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Sustainable Practices And Performance Outcomes: A Study Of Circular Economy In Indian Firms

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Abstract
In recent years, corporate social responsibility (CSR) has become a pressing challenge for firms, and the circular economy (CE) has emerged as an innovative business model that translates CSR into practical actions. While adopting such a strategic model has the potential to enhance firm performance, existing evidence remains mixed and inconclusive. This study serves a dual purpose: first, it examines the impact of three CE practices - waste treatment, reduction, and recycling - on brand reputation and financial performance; second, it explores the mediating role of brand reputation in the relationship between CE practices and financial outcomes. The findings underscore the significance of the 3Rs and brand reputation in improving firm performance. This research offers valuable insights into how CE practices, as sustainable strategic and managerial tools, influence both marketing and financial performance. Additionally, it highlights the importance of incorporating CE into the corporate sustainability agenda, emphasizing managers' perspectives on how firms and policymakers can better implement CE at the firm level.
Keywords: *Business Performance, Corporate Social Responsibility, Circular Economy, Brand Reputation, Competitive Advantages*

1. INTRODUCTION

The transition to a more sustainable economic system is becoming more and more desired due to sustainability challenges such as increasing inequality and the degradation of our natural livelihood (Geissdoerfer et al., 2018). "Going green" has advantages for businesses as well as the environment, including significant savings on energy, water, and raw materials. A production and consumption paradigm known as the "circular economy" emphasizes sharing, renting, reusing, repairing, refurbishing, and recycling current materials and products for as long as feasible. Though the concept of corporate social responsibility (CSR) originated and later evolved into a business-focused form called strategic CSR, CE currently dominates conversation (Esken et al., 2018; Thakur, Shah, et al., 2025; Thakur & Shah, 2024). The idea of CE offers a core perspective in discussions concerning how society can address the growing challenges of resource scarcity and the exhaustion of nonrenewable resources (Stewart & Niero, 2018). The circular economy (CE) concept, which is an emerging framework for waste and resource management that promotes the idea of waste and resource cycle in an effort to provide an alternative to the widely used take-make-dispose methods (Blomsma & Brennan, 2017; Thakur, Koundal, et al., 2025). Circular economy (CE), founded on the principles of recycle, reduce, and reuse (the 3Rs), presents a fresh business model distinct from the traditional linear economy paradigm of production-consumption-disposal. This approach enables the curtailment of resource consumption and waste generation (Geissdoerfer et al., 2018; A. Gupta et al., 2019; Hussain et al., 2025). The adoption of circular economy principles holds significant consequences for the operational performance of Indian companies (Khan & Mahajan, 2023). As these businesses progressively incorporate circular economy principles, it becomes essential to assess how these practices impact various aspects of performance, including both financial and non-financial metrics (Alatawi et al., 2023; Almagtome et al., 2020; McWilliams & Siegel, 2000; Saikia & Hussain, 2022; Wang et al., 2016). Notably, waste treatment, reduction, and recycling emerge as pivotal practices, each presenting distinct opportunities and obstacles (Hopewell et al., 2009). This research aims to investigate the intricate relationship between circular economy practices and brand reputation, aiming to uncover the underlying dynamics that influence firm success within the Indian context. Moreover, it seeks to illuminate the interplay between financial achievements and circular economy initiatives, offering valuable insights for companies navigating the complexities of sustainability and profitability in a dynamic environment.

2. LITERATURE REVIEW

In recent decades, economic advancement has resulted in significant resource depletion and environmental deterioration. As a result, governments, institutions, non-governmental organizations, and professionals have integrated into their agendas the exploration of innovative methods, procedures, and effective solutions to help businesses achieve their economic goals while ensuring environmental sustainability (de Jesus & Mendonça, 2018). The concept of CE emerged as a practical strategy, placing equal emphasis on achieving environmental and economic goals. Undoubtedly, the ongoing transition towards a sustainable economic model is recognized as a fundamental aspect of the European industrial strategy (Wallace et al., 2020). Against the backdrop of escalating environmental awareness and the urgent need for resource preservation, businesses are growing more sensitive to environmental matters (González et al., 2008). They are proactively employing circular economy practices to tackle environmental challenges and counteract resource scarcity, thereby facilitating a shift towards sustainability (Mazzucchelli et al., 2022a). Particularly, environmental endeavors, particularly those associated with the circular economy (CE), are recognized as valuable avenues for wealth creation. Companies adopt them with the aim of improving performance, encompassing both marketing and financial aspects. In the realm of marketing, numerous studies have sought to demonstrate how firms' commitment to corporate responsibility impacts their performance by molding customer perceptions (Caputo et al., 2021). By embracing a more mindful approach to sustainability, companies can elevate the worth of their products and foster a more resilient reputation (Panagiotakopoulos et al., 2016; Tulcanaza-Prieto et al., 2020)

