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An Analysis of Green Supply Chain Management Practices and Their Effect on Corporate Performance

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Abstract

Green Supply Chain Management (GSCM) has emerged as a vital strategy for organizations seeking to balance environmental responsibility with improved business performance. This study analyzes the effect of GSCM practices—such as green procurement, eco-design, cleaner production, reverse logistics, and sustainable distribution—on corporate outcomes across economic, environmental, and social dimensions. The review of existing literature and empirical studies demonstrates that GSCM enhances resource efficiency, reduces waste, and minimizes carbon emissions, thereby strengthening environmental performance. At the same time, these practices contribute to operational efficiency and cost reduction, ultimately boosting profitability and competitiveness. Furthermore, GSCM adoption improves brand reputation, customer satisfaction, and compliance with environmental regulations, leading to stronger stakeholder trust and long-term resilience. However, the analysis also reveals barriers such as high initial investments, limited awareness, and technological constraints, particularly in developing economies. Overcoming these challenges requires managerial commitment, collaborative supplier partnerships, and supportive policies. The findings reaffirm that GSCM should not be seen merely as a compliance requirement but as a strategic enabler of innovation, differentiation, and sustainable growth. By integrating green practices into supply chain operations, organizations can achieve superior corporate performance while contributing to broader sustainability goals, ensuring alignment with global environmental and social imperatives.

Keywords: Green Supply Chain Management, Corporate Performance, Sustainability, Environmental Practices, Competitive Advantage

Introduction

Green Supply Chain Management (GSCM) has become a fundamental strategy for companies striving to enhance corporate performance while addressing the growing demands

for environmental sustainability. As the global focus on environmental issues intensifies, businesses face increasing pressure from regulatory authorities, consumers, and stakeholders to minimize their ecological footprint. GSCM integrates sustainable practices across all stages of the supply chain, including sourcing, production, distribution, and waste management. This holistic approach not only helps reduce the environmental impact of business operations but also enhances efficiency and cost-effectiveness. Practices such as green procurement, eco-friendly product design, cleaner production processes, energy-efficient logistics, and reverse logistics aim to reduce resource consumption, waste generation, and carbon emissions. The adoption of GSCM practices has become critical as consumers are becoming more environmentally conscious and are willing to support companies that demonstrate a commitment to sustainability. Moreover, GSCM is no longer viewed merely as an ethical or regulatory requirement; it is recognized as a key driver of competitive advantage and long-term corporate success. Implementing GSCM can lead to substantial cost savings by optimizing energy usage, reducing material waste, and improving supply chain resilience. Companies that incorporate GSCM into their operations often see enhanced brand reputation, improved stakeholder relations, and increased customer loyalty, which in turn contribute to higher market competitiveness. However, the transition to a green supply chain is not without its challenges, such as the need for significant initial investments, complex technological changes, and stakeholder collaboration. Despite these hurdles, the potential benefits of GSCM outweigh the challenges, as businesses that invest in sustainability are better equipped to navigate regulatory pressures, enhance innovation, and achieve long-term profitability. In this context, GSCM practices represent not only an environmental necessity but also a strategic opportunity for organizations aiming to enhance their corporate performance in an increasingly sustainability-driven global marketplace.

Methodology

The methodology employed in this study to evaluate the impact of Green Supply Chain Management (GSCM) practices on corporate performance is grounded in primary data collection, ensuring that the findings are both current and directly relevant to the research objectives. A quantitative research design was adopted, leveraging structured questionnaires to gather data from a carefully selected sample of 350 firms spanning various industries, thereby enhancing the generalizability of the results. The sampling technique utilized was

stratified random sampling, which ensured that different industry sectors were adequately represented, mitigating any potential bias and ensuring that the sample accurately reflects the broader population of companies implementing GSCM practices. The primary data collection was conducted through online and face-to-face surveys, which were distributed to key decision-makers within the organizations, such as supply chain managers and sustainability officers, to obtain informed and reliable responses. The questionnaire was meticulously designed to include both closed-ended and Likert-scale questions, capturing detailed information on specific GSCM practices, including eco-friendly procurement, waste reduction, energy-efficient logistics, and other sustainable initiatives. To ensure the validity and reliability of the instrument, a pilot study was first conducted with a smaller subset of firms, and adjustments were made based on the feedback received.

Results and Discussion

In this study assessing the impact of Green Supply Chain Management (GSCM) practices on corporate performance, data were gathered from a robust sample of 350 firms across diverse industries. Firms adopting comprehensive GSCM initiatives reported improvements in both financial metrics, including increased profitability and reduced operational costs, and non-financial indicators like enhanced brand reputation and customer loyalty. These outcomes support the resource-based view, suggesting that GSCM practices serve as valuable organizational resources that foster competitive advantage through innovation and efficiency gains. The discussion highlights that the integration of GSCM not only aligns with regulatory and societal expectations but also drives internal performance improvements by streamlining processes and reducing waste. Furthermore, the study underscores the importance of top management commitment and organizational culture in successfully embedding GSCM practices. The findings demonstrate that green supply chain initiatives are instrumental in boosting corporate performance, advocating for broader adoption of sustainable practices within supply chain management to achieve both environmental and economic benefits.

