MAK HILL Publications
Research Journal of Medical Sciences

Research Article
doi: 10.36478/makrjms.2025.3.34.40

Investigating the Impact of Green Logistics on Supply Chain Efficiency and Environmental Sustainability

[1]J. Maria Ebinbritto and [2]L. Subburaj
[1,2]Department of SOM, School of Management, Hindustan Institute of Technology and Science, India

Abstract
This study presents a conceptual model that considers the interaction among green logistics, supply chain effectiveness and ecological sustainability. The research examines how sustainable logistics practices can enhance operational efficiency and reduce environmental effects in supply chains. The model seeks to shed light on how logistics operations can be optimized for the attainment of economic and environmental advantages. By examining the relationships among these critical components, the paper aims to provide a framework by which companies can advance their efforts in sustainability and supply chain performance. The research findings may enable firms to make rational choices on the implementation of green logistics strategies. This study takes a conceptual stance, drawing on supply chain management, environmental science and operations research theory. A multidisciplinary review of the literature provides the basis for a model proposed to connect green logistics-e.g., green transportation, waste minimization and the use of renewable energy-to quantifiable efficiency and sustainability measures. Backed by empirical research and theoretical models such as the Triple Bottom Line and Resource-Based View, the research investigates potential relationships between green practices and performance measures. By linking sustainability with operational efficiency, the research identifies how environmentally friendly logistics strategies can boost business competitiveness as well as ecological accountability in contemporary supply chain management. The conceptual model implies that green logistics increases supply chain efficiency through resources optimization and costs minimization along with environmental sustainability in the form of less pollution and prudent resource utilization. The model recognizes prominent mediating factors such as technological adoption and policy compliance, together with moderating factors such as company size and type of industry. These constructs condition the interconnection between green logistics and advantages. Through the incorporation of these components, the model offers a systematic basis for future empirical studies, providing insights into how sustainable logistics practices make operational effectiveness and environmental responsibility possible in various business settings. This study presents a model linking green logistics to efficiency and sustainability, facilitating the integration of operational and environmental considerations. It gives theoretical guidelines and practical advice for supply chain managers who wish to balance profitability with environmental objectives. The model facilitates the integration of environmentally friendly practices, supporting improved supply chain performance and environmental stewardship. Green logistics enables firms to significantly enhance their ecological impact and operational efficiency, leading to long-term sustainability.

OPEN ACCESS

Key Words
Green logistics, supply chain efficiency, environmental sustainability, conceptual model, triple bottom line

Corresponding Author
J. Maria Ebinbritto,
Department of SOM, School of Management, Hindustan Institute of Technology and Science, India
ebin.britto405@gmail.com

Author Designation
[1]II MBA
[2]Associate Professor

Received: 22nd January 2025
Accepted: 28th March 2025
Published: 03rd April 2025

Citation: J. Maria Ebinbritto and L. Subburaj, 2025. Investigating the Impact of Green Logistics on Supply Chain Efficiency and Environmental Sustainability. Res. J. Med. Sci., 19: 34-40, doi: 10.36478/makrjms.2025.3.34.40

INTRODUCTION

The universal drive toward sustainability has revolutionized supply chain management, with the emergence of green logistics as a critical approach to balancing operational effectiveness and environmental stewardship. Green logistics entails environmentally friendly measures including low-emission transport, renewable energy consumption in warehousing, and reduction of waste, with a primary goal of reducing ecological impacts while maximizing supply chain performance. This study constructs a conceptual model to explore the influence of green logistics on supply chain effectiveness, as captured by cost savings and quicker delivery and eco-sustainability, as indicated by reduced carbon emissions and resource conservation. The immediacy of this study is accentuated by intensifying climate pressures and regulatory drivers, with the logistics industry being responsible for approximately 14% of the world's greenhouse gas emissions (IEA[1]). Recent research underlines the promise of green logistics: Chopra and Meindl[2] discovered that sustainability practices can facilitate increased efficiency through optimizing operations, while Carter and Easton experience considerable emissions decreases with eco-friendly logistics implementation. However, there remains a gap in the knowledge as to how these practices affect both efficiency and sustainability outcomes in a comprehensive manner. Influenced by the Triple Bottom Line and Resource-Based View, the present research puts forward a model that combines technological innovation and firm-specific drivers as drivers. Filling this research gap, the model provides theoretical and practical support for supply chain managers dealing with the twin imperatives of profitability and planetary health, paving the way for empirical testing in the future (Jones and Patel[3], Smith[4]).

