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# Eco-Friendly CSR in Action: How News Reports and Social Media Drive Green Vehicle Sales in South Korea's Automotive Market

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## Abstract

**Purpose:** This study explores how eco-friendly Corporate Social Responsibility (CSR) initiatives, when communicated through traditional and digital media, influence consumer behavior in South Korea's automotive industry. It examines the indirect effects of CSR publicity via media coverage on green vehicle sales by analyzing the mediating role of Instagram-based electronic word-of-mouth (eWOM), offering a clearer understanding of how communication prompts consumer response and leads to purchasing behavior. **Research Design and Methodology:** Using monthly panel data from 22 automotive brands over a 29-month period (610 observations), we analyze the causal pathway from CSR news exposure to Instagram engagement and subsequent green vehicle sales. The volume of Instagram posts is treated as a proxy for consumer-generated eWOM. **Findings:** Our results show that eco-friendly CSR news reports significantly increase Instagram eWOM, which in turn contributes to higher sales of eco-friendly vehicles. This confirms the mediating role of social media engagement in translating CSR communication into real market behavior. **Conclusions:** This study is the first to empirically demonstrate the indirect effect of CSR news coverage on actual product-level outcomes via eWOM in the South Korean automotive industry. The findings offer new insights into how firms can strategically amplify CSR impact by leveraging third-party media and consumer-driven communication channels.

**Keywords :** Corporate social responsibility, Eco-friendly CSR, Instagram postings, Social media engagement, South Korean automotive industry, Green vehicle distribution

**JEL Classification Code:** M31, Q56, D12

## 1. Introduction

Corporate social responsibility (CSR) includes a variety of initiatives that go beyond traditional business objectives, with the aim of fostering positive societal changes and addressing pressing social and environmental issues. These efforts not only support corporate goals but are also meant

to contribute to broader societal well-being (Grier & Bryant, 2005; Kotler & Zaltman, 1971; Lefebvre, 2011; Tekleab et al., 2021; Wymer, 2011). However, existing CSR research largely focuses on CSR's impact on financial outcomes at the firm level, often relying on broad indices like firm value to gauge CSR's efficacy (Seok et al., 2020; Servaes & Tamayo, 2013). Such approaches, while informative, can

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obscure direct market shifts attributable to CSR, making it difficult to isolate how specific CSR initiatives influence consumer behavior and drive product-level sales. To bridge this gap, our study examines the impact of CSR on actual product sales by focusing on eco-friendly car sales as a concrete measure of CSR's effect.

This study focuses on the role of publicizing CSR activities as a way to shape public perception and drive positive consumer behavior. Corporate communication of CSR efforts through credible media channels enables firms to reach stakeholders effectively and to stimulate favorable attitudes toward the brand (Seok et al., 2020). Previous research demonstrates that media coverage of CSR can extend beyond the immediate consumer base, fostering broader societal engagement with relevant issues and enhancing public awareness (McCombs, 2014). In today's digital era, social media platforms like Instagram serve as accessible and influential channels for distributing CSR content and engaging consumers in real time (De Veirman et al., 2017; Kim & Kim, 2021; Milanesi et al., 2022). Regardless of the level of resources allocated to CSR, the act of publicizing these efforts itself—particularly through online channels—offers firms an effective strategy to increase awareness and encourage supportive attitudes (Seok et al., 2020).

This study addresses the critical societal issue of environmental sustainability, focusing on CSR's role in promoting positive environmental change (Bui et al., 2025; Öberseder et al., 2013; Yanyan et al., 2023). Across various industries, there is an increasing recognition of the urgent need to reduce carbon emissions from corporate activities, with the automotive sector standing as one of the industries most impacted by and responsive to these environmental concerns (Wellbrock et al., 2020). As the automotive industry is a significant contributor to global carbon emissions, companies within this sector have increasingly undertaken CSR initiatives that prioritize environmental responsibility. These initiatives include the development of alternative fuel vehicles, such as electric and hydrogen-powered cars, and active participation in the installation of charging infrastructures to support the transition to sustainable mobility (Günther et al., 2015). By proactively promoting these CSR activities, automotive companies not only demonstrate their commitment to environmental stewardship but also leverage media channels to shape public opinion and build positive associations with their brands.

