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Supply Chain Management Practices in Response to Ecosystem Challenges – Literature Review

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Abstract

In recent years, there has been a widespread awareness of issues affecting the ecosystem, such as climate change. It is in fact a universal reality that affects human life, business activities, and the environment. In this context, companies are required to master operations in a dynamic and risky ecosystem where logistics play a very important role in meeting sustainable development objectives. More specifically, optimizing supply chain performance requires the implementation of various green practices, which leads managers to rethink their decision-making processes related to supply chain management in order to reduce carbon emissions and improve their overall performance (Wang and Sarkis, 2013). This study is therefore a direct continuation of work focusing on sustainable supply chain management. This type of management is now an obligation rather than a choice in the era of climate change, which has major implications in terms of strategic and operational planning. It therefore seems relevant to address the following question: "What supply chain management practices can be adopted to address the challenges of climate change?" The objective of this

article is to identify best practices in supply chain management and their impact on the environment and overall performance. Our research methodology consists of a theoretical study based on an analysis of work carried out in this field, the identification of green SCM practices that should be adopted by companies, and an analysis of their impact on overall performance.

Keywords: Supply chain management, Climate change, Green supply chain, Resilience, Sustainability, Environmental performance

Introduction

The ecosystem represents the totality of interactions between living beings and their natural environment, and its balance depends on the rational use of available resources. Human activities have made the ecosystem increasingly fragile. Deforestation, chemical waste production, and excessive consumption of energy and natural resources have led to major environmental problems such as drought, soil degradation, erosion of biodiversity, air and water pollution, etc. (Rockström and al., 2009). One of the most pressing issues of the current century is climate change, which poses a real threat to the continuity and stability of the ecosystem. Since the beginning of the industrial revolution, humans have neglected the fact that the atmosphere, despite its abundance, is in reality extremely fragile. They have considered it to be an unlimited reservoir capable of absorbing all gas emissions. These emissions are increasingly aggravating the greenhouse effect, causing global warming, which has serious consequences such as rising sea levels and other environmental changes that impact the entire planet. With globalization, our planet has been transformed into a place of increasingly intense exchange of capital, goods, and information. But this economic globalization abuses the free emission of greenhouse gases and jeopardizes the atmosphere's ability to maintain its balance (Perthuis & Delbosc, 2009). As a result, climate change is undoubtedly the greatest challenge of the century. Studying its link with the economy and performance is therefore an urgent priority that requires governments and businesses to develop a range of actions and programs that Ghadge and al. (2020) refer to as “mitigation strategies” in order to avoid future disasters. Specifically, the adoption of such strategies is necessary in the supply chain management of large companies, which are considered to be the largest emitters of GHGs. It is estimated that the supply chain of a typical consumer company generates social and environmental costs that exceed those of its own operations, accounting for more than 80% of greenhouse gas emissions and 90% of the impact on air, land, water, biodiversity, and geological resources (Bové & Swartz, 2016).

Companies are therefore under intense pressure to reduce their carbon footprint and adapt to climate disruption (Aykut, 2020). Diagnosing the supply chain is essential in order to identify all the anomalies that cause CO2 emissions. Transforming supply chain processes (procurement, production, and distribution) is becoming a necessity to ensure the sustainability of operations and achieve optimal performance. When analyzing the link between climate change and SCM, a mutual influence seems to emerge. On the one hand, companies are being called upon more than ever to review their supply chain activities in order to reduce gas emissions and contribute to the well-being of the environment, societies, and countries. On the other hand, climate change caused by extreme weather conditions has a significant impact on food production, natural resources, and transportation around the world (Ghadge and al., 2020). This involves a range of risks that companies must be able to analyze, identify, and manage.

Overall, companies are forced to adopt a sustainable supply chain (or green supply chain) that is also concerned with producing and distributing goods in a sustainable manner, taking environmental and societal factors into account (KAMMAS, 2016). It is therefore relevant to address the following issue: “What supply chain management practices can be adopted to address the challenges of climate change?” This central question can be subdivided into two sub-questions to achieve the objectives assigned to this research:

- What are the ecological practices that enable companies to optimize the supply chain and combat climate change?
- To what extent will the adoption of these practices improve the environmental performance of companies?

To answer these questions, this research will be structured around three main sections. First, we will attempt to highlight the implications of climate change for supply chain management. Second, we will explore the green practices related to SCM that can be adopted. Finally, we will examine the impact of these practices on optimizing environmental and overall performance.