2.1. Waste treatment and brand reputation

In recent times, it's become evident that consumers are acknowledging their role in promoting sustainable consumption and production, going beyond their own needs (Seyfang, 2006; Sheth et al., 2011). The principles encapsulated by reduce, reuse, and recycle (the 3Rs) are instrumental in ensuring customer satisfaction through the delivery of safe and high-quality products. Concurrently, these principles aid companies in mitigating their environmental footprint and reducing expenses (Cheung et al., 2016). Efficient waste management practices highlight a company's commitment to sustainability, distinguishing it from competitors and strengthening its brand reputation. This has a notable impact on consumers' perceptions, cultivating positive attitudes towards the company (Jones et al., 2015). Moreover, by implementing waste treatment practices, a company can position itself as a socially responsible organization (King, 2002).

Hypothesis 1 (H1): The adoption of waste treatment as a circular economy practice has a substantial and positive impact on brand reputation.

2.2. Reduction and brand reputation

Reduction involves stopping pollution at its origin, whether in products or manufacturing processes, rather than merely eliminating it after it's been produced (Cheremisinoff & Ferrante, 2013; Nemerow, 1995). Certainly, customers are inclined to purchase products from companies they perceive as environmentally responsible and that demonstrate compliance with sustainable principles (Grimmer & Bingham, 2013). Implementing reduction practices in a company's operations not only helps minimize environmental impact but also has a substantial impact on brand reputation (Montabon et al., 2007). Brands prioritizing sustainability and actively reducing their ecological footprint are increasingly favored by customers. Such reduction strategies not only contribute to environmental preservation but also boost brand reputation, nurturing trust and loyalty among environmentally conscious consumers (Dabija et al., 2020; Esty & Winston, 2009; Katsiamaka, 2022). Consequently, reduction initiatives play a vital role in shaping a positive brand image and sustaining a competitive edge in today's eco-conscious market.

Hypothesis 2 (H2): Implementing reduction as a circular economy practice positively and significantly influences brand reputation.

2.3. Internal Recycling Practices and Brand Reputation

Effective internal recycling practices are instrumental in shaping the reputation of a company's brand (Bos-Brouwers, 2010; Rathore, 2018). Through the implementation of streamlined recycling systems within their operations, companies showcase their dedication to sustainability and environmental stewardship(Savely et al., 2007). These initiatives not only result in waste reduction and minimized environmental harm but also communicate to consumers the company's active involvement in eco-conscious endeavors (Buhl et al., 2016; Vilaça, 2022). A focused approach to internal recycling can bolster the brand's image as socially responsible and environmentally aware (Graci & Dodds, 2008; Sharma, 2019). Consequently, customers are more inclined to regard such companies favorably and may develop

deeper levels of trust and loyalty toward them. Therefore, internal recycling practices emerge as a pivotal element in establishing and upholding a positive brand reputation amidst today's environmentally conscious market dynamics.

Hypothesis 3 (H3): Implementing internal recycling as a circular economy practice positively and significantly impacts brand reputation.

2.4. Brand Reputation and Financial Performance from a Circular Economy Perspective

Examining financial performance through the prism of brand reputation is crucial, particularly within the context of a circular economy (Negri et al., 2021a). A robust brand reputation not only shapes consumer behavior but also directly influences financial outcomes (Bravo et al., 2012; Reza Jalilvand & Samiei, 2012; Wang et al., 2016). Companies that boast favorable brand reputations often have the ability to command premium prices for their offerings, resulting in heightened revenues and profitability. Additionally, they typically benefit from enhanced customer loyalty and recurring business, thereby trimming marketing and acquisition expenses. In the circular economy, where emphasis is placed on sustainability and environmental stewardship, a positive brand reputation can also allure investors and stakeholders who prioritize ethical and socially responsible business practices (Provasnek et al., 2018). Consequently, evaluating financial performance from the standpoint of brand reputation provides invaluable insights into the enduring sustainability and prosperity of enterprises operating within a circular economy framework.

Hypothesis 4 (H4): There is a positive and significant relationship between brand reputation and financial performance under a circular economy model.