However, as emphasized earlier, the impact of publicizing CSR activities extends beyond immediate brand perception, potentially fostering broader public awareness and concern for environmental issues. For instance, exposure to CSR promotions may help consumers see alternative fuel vehicles as essential for achieving a

sustainable environment, motivating them to choose eco-friendly cars or advocate for such options among their peers (Bhattacharya & Sen, 2004). This enhanced public engagement with environmental issues can, in turn, strengthen the financial performance of automotive firms by driving increased sales of eco-friendly vehicles. Utilizing data from the Korean automotive market, this study aims to empirically validate that media coverage of eco-friendly CSR initiatives by automotive manufacturers not only raises public awareness and engagement but also leads to a measurable increase in 'green' vehicle sales.

This study contributes to a deeper understanding of how publicizing eco-friendly CSR initiatives can influence market outcomes through consumer engagement on social media. By focusing on actual green vehicle sales rather than firm-level financial indicators or consumer intentions, this research offers a more behaviorally grounded view of CSR effectiveness. In doing so, it highlights the role of Instagram-based electronic word-of-mouth (eWOM) as a key mechanism linking media coverage to outcomes. Furthermore, by situating the analysis within the South Korean automotive industry—a market undergoing both environmental and digital transformation—this study provides timely insights into how firms can strategically align sustainability messaging with evolving patterns of consumer attention and behavior. Moreover, as eco-conscious consumer demand grows, such CSR-driven engagement may have broader implications for the distribution and availability of green vehicles in sustainability-oriented markets.

The study is structured as follows: Section 2 covers the theoretical background and hypothesis building; Section 3 describes the data, variable construction, and research model; Section 4 presents the empirical results; and Section 5 provides the discussion and conclusions.

## **2. Theoretical Background**

### **2.1. Understanding CSR: Definitions and Varied Impacts**

The concept of CSR has continuously evolved, highlighting its increasing significance in both academic and corporate arenas. Friedman (1962) was one of the early proponents, arguing that a company's primary economic responsibility is to maximize profits while operating within legal boundaries. In contrast, Manne and Wallich (1987) proposed that CSR involves activities that go beyond legal and economic obligations. Building on these foundational views, Carroll (1979, 1991) proposed that CSR should be understood across four primary dimensions: economic, legal, ethical, and philanthropic responsibilities. Similarly, Kotler

and Lee (2005) defined CSR as a company's commitment to enhancing societal well-being through both business practices and direct allocation of resources. Savitz and Weber (2013) further elaborated that CSR encompasses both environmental protection and the improvement of life quality for individuals connected to the company, while still generating economic benefits for its stakeholders. Overall, despite variations in how CSR is defined, it is widely recognized as a voluntary effort by businesses to positively impact society and the environment.

A 2017 study by Cone Communications highlighted the tangible effects of CSR on consumer behavior. The study revealed that 87% of respondents were willing to support companies that advocate for social and environmental causes, while 88% indicated they would avoid products from companies perceived as socially irresponsible (Cone Communications, 2017). These results highlight that consumers are increasingly willing to align their spending with their values, viewing CSR as more than just corporate rhetoric but as a key consideration in their purchasing decisions. Building on this, prior studies have consistently examined the relationship between CSR activities and consumer responses. Sen and Bhattacharya (2001) found that active CSR engagement significantly boosted consumers' purchase intentions. Similarly, Luo and Bhattacharya (2006) utilized the Fortune America's Most Admired Corporations (FAMA) scores as a measure of CSR and discovered a direct correlation: companies with higher CSR scores saw increased customer satisfaction, which subsequently enhanced firm value. Furthermore, a meta-analysis by Orlitzky et al. (2003), which reviewed 52 studies, confirmed a positive relationship between CSR and corporate financial performance. In this way, prior research has demonstrated that CSR initiatives can influence both intangible metrics, such as customer satisfaction, and tangible outcomes, such as financial performance (Seok et al., 2024).