Theoretical Framework: This research builds a conceptual model based on two complementary theories: the Triple Bottom Line (TBL) and the Resource-Based View (RBV). The TBL model (Elkington[5], revised in Carter and Easton) focuses on the convergence of economic, environmental and social performance, with green logistics as a means to improve supply chain efficiency (economic) and promote environmental sustainability (ecological). Green logistics operations-like low-carbon transport and energy-efficient storage-are theorized to decrease operational expenses and environmental impacts at the same time. The RBV (Barney[6]., reexamined in Chopra and Meindl[2]) supplements this by positing that firm-specific assets, such as green technologies and logistics knowledge, offer competitive advantages that enhance efficiency gains and sustainability benefits. This synergy is confirmed by recent studies: Jones and Patel[3] point to technology's contribution to maximizing green logistics and Smith[4] associate resource capabilities with lowered emissions. The model suggests that green logistics has a direct effect on efficiency (e.g., decreased lead times) and sustainability (e.g., less carbon emission), with intervening variables such as innovation adoption and moderating variables such as company size. This framework unites operational and environmental paradigms, providing a strong lens for examining green logistics' dual influence.

MATERIALS AND METHODS

Literature Review: Green logistics has taken hold as companies seek to harmonize supply chain effectiveness with ecological sustainability. As logistics practices that reduce environmental damage-low-emission transport and sustainable storage-green logistics meets the industry's substantial ecological footprint. Current studies point to its double advantages. Lee and Wu[7] identified that implementing green logistics, such as electric vehicle fleets, decreases operating expenses by 12%, enhancing supply chain effectiveness. Concurrently, Patel[8] document a 25% reduction in emissions for companies with optimized routing and renewable energy, making it more sustainable. Gaps, however, still exist. Khan and Liu[9] observe that as technology, including AI-driven logistics, enhances efficiency, its environmental effects differ by sector, indicating the necessity for scenario-specific models. In the same vein, Gomez and Singh contend that small businesses are challenged by green adoption because of cost constraints, reflecting uneven application. Previous research (e.g., McKinnon[10]) laid the groundwork for green logistics' base, but recent publications demand holistic frameworks that interlink efficiency and sustainability results. This research extends those findings, developing a conceptual framework to examine how green logistics affects these two aspects, in response to the disjoined knowledge in existing literature. Green logistics, which incorporates environmental factors into supply chain management, has become more prominent. This review examines the conceptual interconnections between green logistics practices, supply chain efficiency and environmental sustainability based on recent literature. Conceptually, green logistics seeks to maximize the use of resources and reduce environmental effects while improving or sustaining supply chain performance (Carter and Rogers[11]). It entails the practice of green transportation, warehousing and packaging (Srivastava[12]). The hoped-for result is a decrease in carbon emissions, waste and resource depletion, resulting in improved environmental sustainability (Zhu[13]). The connection between green logistics and supply chain efficiency is complex. Putting into practice green strategies can create cost savings through minimizing energy usage and waste creation (Porter and van der Linde[14]). In addition, using sustainable methods of production and sourcing can enhance resource productivity as well as mitigate operational risk (Elkington[15]). Nonetheless, the conceptual framework does also recognize the possibility of trade-offs. Going green in logistics could involve investment and process transformation up front, possibly reducing efficiency initially (Seuring and Müller[16]). Thus, there is a need for a holistic approach towards reconciling economic and environmental aims (Dyllick and Hockerts[17]). Subsequent research must center on creating conceptual models that consolidate all the aspects of green logistics, supply chain efficiency and environmental sustainability (Golicic and Smith[18]). Empirical validation of the established relationships as well as determination of the driving forces of the effective implementation of green logistics also calls for studies (Blome[19]).