2.5. The mediating influence of brand reputation

Reputation is widely recognized as a key outcome of CSR initiatives and is often linked to enhanced financial performance (Michelon et al., 2013). Prior research suggests that the alignment between brand reputation and sustainability efforts enables firms to achieve superior financial outcomes (Che-Ha et al., 2014; Thakur et al., 2024). Although this positive association has been prominent in CSR literature (Carroll & Shabana, 2010), the findings remain inconclusive. The relationship between CSR and financial performance (FP) appears to be more complex than initially assumed. Several studies have reported mixed results, with some indicating negative or even non-existent correlations (Lima Crisóstomo et al., 2011; McWilliams & Siegel, 2000), suggesting that external variables may influence this dynamic. Among these, reputation is frequently highlighted as a crucial strategic asset that can shape this relationship (Flanagan & O'Shaughnessy, 2005).

Despite its strategic importance, reputation remains underexplored in the intersection of CSR and circular economy (CE) contexts (Kowalczyk & Kucharska, 2020). Based on this perspective, it is reasonable to anticipate that brand reputation may serve as a mediating factor in the relationship between circular economy practices and financial performance. Accordingly, this study proposes the following hypothesis:

Brand reputation mediates the relationship between circular economy practices and firm financial performance.

3. METHODOLOGY

Figure 1 visualizes the conceptual model, demonstrating the connection between each element of the 3Rs framework and its impact on both brand reputation and financial performance. To effectively achieve the research objective, the study focuses on a sample of micro, small, and medium-sized manufacturing enterprises operating in India. These enterprises were selected through an opt-in panel using an integrated digital platform that automates field operations and streamlines data collection, allowing access to a wide range of industry participants across various sectors. The proposed relationships were examined using Structural Equation Modeling (SEM) to evaluate how the three identified CE practice constructs - waste treatment, resource reduction, and internal recycling - positively influence brand reputation and, subsequently, financial performance. While the analysis faced some limitations, particularly related to multicollinearity among the independent variables, SEM was employed for its ability to estimate the net effects of each independent variable on the dependent variables simultaneously (Woodside, 2013), while also accounting for measurement errors (Iacobucci et al., 2007). Additionally, SEM is considered more robust and effective than alternative techniques, especially for testing mediation effects between independent and dependent variables (Iacobucci et al., 2007).

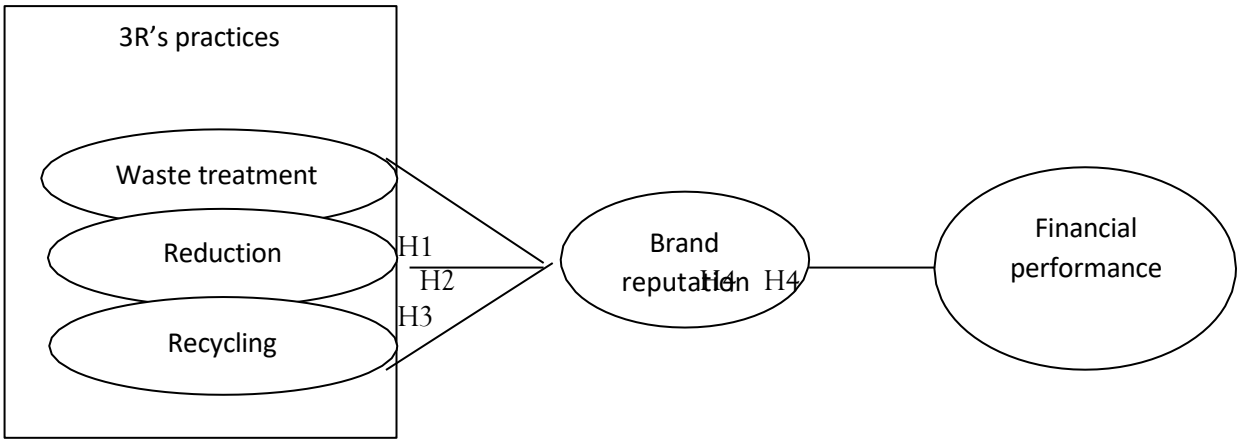

Figure 1: Conceptual framework
Source: (Mazzucchelli et al., 2022a)