However, it's crucial to recognize the diversity in findings regarding CSR's impact on financial performance. While many studies highlight CSR's positive effects, others present a more nuanced or contradictory view (Barnea & Rubin, 2010; Griffin & Mahon, 1997; Margolis & Walsh, 2003; Pava & Krausz, 1996; Viererbl & Koch, 2022). Pava and Krausz (1996), for instance, demonstrated that investors might perceive CSR activities as mere expenditures, potentially leading to negative perceptions. Barnea and Rubin (2010) suggested that differing views on CSR among corporate stakeholders could lead to a decrease in corporate value. Similarly, Viererbl and Koch (2022) argued that excessive CSR communication can trigger persuasion resistance among the public, ultimately leading to negative perceptions of a company's CSR efforts. These varied findings illustrate the complex nature of CSR's influence,

emphasizing the need for continued research in this area.

## 2.2. Effect of Publicizing CSR on Product Sales

Discrepancies in findings regarding the relationship between CSR activities and corporate performance can often be attributed to varying levels of customer awareness, as Servaes and Tamayo (2013) noted. This study argued that consumers are more likely to reward firms for their CSR initiatives if they are aware of them. This perspective is supported by McWilliams and Siegel (2001), who emphasized that consumer awareness is critical for the success of CSR activities; without it, consumers might overlook a company's CSR efforts when making purchasing decisions. Seok et al. (2020) extended this idea, showing that the volume of CSR news reports significantly impacts firm value, as measured by Tobin's  $q$ , primarily through the increase in eWOM. Therefore, the tangible impact of CSR depends largely on consumers' recognition and perception of the company's efforts.

When considering the media's influence, agenda-setting theory provides key insights into how public perception is shaped. Lippmann (1922) argued that media portrayals often become the public's perceived reality, much like the captives in Plato's Allegory of the Cave who mistake shadows for the truth. McCombs and Shaw (1972) further validated the media's power by showing a strong correlation between public opinion on major issues and how the media portrayed those issues during the 1968 U.S. presidential election. Expanding on this, Brown and Deegan (1998) noted that the media's agenda-setting role significantly influences how the public processes information on specific topics. This suggests that media coverage shapes public perceptions and values more than it directly alters their thoughts (Sheng & Lan, 2019). As a result, media coverage of a company's CSR initiatives can raise public awareness and foster increased interest in these efforts (McCombs, 2014), which can lead to enhanced consumer loyalty and improved sales performance for the company.

## 2.3. Effect of Publicizing Eco-Friendly CSR on Eco-Friendly Product Sales

As global concerns over environmental sustainability grow, news reports highlighting eco-friendly CSR initiatives have become especially impactful. In today's world, where the conversation around climate change and ecological balance dominates, companies that prioritize environmental sustainability often attract significant public attention (Yanyan et al., 2023). Consumers increasingly view eco-friendly practices as a vital component of CSR and believe that companies should actively address environmental challenges (Öberseder et al., 2013). Additionally, prior

studies suggest that environmentally responsible actions by companies not only increase customer value by improving product quality and safety, but also reduce operating and disposal costs, thereby enhancing the company's overall image and reputation (Kim et al., 2024; Lankoski, 2008; Miras-Rodríguez et al., 2015).

When media channels shine a spotlight on eco-friendly CSR endeavors, they align with contemporary societal values and enhance the company's positive image among consumers (El Ghouli et al., 2019; Khojastehpour, 2014; Miras-Rodríguez et al., 2015). Publicizing eco-friendly initiatives provides companies with a strategic advantage by bolstering consumer support, as CSR remains a highly relevant issue. Increased consumer awareness of CSR activities directly contributes to a company's financial performance by strengthening customer loyalty (Fatma & Rahman, 2017; Islam et al., 2021). Furthermore, it promotes prosocial behavior among consumers (Inoue & Kent, 2014). Consumers who are aware of a company's CSR efforts often identify with its values and are motivated to align with its goals (Bhattacharya & Sen, 2004; Fatma & Rahman, 2017). They also tend to actively participate in or promote the company's CSR activities (Hur et al., 2014). Therefore, actively executing and publicizing eco-friendly CSR initiatives can encourage consumer engagement, leading to increased sales of eco-friendly products. This leads us to our first hypothesis:

**Hypothesis 1:** Eco-friendly CSR news reports have a significant positive influence on eco-friendly product sales.

## 2.4. The Mediating Role of Instagram Posts

In this study, we examine the mediating role of Instagram posts in the relationship between publicizing eco-friendly CSR and eco-friendly product sales. Research shows that CSR publicizing increases consumer awareness and encourages consumers to advocate for socially responsible companies and initiatives, even among those who have not purchased from the company (Bhattacharya & Sen, 2004; Seok et al., 2020; Walsh & Bartikowski, 2013). This consumer-driven advocacy often arises from an alignment with the company's perceived ethical values, which leads consumers to share their positive impressions with family, friends, and peers, thus reinforcing the company's reputation and values (Bhattacharya & Sen, 2004).