Literature review

Over the past decade, industrialized countries have seen continuous growth in logistics services dedicated to international and regional supply chains due to the globalization of trade, strategies to consolidate and relocate production centers, and the distribution of consumer products. The adoption by companies of just-in-time production and distribution models and the search for very low-cost production sites are not enough to cope with disruptions such as health crises, natural disasters, and climate change. It is at the level of supply chain management that rapid and effective practices

must be adopted (Choumert, 2022). Supply chain management is not a new concept; it is constantly evolving, with more than 25 million web pages containing the term “supply chain management” (Le Moigne, 2013), which illustrates the existence of multiple definitions. SCM includes the planning and management of all activities related to supplier sourcing, purchasing, inventory, and coordination between supply chain players, including suppliers, service providers, and customers. According to Colin (2005), supply chain management efficiently and effectively plans, implements, and controls product flows and storage using associated information in order to meet customer needs.

Today's supply chain faces several challenges, including environmental issues related to climate change. The latter has an impact on the various activities of the supply chain, including production, transport, and distribution. These economic, regulatory, and physical implications represent new challenges for companies that must ensure both economic and environmental performance (Dasaklis & Pappis, 2013; Ivanov, 2022).

Implications and challenges of climate change

Climate change affects production and economic systems through extreme weather events such as storms, floods, droughts, cold spells, and heat waves, which directly impact natural resources, logistics platforms, and the functioning of the entire supply chain (Qarahasanlou and al., 2024). The effects of climate change on the supply chain are manifested in the stoppage and slowdown of physical flows, the degradation of resources, increased costs, and the entanglement of logistics networks.

Companies are affected by the risks posed by climate change, including standards put in place to reduce CO2 emissions, the demands of environmentally conscious customers, and damage to physical assets caused by climatic events. The purchasing decisions of customers and investors are now influenced by a company's environmental record. The risk for the supply chain is that environmental regulations can lead to increased costs for components, energy, and carbon, with suppliers passing these increases on to customers (Lash & Wellington, 2007).

More specifically, Dasaklis & Pappis (2013) consider that each link in the supply chain contributes to environmental and climate degradation through greenhouse gas emissions, and conversely, the supply chain is exposed to the risks of climate change. The table below presents examples of the possible impacts of climate change on the supply chain :

Table 1: Climate change impacts to supply chain links

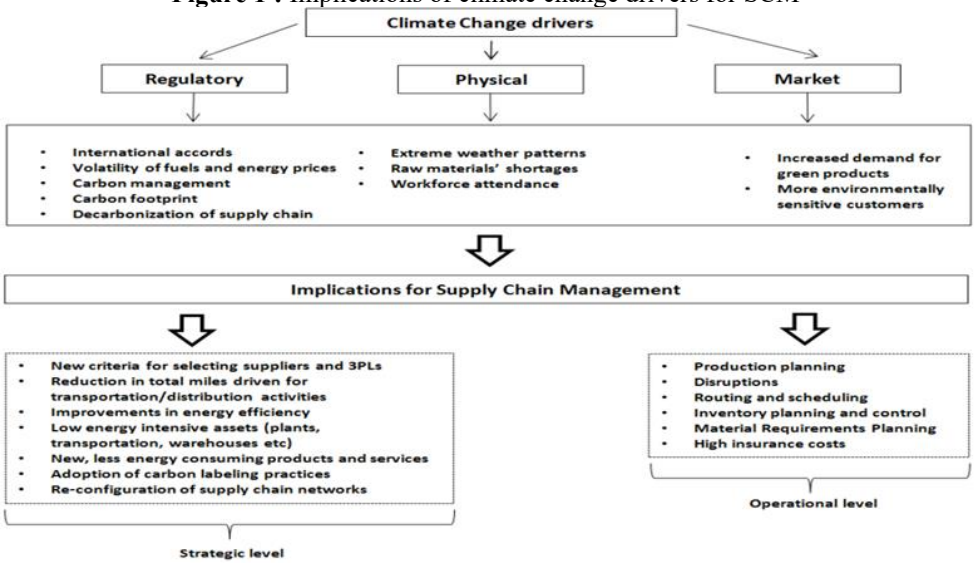
Supply Chain Stage	Climate Change–Related Impacts and Risks
Manufacturing	Damage or complete destruction of assets Disruption of factories and production lines Laws related to carbon emissions Impacts on production process efficiency High costs for energy and maintenance activities Investments in renewable energy projects and increased demand for biofuels Development of diversified low-GHG-emission products
Transportation	Deformation of rails and roads and Delivery delays Overhead cables knocked down due to strong winds
Warehousing and Storage	Infrastructure vulnerability Disruptions caused by extreme weather events
Retail/Trade	New regulations regarding product labeling Increased production costs and prices Decrease in demand
Customer	Need for product design that improves sustainability

