statistically significant association between efficiency and CSR. It implies that an increased investment in CSR can potentially enhance the intermediation process of banks, resulting in improved financial performance and efficiency.

Thus, this finding follows the stakeholder theory, which suggests that the interconnections among the stakeholders are intertwined and that enhancing the benefits of one stakeholder leads to enhancing the benefits of all others involved (Freeman & Dmytriyev, 2017).

The implications of the study's findings hold significant practical value for both bankers and policymakers in India. Firstly, bank managers need to prioritize the improvement of their scale efficiency in order to enhance their overall technical efficiency. Secondly, efficient banks can allocate more resources towards CSR activities to further enhance their efficiency levels. Thirdly, policymakers can promote such activities by providing incentives or regulations that encourage banks to invest in them, as they have the potential to benefit all stakeholders, including the bank, its customers, and society at large.

This research provides deeper insight into the relationship between CSR engagement and bank efficiency in the Indian context, though certain limitations should be acknowledged. First, data constraints limited the measurement of CSR performance to the total amount spent on CSR activities, as banks vary widely in the depth and format of their disclosures. This approach excludes qualitative dimensions such as impact, sustainability, and stakeholder inclusiveness, which are critical to a comprehensive understanding of CSR effectiveness. Second, the DEA-based efficiency scores, while useful for benchmarking, are sensitive to variable selection and do not account for random noise or external shocks, potentially affecting the precision of efficiency estimates.

These limitations also suggest several directions for further study. A more nuanced understanding of CSR could be achieved by incorporating qualitative indicators, such as stakeholder feedback, to complement financial metrics. Expanding the sample to include regional rural banks, cooperative banks, and foreign banks would enhance the scope and relevance of the findings. Future studies could also adopt parametric techniques to better capture inefficiencies and random errors. Lastly, examining the moderating effects of ownership structure, strategic intent, and regulatory shifts on the CSR-efficiency link can offer deeper insights into how institutional contexts shape CSR behavior.

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