Given WOM's credibility and personal nature, it serves as an influential source compared to traditional advertising, making it essential for product sales (Goldsmith & Goldsmith, 2011; Kim & Hanssens, 2017; Liu, 2006). Previous studies have identified platforms such as blogs (Johnson & Kaye, 2004; Kim & Hanssens, 2017), X (formerly Twitter) (Chintagunta et al., 2010; Fossen &

Schweidel, 2017; Hennig-Thurau et al., 2015), and both combined (Seok et al., 2020) as primary sources of eWOM. However, with the rise of visual-based social media, images and videos have become dominant in online conversations, making platforms like Instagram, YouTube, and TikTok increasingly popular (Barta et al., 2023). Instagram, in particular, enables dynamic interactions between brands and users through user-generated content and hashtags, providing companies with a powerful tool to communicate their sustainability initiatives (Liu et al., 2020; Milanese et al., 2022). This study thus considers Instagram posts about brands as a contemporary form of eWOM.

In summary, news reports on eco-friendly CSR activities enhance consumer awareness (Seok et al., 2020; Sheng & Lan, 2019; McCombs, 2014), and informed consumers actively discuss their beneficial activities for society (Bhattacharya & Sen, 2004; Seok et al., 2020; Walsh & Bartikowski, 2013). This dialogue encourages greater participation in the company's eco-friendly initiatives, ultimately leading to increased sales of eco-friendly products (Goldsmith & Goldsmith, 2011; Kim & Hanssens, 2017). The link between consumer perceptions of eco-friendly brands and their social media engagement supports our hypothesis that eWOM, particularly on Instagram, mediates the effect of CSR news on product sales. This leads to our second hypothesis:

**Hypothesis 2:** The influence of eco-friendly CSR news reports on eco-friendly product sales is mediated by Instagram postings of brands undertaking eco-friendly initiatives.

## 3. Research Design

### 3.1. Data and Variable Construction

This study used data from the Korean automobile industry to test our hypotheses. The first reason for selecting this data is that the automotive sector is closely linked to environmental issues (Wellbrock et al., 2020). With increasing public awareness of environmental protection, topics like electric vehicles and CO2 emission reduction have become focal points in the industry. Automotive companies are actively adapting to these trends to enhance sustainability, and consumers are showing heightened interest in these issues. The second reason is that constructing a time series dataset for brand-level sales is relatively straightforward, as the Korea Automobile Manufacturers Association (KAMA) and the Korea Automobile Importers & Distributors Association (KAIDA) publish detailed monthly sales data for each brand. Furthermore, each brand provides model-specific details, such as price, fuel efficiency, and engine displacement. This

allows us to gather comprehensive data for empirical analysis, making the Korean automotive industry an appropriate context for our study.

In this research, we used data from three primary sources. The first key variable, eco-friendly CSR news reports, was quantified by counting the number of monthly news stories that included both the brand name and the term 'eco-friendly' in the title (Garcia-Sanchez et al., 2014; Seok et al., 2020). These reports were collated from the Bigkinds platform (www.bigkinds.or.kr) over a period spanning from January 2021 to May 2023. Bigkinds, operated by the Korea Press Foundation, is a sophisticated media analysis platform in South Korea. It provides exhaustive access to a substantial volume of news articles from various Korean media sources, covering numerous decades. We considered the frequency of eco-friendly CSR news reports to be a viable measure of a firm's effort to publicize its environmentally friendly activities (Garcia-Sanchez et al., 2014; Seok et al., 2020; Sheng & Lan, 2019).