3.1. Sample and data collection

In recent years, India has made significant progress in adopting Circular Economy (CE) practices, particularly within the micro, small, and medium-sized enterprise (MSME) manufacturing sector. These enterprises are increasingly implementing innovative waste management systems, reducing resource consumption, and integrating recycling processes into their operations. Many Indian MSMEs are also exploring alternative business and consumption models such as shared services and local reuse mechanisms, aimed at minimizing waste and utilizing secondary raw materials. Given the critical role MSMEs play in India's industrial and economic development, they offer a relevant and impactful context for examining the transition toward sustainable and circular manufacturing practices. The sector's limited access to natural resources and rising production costs further incentivize the adoption of CE principles to enhance efficiency and competitiveness. To explore this shift, the study collected data from Indian MSME manufacturing firms that have begun implementing CE-oriented strategies. A structured online questionnaire was administered to managers within these firms. The questionnaire was initially prepared in English, reviewed by subject matter experts, and pre-tested to ensure clarity and reliability. A pilot study involving 10 randomly selected participants was conducted to evaluate the instrument's effectiveness and ensure item validity. The survey instrument employed a 5-point Likert scale to examined key constructs such as corporate social responsibility (CSR), circular economy practices, and firm performance. A total of 613 valid responses were received, out of which 389 responses from MSME managers were retained for final analysis. The study focused on core CE constructs - waste treatment, resource reduction, and recycling within the firm - along with brand reputation and financial performance as outcome variables. The recycling dimension was measured using a five-item scale adapted from Agan (Agan et al., 2013), assessing how effectively firms collect and reprocess scrap, materials, and water. Brand reputation was evaluated based on customer perceptions using established measures from Lai (Lai et al., 2010) and Kucharska (Kowalczyk & Kucharska, 2020). Financial performance was assessed using items from Rao (Rao, 2002), covering profitability, productivity, market share growth, and return on investment (ROI). All variables were measured using a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Structural Equation Modeling (SEM) was performed using SmartPLS 4 to test the hypothesized relationships between CE practices, brand reputation, and financial performance. To control for non-response bias, the study adopted several measures: a thorough pre-test of the questionnaire, assurance of respondent anonymity, concealment of the study's full purpose, and application of Harman's single-factor test. The test revealed a total explained variance of 38.76 % by a single factor, indicating that common method bias was not a major concern in this research. Table 1 presents the measurement scale, including constructs, their respective items, factor loadings, and reliability (Cronbach's Alpha) used to assess CSR-related practices and firm performance.

Table 1: Measurement scale

Construct	Measurement items	Loadings	Alpha
Waste treatment	WT1: Water filtering system	.738	
	WT2: Using air filters	.874	

	WT3: To burn, bury or give/sell solid waste to recycling companies	.815	.865
Reduction	RED1: To reduce energy consumption	.752	
	RED2: To reduce raw materials	.736	
	RED3: To reduce waste	.802	.705
Recycling within the Firm	REC1: To develop reuse process	.888	
	REC2: To buy/use recycled materials	.820	
	REC3: Recycling within the firm	.854	
	REC4: To develop recycling process	Dropped	
	REC5: To give priority to the use recyclable material	Dropped	.829
Brand image	BI1: Customers' overall perceptions of total experience in the firm is rather good	.738	
	BI2: Customers' comparative perceptions of this firm with other competitors are very good	.874	
	BI3: Customers believe in a good long-term future of this firm	.815	.865
Firm performance:	FP1: Long term profits Dropped	Dropped	
	FP2: Short term profits	Dropped	.858
	FP3: Market share	.780	
	FP4: Firm's image	.857	
	FP5: Competitive advantage	.843	

3.2. Data analysis

Utilizing the provided dataset, the study delves into exploring the connections among circular economy practices, brand reputation, and financial performance within Micro, Small, and Medium Enterprises (MSMEs) operating in India. Specifically, the research zeroes in on three pivotal circular economy practices: waste treatment, reduction, and recycling, and their implications on both brand reputation and financial performance. Guiding this analysis is a conceptual framework, depicted in figure 1, which elucidates the intricate interplay between circular economy practices, brand reputation, and financial performance. Table 2 displays the CFA loadings, indicating strong item reliability for the constructs: Brand image (BI), Financial Performance (FP), Recycling (REC), Reduction (RED), and Waste Treatment (WT).