Source : Dasaklis & Pappis, (2013)

Physically, climate change impacts delivery and production conditions and reduces the availability of raw materials, which affects supply security, especially in the energy and agri-food sectors, as specified by Yun & Ülkü (2023). Climate issues can lead to disruptions in road, rail, and port infrastructure, delivery delays, damage to goods, and increased logistics costs. According to Ivanov (2022), from an economic perspective, these disruptions have an impact on production costs, energy prices, and more complex inventory planning. Therefore, in order to mitigate the risk of supply disruptions (Christopher & Peck, 2004), they emphasize the importance of strengthening the resilience of logistics networks, relocation, diversification of suppliers, and digitization for effective traceability.

Finally, on the regulatory front, pressure from international environmental policies is forcing companies to review their production and distribution models (Negri and al., 2021). Customers, investors, and stakeholders are also putting pressure on companies to increase the transparency of their environmental practices. The regulatory, physical, and commercial constraints arising from climate change pose threats to supply chains (Dasaklis & Pappis, 2013). As a result, several implications for supply chain management must be taken into account. The figure below presents the implications of climate change for supply chain management.

Figure 1 : Implications of climate change drivers for SCM



Source : Dasaklis & Pappis, (2013)

Climate change causes disruptions in supply chain activities, leading to delivery delays and significant downtime costs. These implications require changes in the way supply chains are managed and industrial planning is carried out. Companies that do not take environmental issues into account are viewed negatively by customers. The effects of climate change create new strategic and operational challenges for supply chain management. Companies are forced to develop more flexible, sustainable, and resilient supply chains that can anticipate disruptions and adapt quickly to uncertainties. Pressure from governments and consumers is pushing companies towards environmentally friendly management practices such as recycling, reducing their carbon footprint, and inter-organizational collaboration (Herrmann and al., 2021). Several authors have studied the challenges of the supply chain from a general perspective. The main challenges of supply chain management are cost reduction, meeting deadlines, quality, flexibility, and control of reverse logistics (BENTALHA, 2023). From a more specific perspective, SCM also faces challenges related to climate change. According to Choumert (2022), three major challenges have been identified that require significant efforts on the part of companies: the challenge of supply chain resilience, the challenge of energy efficiency in freight transport and emissions reduction, and the ethical and social challenge. The figure below shows the challenges facing supply chain management in the context of climate change:

Figure 2: Challenges in the supply chain

Source: Authors

The adoption of green supply chain practices represents a strategic solution to environmental challenges (Chatzoudes & Chatzoglou, 2023). However, implementing a green supply chain is not easy and faces several obstacles, such as resistance to change, lack of technology, and high investment costs (Balkumar and al., 2024). Climate change is therefore acting as a factor pushing companies to transform their logistics management methods by adopting more environmentally friendly practices that enhance long-term sustainability and competitiveness.

Supply chain resilience

The challenges facing the supply chain in relation to climate change, associated regulations, and customer pressures have made supply chain management more complex. The concept of supply chain resilience is relevant for analyzing the ability of physical and information flows to adapt to uncertainties (Samuel & Ruel, 2013). Supply chain resilience is defined as the ability to anticipate impacts, survive, adapt quickly, and grow in the face of turbulent change (Gunasekaran and al., 2015). Resilience is a proactive approach that aims to improve the ability of companies to control risks and cope with unexpected shocks (SERGHINI, 2022); it is the ability to stabilize a disruption.

We note that the word capacity is repeated frequently in definitions of “supply chain resilience.” Capacity in this sense means the ability to anticipate, change, respond, recover, and learn. Supply chain resilience enables preparation, resistance, and recovery from disruptions, and contributes to the management of risks that may affect the supply chain (Negri and al., 2021).

Figure 3: Supply chain improvement process

Source: (ESCAP, 2013)

Strategies for improving supply chain resilience focus on preventing and minimizing the impact of disruptions, and are therefore either proactive or reactive in nature (Ali and al., 2017). Proactive strategies involve anticipating disruptions that may be caused by climate change. These strategies include assessing the impact of climate change on the supply chain, increasing collaboration between stakeholders, strengthening human skills, designing a green supply chain, segmentation, decentralization, adopting new technologies, implementing information systems (Samuel & Ruel, 2013), and, most importantly, establishing a culture of resilience and sustainability.