The second variable in our study is the volume of Instagram posts related to eco-friendly automobile brands. These data were collected on a monthly basis over a period from January 2021 to May 2023, matching the timeframe used for the CSR news reports and sales data. Using a social media analytics platform developed and operated by VAIV Company, Inc., we extracted the number of Instagram posts that included both the brand name and the term "eco-friendly". This keyword-based filtering approach ensured consistency across all brands and time points (Seok et al., 2020). Instagram has become a critical platform for studying consumer eWOM, as it allows users to interact with brands through images, videos, and hashtags (De Veirman et al., 2017; Kim & Kim, 2021; Mele & Cantoni, 2021; Ye et al., 2018). In this study, the volume of Instagram posts discussing a company's eco-friendly initiatives serves as an indicator of consumer eWOM regarding that brand's environmental efforts (Seok et al., 2020).

The third variable in our study, eco-friendly product sales for each brand, was obtained from Danawa Auto, a platform that compiles official sales data from KAMA and KAIDA. Danawa Auto provides detailed time-series data on various vehicle characteristics, including price, engine displacement, and fuel efficiency, making it a valuable resource for our analysis. Numerous studies that utilize automobile sales data have highlighted the importance of these characteristics as crucial variables (Chu & Chintagunta, 2011; Douglas et al., 1993; Kopalle et al., 2017; Landwehr et al., 2011). However, since our study focuses on brands rather than individual models, we applied a weighted average approach, based on the sales volume of each model, to represent brand-level characteristics more accurately.

For example, in January 2021, Hyundai Motors recorded sales across 20 different models, summing up to a total of

48,004 vehicles. The leading models were the Grandeur, Porter II, Tucson, Elantra, and Santa Fe, which sold 8,081, 7,952, 6,730, 6,552, and 4,313 units, respectively. Their individual prices were recorded as KRW 46.06 million, 40.13 million, 40.00 million, 28.92 million, and 47.62 million. In contrast, the i30 model saw only minimal sales, with just one unit sold that month. Table 1 provides a detailed breakdown of Hyundai Motors' sales for January 2021.

**Table 1:** Hyundai Motors' Data for January 2021

Brand	Year	Month	Rank	Model	Sale	Price
Hyundai	2021	1	1	Grandeur	8081	46.06
	2021	1	2	Porter II	7952	40.13
	2021	1	3	Tucson	6730	40.00
	2021	1	4	Elantra	6552	28.92
	2021	1	5	Santa Fe	4313	47.62
	...					
	2021	1	20	i30	1	25.56

Using the data provided, we calculated the weighted average price for Hyundai Motor in January 2021 as follows:

$$\left( \left( 46.06 \times \left( \frac{8081}{48806} \right) \right) + \left( 40.13 \times \left( \frac{7952}{48806} \right) \right) + \left( 40 \times \left( \frac{6730}{48806} \right) \right) \dots \left( 25.56 \times \left( \frac{1}{48806} \right) \right) \right) = 40.59$$

Additionally, this study incorporated the total brand sales as a control variable to account for the size effect of the brand. Another control variable considered was the monthly key interest rate, sourced from Statistics Korea (KOSTAT), due to the common practice of financing car purchases through loans. In total, data were collected for 22 brands over a period of 29 months, resulting in 610 observations.

### 3.2. Research Model

To test Hypothesis 1, which posits that the volume of eco-friendly CSR news reports may influence eco-friendly product sales, we employed Equation (1). Within this equation, the dependent variable is represented by the natural logarithm of eco-friendly car sales (ln(EcoSale)), while the independent variable pertains to the volume of eco-friendly CSR news reports (ln(NEWS)). We also included several control variables: ln(PRICE), ln(DPM), and ln(KML), representing the natural logarithms of price, engine displacement, and fuel efficiency, respectively. The dummy variable FOR indicates imported cars, while ln(Sale) represents the natural logarithm of total brand sales, with its lagged value included to control for brand size effects. KIR denotes the key interest rate, and monthly dummy variables are included to control for time-specific effects. To address

potential reverse causality, we used the lagged NEWS variable instead of a contemporaneous one.