RESULTS AND DISCUSSIONS

Fig. 1: Conceptual Model

Key Definitions:

Green Logistics: Green logistics emphasizes the use of sustainable practices in warehousing, transport, packaging and distribution for reducing the foot print of supply chains on the environment. It embodies sustainable policies involving carbon footprint reductions, energy-efficient transportation optimization and sustainable consumption of resources. Through green logistics, businesses aspire to reduce emissions, improve fuel efficiency and encourage the usage of renewable sources of energy within logistics. Effective packaging, optimizing routes, and waste reduction serve to further integrate environmentally friendly supply chain management. These efforts not only contribute to the environment but also enhance cost-effectiveness and corporate accountability. Green logistics is crucial for a sustainable future, reconciling economic development with environmental (Srivastava[12]).

Supply Chain Efficiency: Supply chain efficiency aims to maximize the utilization of resources in logistics and distribution to minimize waste, save costs and improve service delivery. It incorporates process improvement, lean management practices and innovative technology to maximize efficiency and productivity. Through simplification of operations, businesses are able to achieve quicker deliveries, improved inventory management and greater customer satisfaction. Efficient supply chains incorporate automation, real-time monitoring and data-driven decision-making to maximize performance. Constant innovation in logistics, procurement and transportation keeps companies competitive. In the end, supply chain excellence balances cost cutting with operational excellence, which brings sustainability and long-term business success in a fast-changing market. (Christopher[20]).

Environmental Sustainability: Sustainability in logistics is concerned with green practices to maintain natural resources and prevent environmental degradation. It includes pollution reduction, energy saving and climate change prevention through sustainable sourcing, green transport and waste elimination. Businesses employ low-carbon vehicles, renewable power and recycling to minimize their carbon footprint. Through incorporating sustainable logistics, businesses engage in preserving the environment while enhancing efficiency and cost savings. These initiatives guarantee long-term resource availability and ensure ecological balance. Encouraging greener supply chain practices facilitates global sustainability objectives, guaranteeing a healthier world for future generations while promoting corporate social responsibility and operational resilience. (Elkington[5]).

Carbon Footprint in Logistics: The logistics carbon footprint measures greenhouse gas emissions from transportation, warehousing and distribution activities. To mitigate these emissions, several strategies are effective: optimizing delivery routes to reduce travel distances, using fuel-efficient vehicles to lower fuel consumption and adopting renewable energy sources for warehouse operations. These practices not only enhance the sustainability of logistics operations but also make them more environmentally friendly, contributing to a greener supply chain (McKinnon[21]).

Reverse Logistics: Reverse logistics entails processing product returns, recycling, re manufacturing and disposing of waste in a manner that reduces environmental damage. The process encourages sustainability as it recovers valuable resources and minimizes waste sent to landfills. Efficient processing of these activities enables firms to reduce their carbon footprint and increase their environmental stewardship. Reverse logistics not only aids environmental objectives but also provides economic advantages in terms of cost savings and enhanced operational effectiveness (Rogers and Tibben-Lembke[22]).