According to Lücker & Seifert (2017) and Rajesh (2019), resilience practices for supply chain management in times of disruption include agility, responsiveness of supply chain actors, additional inventory to avoid shortages, adoption of flexible transportation solutions, security measures to protect operations and assets, supplier diversification, consolidation of customer demand to optimize resources, and postponement of critical decisions until the situation stabilizes.

Reactive resilience strategies aim to recover from the negative effects of climate change disruptions and learn lessons to respond better next time. These reactive practices include: planning for business continuity in the event of disruptions, building social capital by expanding the company's network, implementing action plans to protect the company's market share, knowledge management and information sharing, and involving employees in resilience strategies (Ali and al., 2017).

Gunasekaran and al. (2015) propose indicators for assessing supply chain resilience, which are flexibility in sourcing, flexibility in manufacturing, flexibility in order fulfillment, efficiency, adaptability, anticipation, collaboration, market position, security, and financial capacity.

In summary, the resilience of the supply chain in the face of climate change risks is very important for mitigating impacts, ensuring the continuity of supply chain activities, performance, and sustainability.

Methodology

Our research is based on a narrative review approach that aims to interpret and identify the main supply chain management practices in response to climate change. A narrative review is a type of literature review that synthesizes existing research on a subject based on an interpretive and qualitative analysis that highlights trends and perspectives in a field of study (Theile & Beall, 2024). Our research objective is to highlight green supply chain practices that can be adopted to address climate change-related disruptions while reducing the supply chain's impact on the environment, and to study the impact of these practices on supply chain performance. This purely theoretical approach requires in-depth reading to understand key concepts such as supply chain management, green supply chains, resilience, performance, ecosystems, and climate change. This method allows us to collect and synthesize existing knowledge related to our research question and organize it around three themes:

- The implications and challenges of climate change for the supply chain
- Practices adopted by companies
- The impact on performance

To deepen our knowledge and answer our research questions, we opted for keyword searches such as “supply chain management,” “climate change,” “green supply chain,” “resilience,” “sustainability,” and “environmental performance” in French and English in recognized scientific databases such as Scopus, Science Direct, and Google Scholar, which allowed us to find as many articles published between 2000 and 2025 as possible. We analyzed a sample of 48 articles to explore the implications and challenges of the supply chain in the era of climate change.

Analysis of this work identifies the role of the green supply chain and the main practices adopted to mitigate the effects of supply chain activities on the ecosystem through the reduction of CO2 emissions, energy consumption, and climate disruption management.

Results and discussion

Analysis of existing research shows that there is a reciprocal relationship between climate change and supply chain activities. Studies show that companies have begun to adopt green practices in supply chain management in order to address the challenges of climate change, reduce environmental impacts, and improve overall performance. This analysis has highlighted relevant findings on the green supply chain practices implemented to reduce the effects of the supply chain, as well as the impact of these practices on business performance. The following results summarize, along two lines, the practices adopted within companies and their impact on performance in the current context.

Supply chain practices in the face of climate change

Supply chain management practices are all the activities carried out upstream and downstream in the logistics chain that enable effective supply chain management. Supply chain management practices include integration and coordination of supply and demand in order to respond to customers in a cost-effective and efficient manner. Among the practices most widely used by companies is supplier evaluation (Ibrahim & Hamid, 2014). According to HADDOUCH and al. (2020), there are four SCM practices: integration, which consists of cooperation with key downstream customers and coordination with upstream suppliers; partnership management with suppliers, which aims to limit the number of suppliers and involve them in product development; customer relationship management, which aims to manage customer complaints, improve customer satisfaction, listen to customer needs, and personalize offers; and the last practice is information sharing, which allows for a better understanding of customer requirements, adaptation to market developments, and better planning and coordination between the different parties. According to Roy and al. (2006), good practices that can be implemented for supply chain management include creating a communication structure between all supply chain stakeholders and a performance evaluation system to eliminate non-value-added activities and synchronize replenishment activities with customer needs, integration, adoption of VMI and CPFR (Collaborative Planning, Forecasting and Replenishment), and reducing inventory. Supply chain management must focus on the strategic aspect; high-performing supply chains are those that focus on agility and adaptability (Ketchen Jr & Hult, 2007). Agility refers to the ability to respond quickly to unexpected changes in supply and demand, and to identify internal and external uncertainties and respond to them through effective integration of relationships in the supply chain (Abrigach & Al Meriouh, 2019) It can be achieved by developing cultural competitiveness based on entrepreneurship, innovation, and learning

(Ketchen Jr & Hult, 2007). Adaptability means the willingness to orient chains according to changing consumer needs. Adaptable supply chains rely on information systems, supplier change, and outsourcing. Adaptability sometimes requires setting up more than one supply chain for the same product to ensure distribution (Ketchen Jr & Hult, 2007).