$$\ln(EcoSale)_{it} = \beta_0 + \beta_1 \ln(NEWS)_{it-1} + \beta_2 \ln(Price)_{it} + \beta_3 \ln(DPM)_{it} + \beta_4 \ln(KML)_{it} + \beta_5 FOR_{it} + \beta_6 \ln(Sale)_{it-1} + \beta_7 KIR_t + \sum_{t'=1}^{28} \gamma_{t'} Month_{t'}, i = 1, \dots, 22, t = 1, \dots, 29 \quad \dots(1)$$

For Hypothesis 2, we applied Equation (2), which incorporates eWOM as measured by the volume of Instagram posts. To further control for reverse causality in this model, we included the lagged eWOM variable.

$$\ln(EcoSale)_{it} = \beta_0 + \beta_1 \ln(NEWS)_{it-1} + \beta_2 \ln(eWOM)_{it-1} + \beta_3 \ln(Price)_{it} + \beta_4 \ln(DPM)_{it} + \beta_5 \ln(KML)_{it} + \beta_6 FOR_{it} + \beta_7 \ln(Sale)_{it-1} + \beta_8 KIR_t + \sum_{t'=1}^{28} \gamma_{t'} Month_{t'}, i = 1, \dots, 22, t = 1, \dots, 29 \quad \dots(2)$$

In econometric research, applying the pooled Ordinary Least Squares (OLS) method for longitudinal data can introduce biases. Two common issues are heteroskedasticity across panel units and serial correlation of error terms across time points for each panel. These biases violate key OLS assumptions, preventing Best Linear Unbiased Estimation (BLUE) (Wooldridge, 2002; 2015). To detect these biases, we conducted preliminary diagnostic tests. First, to assess the presence of heteroskedasticity, we estimated both a constrained and an unconstrained model and then performed a likelihood-ratio (LR) test. The LR statistic follows a chi-square distribution and is calculated as shown in Equation (3).

$$LR = -2(\log L_R - \log L_{UR}) \sim \chi_{df}^2 \quad \dots(3)$$

The LR test revealed significant heteroskedasticity across panels ( $\chi^2(15) = 778.18, p < .001$ ). In addition, the Wooldridge test was applied to test for autocorrelation (Wooldridge, 2002). The result reported that there was a first-order autocorrelation between different time points of error terms in the same panel unit ( $F = 110.06, p < .001$ ). Due to these issues and the data structure—29 time points (T) across 22 panel units (N), satisfying an 'N < T' structure—we opted for the Feasible Generalized Least Squares (FGLS) method over OLS. The FGLS approach is generally recommended when the number of time points exceeds the number of cross-sectional units (Beck & Katz, 1995), making it suitable for our panel structure.

## 4. Empirical Results

### 4.1. Descriptive Statistics

Table 2 provides the descriptive statistics and correlation matrix for the variables used in the study. Notably, certain pairs of variables exhibit high correlations. For instance,  $\ln(DPM)$  and  $\ln(Price)$  have a correlation coefficient of  $r = .761$ , and  $\ln(Sale)$  and  $\ln(EcoSale)$  are correlated at  $r = .654$ . These high correlations among independent variables suggest a potential multicollinearity issue. To address this, we calculated the Variance Inflation Factor (VIF) for each variable after estimating the models using the pooled OLS method. The results show an average VIF of 2.11, which is well below the generally accepted threshold of 10, indicating that multicollinearity is unlikely to be a significant concern in our models. Thus, the correlations between independent variables do not present a substantial issue.

**Table 2:** Descriptive Statistics and Correlation Matrix of Variables

Var.	M.	Std. Dev.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ln(EcoSale)	3.79	3.14	1							
ln(News)	0.43	0.86	.508***	1						
ln(eWOM)	1.32	1.08	.400***	.468***	1					
ln(Price)	8.97	0.66	-.198***	-.327***	.154***	1				
ln(DPM)	7.88	0.41	-.172***	-.177***	.218***	.761***	1			
ln(KML)	2.65	0.34	.427***	.308***	.009	-.432***	-.216***	1		
ln(Sale)	6.95	2.13	.654***	.584***	.395***	-.407***	-.291***	.419***	1	
KIR	1.78	1.14	.044	-.098**	-.110***	.008	-.029	.025	-.031	1