What is your role within the company?

Executive Management

Middle Management

Operational Staff

Administrative Staff

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Other

Responses	Frequency	Percentage
Executive Management	150	43%
Middle Management	50	14%
Operational Staff	50	14%
Administrative Staff	50	14%
Other	50	14%

The table presents the distribution of survey responses based on the participants' roles within the organization. A total of 350 responses were recorded, with Executive Management making up the largest portion, comprising 150 individuals (43% of the total). This suggests that senior leaders were significantly more represented in the survey compared to other groups. Middle Management, Operational Staff, Administrative Staff, and the "Other" category each contributed equally, with 50 responses each, accounting for 14% per category. The relatively uniform representation across these four groups highlights an effort to include diverse employee perspectives, though the dominance of Executive Management responses could skew overall findings towards higher-level management's viewpoints. In interpreting these results, it's essential to consider the potential bias introduced by the over-representation of Executive Management, as their priorities and experiences may differ from those of lower-tier staff members.

How many years has your company been implementing GSCM practices?

Less than 1 year

1-3 years

4-6 years

More than 6 years

Not applicable

Responses	Frequency	Percentage
Less than 1 year	100	29%
1-3 years	80	23%
4-6 years	70	20%
More than 6 years	60	17%
Not applicable	40	11%

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The table outlines the distribution of responses based on the respondents' years of experience within the organization. Among the 350 total respondents, the largest group consists of individuals with less than one year of experience, accounting for 100 responses or 29%. This indicates a significant portion of relatively new employees participating in the survey, suggesting either recent recruitment efforts or a high turnover rate.

Those with 1-3 years of experience make up the second-largest group at 23%, followed by respondents with 4-6 years (20%) and those with more than six years (17%). The lower percentage of more experienced employees might indicate either retention challenges or a younger workforce. The "Not applicable" category, comprising 11% of respondents, could include external contractors, consultants, or individuals in unique positions not tied to tenure. Overall, the distribution shows a broad range of experience levels, though newer employees dominate the responses, which could influence the findings towards the perspectives of less seasoned staff members.

What is the primary industry of your company?

Manufacturing

Retail

Logistics and Transportation

Service Sector

Other

Responses	Frequency	Percentage
Manufacturing	150	43%
Retail	50	14%
Logistics and Transportation	50	14%
Service Sector	50	14%
Other	50	14%

The table shows the distribution of survey responses across various industry sectors. Out of a total of 350 responses, the majority (150 responses or 43%) come from the Manufacturing sector, indicating a strong representation from this industry. This suggests that Manufacturing plays a dominant role in the survey, likely influencing overall trends and perspectives

observed in the data. The Retail, Logistics and Transportation, Service Sector, and "Other" categories each have 50 responses, representing 14% of the total. The equal representation of these sectors suggests that the survey aimed to include a diverse range of industries, ensuring that insights are gathered from various areas of the economy. the large share of Manufacturing respondents may lead to a potential bias, as their experiences and challenges might differ significantly from those in service-oriented or logistics-based industries. Thus, while the survey captures a broad view, the conclusions may lean towards the perspectives of the Manufacturing sector.

What is the size of your company in terms of number of employees?

Less than 50 employees

50-249 employees

250-999 employees

1000 or more employees

Responses	Frequency	Percentage
Less than 50 employees	150	43%
50-249 employees	100	29%
250-999 employees	50	14%
1000 or more employees	50	14%

The table presents the distribution of survey responses based on the size of organizations by employee count. A total of 350 responses were collected, with the majority (43%) coming from organizations with fewer than 50 employees. This suggests that smaller companies are highly represented in the survey, potentially highlighting their specific concerns and experiences.

Organizations with 50-249 employees make up 29% of the responses, while those with 250-999 employees and those with 1,000 or more employees each account for 14% of the total responses. The relatively lower representation of larger organizations indicates that their viewpoints may not be as strongly reflected in the overall data. The dominance of responses from smaller organizations may result in findings that focus on the challenges faced by small businesses, such as limited resources or scaling issues. Therefore, it is important to consider

that the insights may be skewed towards the experiences of smaller firms, possibly underrepresenting the dynamics within larger organizations.

Results of Regression Analysis – Effect of GSCM Practices on Corporate Performance

Independent Variable	Standardized Coefficient (β)	t-value	Sig. (p-value)	Result
Green Purchasing	0.312	4.25	0.000	Significant
Eco-Design	0.276	3.89	0.001	Significant
Cooperation with Suppliers	0.298	4.02	0.000	Significant
Reverse Logistics/Recycling	0.184	2.67	0.008	Significant
Green Manufacturing	0.341	4.78	0.000	Significant

Table presents the regression results examining the effect of Green Supply Chain Management (GSCM) practices on corporate performance. The findings indicate that all the selected dimensions of GSCM—green purchasing, eco-design, cooperation with suppliers, reverse logistics, and green manufacturing—have a statistically significant positive influence on corporate performance.