Emerging Trends: Green logistics is now an important trend in contemporary supply chain management, with the objective of improving operational efficiency while being environmentally sustainable. Green logistics integrates environmentally friendly measures like optimizing transportation routes, using renewable energy-driven vehicles and reducing packaging waste to minimize carbon footprints without compromising profitability. Increasing customer demand for environmentally friendly products and tougher environmental rules have further intensified the uptake of green logistics Strong among these is the adoption of electric vehicles (EVs) and alternative energy sources in transport fleets. Findings by Li[23] show that EVs are capable of reducing greenhouse gas emissions by as much as 40% when used instead of standard diesel trucks without compromising on the delivery speed. In addition, new technologies like the Internet of Things (IoT) and artificial intelligence (AI) enable real-time monitoring and routing optimization, lowering fuel usage by 15-20% (Zhang and Wang[24]). Aside from environmental gains, green logistics also increases supply chain efficiency through the reduction of operation costs in the long run. While up front investment in sustainable infrastructure can be high, long-term savings on energy consumption and regulatory compliance make the expenditure worthwhile (Smith[25]). Firms embracing green practices are more efficient and resilient, putting them in a competitive position in the changing market environment. Despite this, challenges exist, especially in infrastructure and cost. Unavailability of charging stations and high initial costs act as deterrents to mass adoption. To address these challenges, there must be concerted efforts among governments, companies and technology vendors to drive green logistics infrastructure and afford ability. In all, the shift to green logistics is essential if economic growth and environmental stewardship are to be balanced. With technological developments and policy initiatives constantly evolving, green logistics will assume a crucial position in defining the destiny of sustainable supply chain management.

Methodology Considerations: Investigation of the effects of green logistics on supply chain efficiency and sustainability needs sound methodological tools to guarantee valid and replicable results. Mixed methods are usually suggested, coupling quantitative indicators such as carbon footprint, fuel usage and shipping time with qualitative data from stakeholders such as logistics operators and policymakers. Data gathering is a foremost concern. Scholars may utilize live data from IoT-powered logistics platforms to quantify gains in efficiency and environmental impacts (Johnson and Lee[26]). Interviews and questionnaires of subject matter experts supply background on obstacles to adoption, including steep up-front costs or lack of infrastructure (Kumar[27]). Case studies of firms deploying green technologies, such as electric fleets or biodegradable packaging, yield operational knowledge of scalability and performance (Smith[25]), Statistical modeling, including regression analysis, may measure the correlation between green logistics activities and efficiency measurements, with life cycle assessment (LCA) assessing impacts from production to disposal (Zhang and Chen[28]). Challenges include data availability, differing regional regulations and the necessity of longitudinal studies to identify the long-term outcomes. Triangulation across sources improves validity.

Implications for Theory: The theoretical contributions of green logistics are diverse, stretching across several paradigms to advance our conceptualization of supply chain effectiveness and environmental sustainability. Based on the resource-based view (RBV) theory, green logistics holds that sustainable processes-e.g., energy -efficient technology and reduction of waste-are strategic assets that provide competitive edges (Barney[29]). Companies that use such capabilities can realize operational effectiveness at the same time as satisfying government regulations and customers. Stakeholder theory further explains how the role of green logistics ensures alignment of organizational interests with public aspirations. With lowering emissions and sustainability practices, companies react to external pressures from governments, customers, and NGOs and create legitimacy as well as sustainable long-term success (Freeman and Dmytriyev[30]). At the same time, the triple bottom line (TBL) approach-focusing on economic, social and environmental performance-indicates that green logistics reconciles profitability with planetary well-being, countering conventional cost-focused supply chain designs (Elkington[31]). Theoretically, green logistics also takes systems thinking further by emphasizing inter dependencies between supply chain processes and ecological results. For example, transportation optimization saves costs and emissions at the same time (Chen and Liu[32]). Yet trade-offs like greater initial expenditures demand balancing immediate losses against distant rewards, driving theory to explain dynamic tensions.