Table 2: Confirmatory Factor Analysis (CFA) Loadings for BI, FP, REC, RED, and WT Constructs

Measurement items	BI	FP	REC	RED	WT
BI1	.852				
BI2	.926				
BI3	.884				
FP3		.895			
FP4		.924			
FP5		.912			
REC1			.953		
REC2			.936		
REC3			.934		
RED1				.926	
RED2				.911	
RED3				.889	
WT1					.851
WT2					.926
WT3					.885

Source: Authors

4. RESULTS

4.1. Measurement Model

Using SmartPLS 4, the study assesses the measurement model to evaluate the reliability, convergent validity, and discriminant validity of each construct (Hair et al., 2019). For reliability, all Cronbach's alpha (α) values exceed the acceptable threshold of 0.70 (Nunnally & Bernstein, 1994), indicating strong internal consistency among the items. In addition, all composite reliability (CR) values are above 0.70, further supporting construct reliability. In terms of convergent validity, all item loadings are greater than the recommended threshold of 0.50 (Hair et al., 2014), and Average Variance Extracted (AVE) values exceed the 0.50 cutoff for most constructs (Fornell & Larcker, 1981). For the waste treatment construct, the AVE value is 0.639, which is marginally below the recommended threshold but still considered acceptable for convergent validity (Fornell & Larcker, 1981). Discriminant validity is confirmed using the Fornell-Larcker criterion, as the square root of each construct's AVE is greater than its correlations with other constructs, confirming that each construct is distinct and valid (Fornell & Larcker, 1981). Figure 2 and Table 3 illustrate that circular economy practices (waste treatment, reduction, and recycling) positively influence financial performance, with brand image acting as a significant mediating factor, supported by strong reliability and validity metrics.

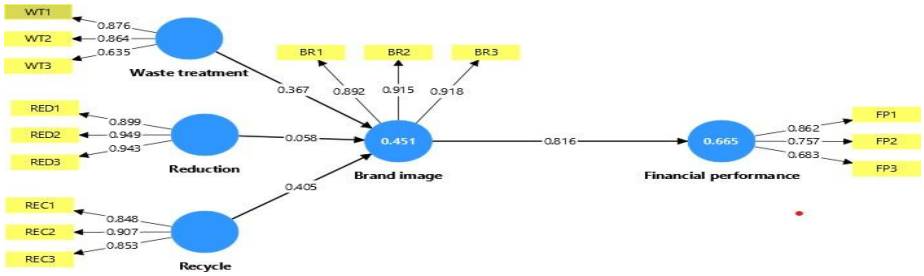

Figure 2: Structural model: the impact of circular economy practices on financial performance through brand image

Table 3: Reliability and validity Assessment

CONSTRUCTS	Cronbach's alpha (α)	CR	AV
Brand image	.894	.896	.825
Financial performance	.701	.832	.594
Recycle	.840	.864	.756
Reduction	.923	.951	.866
Waste treatment	.708	.742	.639

4.2. Structural model

The structural model demonstrates a good fit with the data, as indicated by the following fit indices: $\chi 2$ = 512.384, df = 160, $\chi 2/df$ = 3.202, RMSEA = 0.072, CFI = 0.975, and SRMR = 0.045. All measurement items show significant loadings on their respective latent constructs. As shown in Table 4, the SEM results indicate that brand image has a strong and significant positive effect on financial performance (β = 0.816, t = 29.796, $p < 0.001$), supporting H1. Likewise, recycling practices significantly enhance brand image (γ = 0.405, t = 4.112, $p < 0.001$), providing support for H2. In contrast, the effect of reduction measures on brand image is not statistically significant (γ = 0.058, t = 0.643, $p > 0.05$), thus H3 is not supported. However, waste treatment shows a significant and positive influence on brand image (γ = 0.367, t = 4.669, $p < 0.001$), confirming H4., as illustrated in Figure 3. Finally, the structural model explains 45.1% of the variance in brand reputation (R2 = 0.451), and 66.5% of that in financial performance (R2 = 0.665) in figure 3.

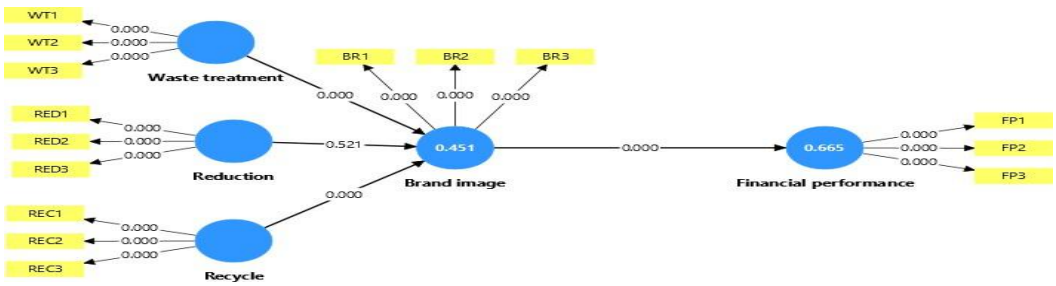

Figure 3: Structural Model Showing the Mediating Role of Brand Image in CE Practices and Financial Performance