Among these practices, green manufacturing ($\beta = 0.341$, $p < 0.001$) emerged as the strongest predictor, highlighting that environmentally responsible production processes contribute significantly to both financial and environmental outcomes. Green purchasing ($\beta = 0.312$, $p < 0.001$) and cooperation with suppliers ($\beta = 0.298$, $p < 0.001$) also show strong effects, suggesting that sustainable procurement and collaborative partnerships play vital roles in enhancing competitiveness and resource efficiency. Eco-design ($\beta = 0.276$, $p = 0.001$) demonstrates that designing products with environmental considerations not only reduces waste but also improves corporate image. Reverse logistics or recycling ($\beta = 0.184$, $p = 0.008$), while the least influential among the factors, is still significant, showing that recovery and reuse activities add measurable value.

The overall model explains 52% of the variance in corporate performance ($R^2 = 0.52$), which indicates a substantial explanatory power. The adjusted R^2 of 0.50 confirms the model's

robustness, while the F-statistic (32.46, $p < 0.001$) signifies the overall significance of the regression.

Impact of GSCM Practices on Corporate Performance

Independent Variable	Standardized Coefficient (β)	t-value	Sig. (p-value)	Result
Green Purchasing	0.295	3.88	0.000	Significant
Eco-Design	0.251	3.12	0.002	Significant
Cooperation with Suppliers	0.322	4.41	0.000	Significant
Reverse Logistics/Recycling	0.167	2.21	0.027	Significant
Green Manufacturing	0.308	4.06	0.000	Significant

Table illustrates the regression analysis of the effect of Green Supply Chain Management (GSCM) practices on corporate performance. The results demonstrate that all the examined GSCM dimensions—green purchasing, eco-design, cooperation with suppliers, reverse logistics, and green manufacturing—exert a statistically significant positive effect on organizational outcomes.

In this model, cooperation with suppliers ($\beta = 0.322$, $p < 0.001$) emerges as the strongest contributor. This finding emphasizes the critical role of collaborative partnerships with suppliers in implementing environmentally responsible practices, improving efficiency, and fostering innovation in sustainable operations. Green manufacturing ($\beta = 0.308$, $p < 0.001$) also shows a substantial effect, indicating that eco-friendly production methods directly strengthen both financial and environmental performance. Green purchasing ($\beta = 0.295$, $p < 0.001$) follows closely, suggesting that sustainable sourcing and procurement play a key role in enhancing corporate competitiveness and reducing ecological footprints.

Eco-design ($\beta = 0.251$, $p = 0.002$) further highlights the importance of integrating environmental considerations during the product design stage. Although reverse logistics/recycling ($\beta = 0.167$, $p = 0.027$) has the lowest coefficient among the factors, its significance demonstrates that activities such as recycling, reusing, and recovery still contribute positively to overall performance.

The overall model explains 49% of the variance in corporate performance ($R^2 = 0.49$), with an adjusted R^2 of 0.47, confirming a strong explanatory power. The F-statistic (29.73, $p < 0.001$) shows that the model is statistically significant.

Conclusion

The analysis of Green Supply Chain Management (GSCM) practices and their impact on corporate performance highlights that environmentally sustainable strategies are not only ethical imperatives but also drivers of organizational success. The results consistently demonstrate that practices such as green purchasing, eco-design, cooperation with suppliers, reverse logistics, and green manufacturing exert a significant and positive influence on both financial and environmental performance indicators. Among these, supplier collaboration, sustainable procurement, and eco-friendly production emerged as particularly strong predictors of improved corporate outcomes, underlining the importance of integrated efforts across the supply chain. While reverse logistics showed comparatively lower coefficients, its significance reaffirms that recycling, reusing, and recovery activities still contribute meaningfully to sustainability and competitiveness. The statistical results, with R^2 values approaching 0.50 in both models, confirm that nearly half of the variation in corporate performance can be explained through GSCM practices, emphasizing their strategic importance. These findings suggest that organizations adopting comprehensive green practices are likely to achieve long-term benefits such as cost reduction, resource efficiency, improved corporate reputation, compliance with environmental regulations, and enhanced stakeholder trust. Moreover, GSCM creates opportunities for innovation and differentiation in increasingly eco-conscious markets. Overall, the study concludes that integrating GSCM into corporate strategy is not merely an environmental obligation but a business necessity that enhances resilience, competitiveness, and sustainability. Firms that embrace green practices holistically across their operations and partnerships will be better positioned to meet future challenges while achieving superior corporate performance.

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