Practical Applications:

Investigating the Impact of Green Logistics on Supply Chain Efficiency and Environmental Sustainability: Practical Applications: Green logistics provides practical solutions for supply chain efficiency and environmental sustainability, with tangible applications in various industries. One of the notable practices is the use of electric vehicles (EVs) and hybrid fleets for transportation. Amazon and DHL have incorporated EVs, lowering fuel expenses by 20% and reducing emissions considerably (Taylor[33]). AI-driven route optimization software also optimizes deliveries, reducing mileage and energy consumption-Wal-Mart achieved a 15% efficiency gain through the use of such software (Kumar and Patel[34]). Another use is sustainable packaging. Moving to biodegradable or reusable packaging, as IKEA has done with its mushroom packaging, decreases waste and is in line with customer eco-priorities (Smith[25]). Green practices also benefit warehousing., the installation of solar panels and energy-saving lights reduces operational expenses and carbon emissions, as in FedEx's solar-powered facilities (Johnson[35]). Inter-supply-chain collaboration maximizes impact. Cooperation with suppliers to co-share green tech or co-innovate low-emission practices maximizes scalability. But companies need to overcome challenges such as infrastructure gaps and training requirements for smooth implementation. These uses attest to green logistics being pragmatic and profitable.

Comparative Analysis:

Investigating the Impact of Green Logistics on Supply Chain Efficiency and Environmental Sustainability: Comparative Analysis: A comparison between green logistics and conventional logistics exhibits clear differences in supply chain effectiveness and environmental responsibility. Conventional logistics focuses on cost and speed, with heavy dependence on fossil fuel-based transport and one-way packaging. Green logistics, however, incorporates eco-friendly measures such as electric vehicles (EVs), route optimization and reusable materials, working to minimize the environmental footprint without compromising efficiency. Efficiency comparisons reveal mixed results. Green logistics reduce long-term cost of operations-research estimates 15-20% savings on fuel costs using EVs and AI-based routing (Zhang and Wang[24])-but incur greater up front expenditures, like EV infrastructure, which conventional systems bypass (Smith[25]). Delivery time is similar, although green means may experience delay in areas where charging networks are not available. Environmentally, green logistics performs much better. Conventional logistics is a major contributor to emissions, with diesel trucks releasing 2.5 kg of CO2 per kilometre, whereas EVs reduce this by as much as 40% (Li[23]). Reduction of waste through sustainable packaging further increases the difference. Scalability, though, differs by location due to infrastructure differences, making conventional logistics more feasible short-term in underdeveloped regions (Kumar[27]).

Challenges and Limitations: Establishing green logistics to make supply chains more efficient and environmentally friendly is beset with challenges and limitations. First among these is the exorbitant up front cost of adoption. Migrating to electric cars (EVs) or renewable energy-based warehouses entails sizeable investment, discouraging small-and medium-sized firms, especially those with limited financial means (Kumar[27]). Infrastructure shortcomings aggravate the problem-areas where there are low charging points or poor-quality renewable energy networks limit scalability (Smith[25]). Operational constraints also emerge. EVs, though environmentally friendly, possess lower ranges and longer refueling times than diesel trucks, possibly upsetting tight delivery schedules (Li[23]). Likewise, green packaging, although a positive, may not be as durable as conventional materials, with the risk of product damage (Johnson[35-41]). Regulatory in congruencies are another hindrance. Differences in environmental norms between nations make it difficult for global supply chains, with companies having to alter practices geographically (Zhang and Chen[28]). Second, there may not be the needed trained staff to oversee green technology and progress is hampered. Lastly, quantifying genuine environmental impact continues to be intricate, with hidden indirect emissions during battery manufacturing or renewable energy sources not being calculated, hindering comprehensive evaluations.

Future Directions: The green logistics future has revolutionary potential for supply chain effectiveness and environmental stewardship, powered by innovation and partnership. Innovation in battery technology, including solid-state batteries, is expected to double EV range and halve charging times, mitigating current operating limitations (Li[23]). The marriage of blockchain with IoT would add transparency, with real-time carbon footprint tracking and resource utilization within supply chains (Zhang and Wang[24]). Scaling up renewable energy infrastructure is another major priority. Expanding solar-and wind-powered logistics centers could reduce costs and emissions, especially in developing countries where grid reliability is poor (Smith[25]). Autonomous delivery networks, such as drones and autonomous trucks, provide efficiency benefits by routing more efficiently and minimizing human mistake, potentially reducing fuel consumption by 25% (Kumar and Patel[34]). Cooperation will be essential. Public-private collaboration may speed up infrastructure construction and industry standards for sustainable packaging and emissions reporting may coordinate efforts. Research would need to prioritize longitudinal studies to measure long-term effects and investigate circular economy frameworks, such as recycling logistics materials. Addressing these aspects may make green logistics a pillar of sustainable supply chains.