Table 4: Structural relationships and hypothesis testing

Hypothesis	Path	Original sample (o)	Sample mean (M)	Standard deviation	T statistics	P value	Decision
H1(+)	Brand image>>Financial Performance	0.816	0.821	0.027	29.796	0.000	Supported
H2(+)	Recycle >>Brand image	0.405	0.390	0.098	4.112	0.000	Supported
H3(+)	Reduction>>Brand image	0.058	0.066	0.090	0.643	0.521	Not supported
H4(+)	Waste treatment>>Brand Image	0.367	0.375	0.079	4.669	0.000	Supported

4.3. Brand Reputation as a Mediator in the Structural Model

A mediation analysis was conducted to examine whether brand image serves as a mediating variable in the relationship between circular economy practices and financial performance. The results indicate that brand image fully mediates the effect of waste treatment on financial performance (T = 4.615; p = 0.000), and partially mediates the effect of recycling practices within firms (T = 3.970; p = 0.000). However, consistent with the baseline findings, brand image does not mediate the relationship between reduction practices and financial performance, as the result is statistically insignificant (T = 0.636; p = 0.525). Table 5 provides the specific indirect effects and corresponding statistics.

Table 5: Test of mediation

Path	Original sample (o)	Sample mean (M)	Standard deviation	T statistics	P value	Decision
Recycle>>Brand image>>Financial Performance	0.330	0.320	0.083	3.970	0.000	Supported
Reduction>>Brand image>>Financial performance	0.047	0.055	0.074	0.636	0.525	Not Supported
Waste treatment>>Brand image>>Financial Performance	0.299	0.308	0.065	4.615	0.000	Supported

5. DISCUSSION

Over the past decade, CSR has evolved into an economic necessity, pushing firms to integrate environmental and social governance into their core strategies. Among these initiatives, the circular economy (CE) has emerged as a pathway for achieving sustainable financial gains. However, despite growing attention, empirical findings on the link between CE adoption and firm performance remain inconsistent - especially within the context of large Indian manufacturing firms (Negri et al., 2021b). This study addresses this gap by examining how CE practices - specifically waste treatment, reduction, and recycling - impact both brand reputation and financial performance. The findings reveal that while recycling and waste treatment significantly enhance brand reputation, reduction practices show no direct effect which is aligned with the previous literature (Frempong et al., 2018; S. K. Gupta et al., 2023; Mazzucchelli et al., 2022b). Importantly, brand reputation plays a mediating role, translating CE practices into financial performance gains (Mazzucchelli et al., 2022b). This suggests that firms can improve competitiveness and profitability not only by implementing sustainable practices, but also by strengthening their reputation among stakeholders. Ultimately, CE serves as an indirect yet powerful driver of financial success by building a credible, socially responsible brand image.

6. CONCLUSION

This study offers fresh insights into the link between circular economy (CE) practices and corporate performance, delivering valuable contributions from both theoretical and practical perspectives.

6.1. Theoretical contribution

This study contributes theoretically by deepening our understanding of how three key circular economy (CE) practices—waste treatment, reduction, and recycling - enhance both brand reputation and financial performance. It is among the first to empirically test how these practices influence brand reputation and how, in turn, reputation mediates financial gains. The findings address the gap in literature by offering evidence that CE practices, especially waste treatment and recycling, positively impact firm outcomes. Additionally, the study highlights that brand reputation helps firms communicate their environmental efforts effectively, transforming sustainability investments into financial opportunities. By using primary data from large manufacturing firms, it advances prior research that relied mainly on secondary data, offering a firm-level perspective on the real impact of CE practices.

6.2. Managerial implications

This study offers valuable practical implications for firms aiming to integrate circular economy (CE) practices to enhance both brand reputation and financial performance. It emphasizes the strategic importance of waste treatment and recycling in strengthening emotional ties and trust with customers, thereby improving brand image and overall performance. Although reduction practices contribute directly to financial gains, their brand-related impact may be limited due to low customer awareness. Therefore, firms must adopt all three CE practices—waste treatment, recycling, and reduction—while also focusing on effective stakeholder communication to convey their environmental efforts. Additionally, the findings underscore the need for policymakers to promote supportive regulations and awareness campaigns to accelerate the transition toward a sustainable, circular economy.

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