Note: \*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

### 4.2. Hypotheses Testing

Table 3 presents the findings from the FGLS analysis conducted on the sample data. First, Model 2 demonstrates a significant relationship between the volume of eco-

friendly CSR news and eco-friendly car sales ( $\beta = .118, p < .05$ ). This finding supports Hypothesis 1, suggesting that as the volume of eco-friendly CSR news increases, sales of eco-friendly cars also rise. Second, in Model 3, although the coefficient for eco-friendly CSR news remains significant ( $\beta$

= .101,  $p < .1$ ), it decreases by .017 after incorporating the volume of Instagram posts, which is also significant ( $\beta = .085, p < .05$ ). Furthermore, Model 1 confirms a significant effect of eco-friendly CSR news on the volume of Instagram posts ( $\beta = .436, p < .01$ ). According to the mediation analysis framework of Baron and Kenny (1986), these results indicate that Instagram post volume partially mediates the relationship between eco-friendly CSR news and eco-friendly car sales (Seok et al., 2020).

To further ascertain this mediation effect, a Sobel test was executed using the values derived from Table 3 (Sobel, 1982). The resulting z-value was 2.37 ( $p < .05$ ), providing further evidence that that Instagram post volume significantly mediates the relationship between eco-friendly CSR news and eco-friendly car sales. Consequently, Hypothesis 2 is also supported. Across all models, additional findings reveal that price, fuel efficiency, and lagged total brand sales have a positive effect on eco-friendly car sales, while engine displacement has a negative effect.

**Table 3:** Regression Results

	Model (1)	Model (2)	Model (3)
IV/DV	ln(eWOM)	ln(EcoSale)	
ln(News)	.436*** (.041)	.118** (.060)	.101* (.059)
ln(eWOM)			.085** (.035)
ln(Price)		.851*** (.209)	1.070*** (.222)
ln(DPM)		-1.643*** (.241)	-1.704*** (.243)
ln(KML)		1.259*** (.269)	1.215*** (.266)
FOR		.092 (.389)	-.190 (.374)
ln(Sale)		.899*** (.044)	.878*** (.042)
KIR		.113 (.108)	.111 (.103)
Constant	1.441*** (.168)	-.349 (2.202)	-1.349 (2.184)
Month dummy	Yes	Yes	Yes
Number of Observations	610	610	610
Number of Brands	22	22	22
Adj. R-squared	.198	.445	.446

Note: Standard errors in parentheses, \*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

## 5. Discussion and Conclusion

In this study, we empirically demonstrate that a firm’s effort to publicize eco-friendly CSR activities can enhance the volume of eWOM related to these efforts, thereby positively impacting the firm’s performance in eco-friendly product sales. Specifically, in the South Korean automotive

market, we found that eco-friendly CSR promotional activities by major brands boosted the Instagram post volume, which subsequently led to higher sales of green vehicles. These findings emphasize the role of social marketing initiatives in shaping stakeholder awareness and behaviors regarding environmental change.

The academic implications of this study are threefold. First, this research not only aligns with prior social marketing studies in demonstrating that corporate social marketing endeavors can induce desirable societal shifts, but it also broadens the scope of social marketing research by revealing that such activities can, through these societal transformations, exert a positive influence on actual eco-friendly car sales. Most traditional CSR research, being conducted at the corporate level, frequently adopted indices related to firm value as their dependent variable (Seok et al., 2020; Servaes & Tamayo, 2013). However, firm value can be influenced by the company's financial activities and investor interventions, making it challenging to discern the genuine market shifts directly attributable to CSR initiatives. Conversely, predominant social marketing research, usually executed at the consumer level, relied on surveys or experiments querying direct consumer attitudes or intentions (Khojastehpour, 2014; Sen & Bhattacharya, 2001; Yanyan et al., 2023). Such approaches, even when querying purchasing intentions directly, were critiqued for lacking empirical realism, given there's no guaranteed transition from intention to actual purchase behavior. In this research, by utilizing eco-friendly car sales at the brand level as the dependent variable, we have empirically showcased the potential for consumer behavior to shift in response to corporate efforts.