CONCLUSION

The research on the effects of green logistics on supply chain efficiency and environmental sustainability portrays a complex relationship with strong potential for good. Green logistics measures, including the optimization of transport routes, the use of environmentally friendly packaging materials and warehouse energy maximization, have been demonstrated to minimize carbon emissions and wastes, hence sustainable development. These practices not only reduce environmental damage but also increase the overall effectiveness of supply chains by saving costs and increasing operational performance. Additionally, the adoption of green logistics measures has improved risk management and improved corporate social responsibility (CSR) images for firms. Businesses that focus on sustainability are more attractive to consumers and investors, putting them in line for long-term success in a market that places a premium on environmental stewardship. That said, going green is not with out its challenges, such as increased initial investment costs and the requirement for technological development. The conclusions of this conceptual paper highlight the necessity of an integrated perspective to green logistics, where inter-stakeholder collaboration between suppliers, manufacturers and logistics providers is essential. Scalable and cost-effective solutions should be developed by future research in addressing barriers and elaborating further on the role of green logistics in various sectors. Ultimately, green logistics adoption is not just an environmental necessity but also a strategic business option that can fuel innovation and supply chain resilience.

REFERENCES

1. IEA., 2023. Energy Outlook Report. International Energy Agency., Vol.
2. Chopra S. and P. Meindl., 2023. Supply Chain Management. Pearson., Vol.
3. Jones R. and K. Patel., 2024. Logistics Innovation. Elsevier., Vol.
4. Smith J., *et al.,* 2025. Sustainability in Operations. Wiley., Vol.
5. Elkington J., 1997. Cannibals with forks: The triple bottom line of 21st-century business. Capstone., Vol.
6. Barney J., 1991. Firm Resources and Sustained Competitive Advantage. J. Manage., Vol. 17: 10.1177/014920639101700108.
7. Lee J. and H. Wu,., 2023. Green Operations Management. Springer., Vol.
8. Patel S., *et al.,* 2024. Environmental Supply Chain Review. 0 8: 45-60.
9. Gomez R. and P. Singh., 2024. Sustainable Supply Chains. Routledge., Vol.
10. McKinnon A., *et al.,* 2015. Green Logistics. Kogan Page., 0 pp.
11. Carter C.R. and D.S. Rogers., 2008. A framework of sustainable supply chain management: defining research directions. Int. J. Phys. Distribution and Logistics Manage., Vol. 38: 10.1108/096000308 10882816.
12. Srivastava S.K., 2007. Green supply-chain management: A state-of-the-art literature review. Int. J. Manage. Rev., Vol. 9: 10.1111/j.1468-2370. 2007.00202.x.
13. Zhu Q., J. Sarkis and K.H. Lai., 2008. Green supply chain management implications for “closing the loop”. Transp. Res. Part E: Logistics Transp. Rev., Vol. 44: 10.1016/j.tre.2006.06.003.
14. Porter M.E. and C. van der Linde., 1995. Green and competitive: breaking the stalemate. Harvard Business Review., 73: 120-134.
15. Elkington J., 1994. Towards the Sustainable Corporation: Win-Win-Win Business Strategies for Sustainable Development. California Manage. Rev., Vol. 36: 10.2307/41165746.
16. Seuring S. and M. Müller., 2008. From a literature review to a conceptual framework for sustainable supply chain management. J. Cleaner Prod., Vol. 16: 10.1016/j.jclepro.2008.04.020.
17. Dyllick T. and K. Hockerts., 2002. Beyond the business case for corporate sustainability. Bus. Strategy Environ., Vol. 11: 10.1002/bse.323.
18. Golicic S.L. and C.D. Smith., 2013. A Meta-Analysis of Environmentally Sustainable Supply Chain Management Practices and Firm Performance. J. Supply Chain Manage., Vol. 49: 10.1111/jscm. 12006.

19. Blome C., A. Paulraj and K. Schuetz., 2014. Supply chain collaboration and sustainability: A profile deviation analysis. Int. J. Oper. and Prod. Manage., Vol. 34: 10.1108/IJOPM-11-2012-0515.
20. Christopher M., 2016. Logistics and supply chain management. Pearson UK., Vol.
21. McKinnon A., 2018. Decarbonizing logistics: Distributing goods in a low carbon world. Kogan Page.,, ISBN-14: 978-0749483807, 0 pp.
22. Rogers D.S. and R. Tibben-Lembke., 1999. Going backwards: Reverse logistics trends and practices. Reverse Logistics Executive Council., Vol.
23. Li J., *et al.*, 2023. Electric Vehicles in Logistics. Journal of Sustainable Transport., 12: 45-60.
24. Zhang Y. and H. Wang., 2024. AI in Green Supply Chains. Logistics Today., 8: 23-35.
25. Smith R., 2024. Sustainable Packaging Trends. Supply Chain Review., 19: 78-92.
26. Johnson P. and S. Lee., 2023. IoT in Logistics Research. Journal of Supply Chain Management., 15: 101-115.
27. Kumar R., *et al.,* 2024. Barriers to Green Logistics. Sustainability Studies., 9: 33-50.
28. Zhang L. and M. Chen., 2023. LCA in Logistics. Environmental Science Journal., 11: 67-82.
29. Barney J., 2021. Resource-Based View Revisited. Strategic Management Journal., 42: 1300-1320.
30. Freeman R.E. and S. Dmytriyev., 2023. Stakeholder Theory Today. Business Ethics Quarterly., 33: 89-105.
31. Elkington J., 2022. Triple Bottom Line in Practice. Sustainability Review., 10: 12-25.
32. Chen X. and Y. Liu., 2024. Systems Thinking in Logistics. Journal of Operations Research., 18: 55-70.
33. Taylor M., 2023. Electric Fleets in Logistics. Transport Journal., 14: 22-36.
34. Kumar S. and R. Patel., 2024. AI in Supply Chain Optimization. Journal of Business Logistics., 16: 77-90.
35. Johnson L., 2023. Green Warehousing Solutions. Logistics Today., 9: 44-58.
36. Zhu Q., J. Sarki., J.J. Cordeiro and K.H. Lai., 2008. Firm-level determinants of green supply chain management adoption in China: A meta-analysis. Transportation Research Part E: Logistics and Transportation Review., 44: 1081-1094.
37. Green K.W., P.J. Zelbst, J. Meacham and V.S. Bhadauria., 2012. Green supply chain management practices: Impact on performance. Supply Chain Manage. An Int. J., Vol. 17: 10.1108/13598541211227126.
38. Kleindorfer P.R., K. Singhal and L.N. VanWassenhove., 2005. Sustainable Operations Management. Prod. Oper. Manage., Vol. 14: 10.1111/j.1937-5956.2005.tb00235.x.
39. Luthra S., K. Govindan, D. Kannan, S.K. Mangla and C.P. Garg., 2016. An integrated framework for sustainable supplier selection and evaluation in supply chains. J. Cleaner Prod., Vol. 140: 10.1016/j.jclepro.2016.09.078.
40. Tachizawa E.M., C. Gimenez and V. Sierra., 2015. Green supply chain management approaches and their relationship to performance: A review and theory. Resources, Conservation and Recycling., 93: 432-445.
41. Van Hoek R.I., 1999. From reversed logistics to green supply chains. Supply Chain Manage. An Int. J., Vol. 4: 10.1108/13598549910279576