Second, this study contributes to expanding the scope of CSR research by focusing on eco-friendly CSR publicizing activities. With the recent surge in global concerns about environmental sustainability, activities protecting the environment often garner significant attention (Öberseder et al., 2013; Yanyan et al., 2023). As key members of society, corporations have a duty to improve and maintain the environment for the quality of life of future generations. Our research indicates that companies can enhance their profitability by engaging in and effectively publicizing eco-friendly activities. Specifically, the study highlights news reports as a channel for publicizing these activities, showing that such publicity can influence a broad audience and encourage shifts in societal perceptions and purchasing behaviors. Future research should embrace more diverse academic approaches to examine the societal effects of these publicizing initiatives.

Third, this study clarifies the relationship between CSR and eWOM within visual-based social media platforms by addressing the role of eWOM on Instagram as a central element in our research model. Previous eWOM research

primarily focused on text-based social network platforms such as blogs (Johnson and Kaye, 2004; Kim and Hanssens, 2017) and X (Chintagunta et al., 2010; Fossen & Schweidel, 2017; Hennig-Thurau et al., 2015), with empirical studies utilizing actual Instagram posts still being scarce (Liu et al., 2020; Milanese et al., 2022). Instagram is undeniably one of the most popular social networking platforms today, exerting significant influence, especially on Generation Z, considered digital natives (Djafarova & Bowes, 2021). By verifying that corporate eco-friendly initiatives can activate eWOM on Instagram, this study reflects current trends and confirms that CSR activities are of great interest to younger generations. This endeavor is expected to pave the way for future in-depth investigations into the relationship between CSR activities and eWOM within the increasingly popular visual-based social media platforms.

This study also has practical implications. First and foremost, CSR initiatives and their effective communication to the public have the potential to foster favorable societal trends (Du et al., 2010). Corporations must acknowledge their significant role as influential communicators in society. The impact of publicizing CSR initiatives extends beyond the targeted audience, creating a ripple effect that influences various stakeholders and contributes to wider societal change (McCombs, 2014). This highlights the dual responsibility of corporations: to not only devise and execute CSR activities but also to strategically communicate these efforts to the public. When crafting press releases, the goal should extend beyond simply sharing information; it should aim to engage and spark interest in relevant topics among the wider community.

Second, despite the relatively low costs associated with such publicizing endeavors, there is an impetus for corporations to leverage them more proactively. Traditional advertising and sales promotion, often perceived to have a direct impact on corporate outcomes, are pursued even at significant expenses, overshadowing the potential benefits of public relations initiatives (McWilliams & Siegel, 2001). While establishing favorable relations with the media is a prerequisite for effective public relations, it is notable that direct costs are not inherently associated with media coverage. As evident from this research, an increase in media coverage can correspond to an increase in sales, highlighting its cost-efficiency relative to other communication strategies.

Lastly, corporations should actively work to amplify eWOM on social media platforms. The findings of this study suggest a prevailing 'herding behavior' among a majority of market constituents (Li & Wu, 2018). Frequent exposure to discussions about eco-friendly vehicles, for instance, can reinforce the notion that purchasing such vehicles aligns with prevailing societal norms and values. From a broader market perspective, this shift in perception and behavior can

support the wider distribution of green vehicles across different regions and consumer segments. As CSR-driven messaging fuels consumer demand, automotive firms and their distribution partners may need to reconfigure their sales channels and delivery strategies to align with environmentally conscious market expectations.

Despite its significant academic and practical contributions, this study acknowledges certain limitations. One primary limitation is the focus on brand-level data, specifically the volume of eWOM for individual brands and their green car sales. This approach may not fully capture the broader societal impact of corporate social marketing initiatives on perceptions and participatory behaviors. The research structure necessitated the use of monthly brand-level data for both mediating and dependent variables due to its panel data format. Future research could address this limitation by incorporating a broader range of data, potentially from various countries, to analyze the effects of CSR initiatives on societal perceptions and participation at a more macro level, thereby allowing for an exploration of differences between countries. Additionally, the potential for reverse causality—where increased sales of eco-friendly vehicles could lead to higher eWOM and media coverage—cannot be entirely discounted. However, this study's methodological approach, which includes time-lagged variables and is grounded in extensive literature review, aims to establish a logical and statistically sound basis for the proposed causal relationships. Future studies might employ alternative statistical methods to further mitigate concerns regarding reverse causality.

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