According to Roy & Beaulieu (2013), best practices in supply chain management focus on four areas: network configuration, which involves choosing the location of distribution sites and defining the transport plan; the integration of information systems to streamline information sharing with the company's internal and external partners, collaboration, which consists of sharing responsibility for planning, executing, and evaluating an activity between two or more companies (Roy and al., 2006), and the optimization of activity processes in terms of time and costs. The main challenge for business leaders is to lower supply chain costs while minimizing the impact of their activities on climate change and complying with environmental constraints. The green supply chain is considered a better solution to these challenges. Srivastava (2007) defines green supply chain management as "the integration of environmental considerations into supply chain management, including product design, procurement and material selection, manufacturing processes, delivery of the final product to customers, and the end of life of the product after its decline." Green supply chain management encompasses all activities implemented by companies to reduce their impact on the environment (Rachid & TALMENSSOUR, 2020). The green supply chain requires close collaboration with suppliers, which is very useful for reducing costs, improving efficiency, and promoting innovation. The four main reasons that drive companies to implement green supply chains are: regulation, the search for a competitive advantage to stand out in the market, pressure from stakeholders, and innovation (Hmioui and al., 2022).

According to Nikbakhsh (2009), green supply chain management offers numerous financial, operational, and environmental benefits. Waste elimination, resource conservation, and the adoption of green practices at various stages of the supply chain can strengthen companies' competitiveness and improve their environmental and operational performance.

The table below shows the benefits of implementing a green supply chain for businesses and the environment:

Table 2: Benefits of green supply chain management practices

Advantages of Green Supply Chain Management Practices	Details
Cost reduction	Costs of raw materials and energy, insurance costs
Risk reduction	Waste-related fees and pollution fines, shortages of water and/or energy
Productivity improvement	Use of natural light and ventilation
Increase in property value	Reduction in operating costs
Improvement of public image	Increased sales, better public perception, and community support
Creation of healthier environments	Fewer toxins and cleaner air, less hazardous production processes

Source: Nikbakhsh (2009)

Barriers to implementing a green supply chain can be either internal or external. Internal barriers are related to high costs, especially for SMEs with fewer resources and limited means, corporate culture, and resistance to change. External barriers include poor relationships with suppliers and regulations, which can be both a driver of development and a barrier to innovation in sustainability (Walker and al., 2008). As mentioned above, most researchers agree that the main objective of the green supply chain is to reduce waste and negative impacts on the ecosystem. Green supply chain management practices must be applied at all levels in order to tackle climate change. According to Pourhejazy & Kwon (2016), the different disciplines of green supply chain management are: eco-friendly product design, which takes social and ecological aspects into account from the design stage onwards; raw material processing, which involves a set of activities aimed at making the factory safer, reducing costs, minimizing environmental and health risks, and improving product quality. The second discipline of the green supply chain is responsible sourcing, which involves purchasing with less impact on the environment. It puts pressure on suppliers to provide environmentally friendly services and products that can be recycled, with optimal packaging and fewer toxic substances. Green marketing is a sales process that influences purchasing decisions. It presents the product to the customer as environmentally friendly, with an eco-friendly production process and environmentally friendly packaging. The last discipline of green logistics is considered the most important in the supply chain, as it is logistics activities that have a negative impact on climate change.

Transportation is the most environmentally damaging link in the chain and contributes significantly to climate change. It is the most important element for the sustainability of the supply chain (Rachid & TALMENSSOUR, 2020). In order to reduce the impact of this link in the supply chain on climate change, KAMMAS (2016) proposes to consolidate

loads and eliminate empty return trips, and to use less polluting modes of transport (rail, river, and electric vehicles). Several green supply chain management practices are cited in the literature review. They have been adopted by global leaders (Apple, Dell, IBM, DHL Express), leading to positive results and a beneficial impact on climate change. These practices can also be deployed by Moroccan companies. Blanchard (2021) identified best practices in green supply chain management that can be applied to three activities: transportation, warehousing, and distribution. We have summarized these practices cited by Blanchard (2021) in the table below:

Table 3: Best practices in green supply chain management

Activity	Best Practices
Warehousing and Distribution	Integrate energy-saving strategies in the warehouse to reduce dependence on GHG-emitting sources. Set energy-reduction targets and conduct annual audits to ensure progress. Use low-voltage lighting and install motion sensors or timers on lighting systems. Integrate real-time visibility of warehouse inventory to reduce unnecessary movement and stock obsolescence. Leverage technology to streamline and improve the accuracy of inventory levels. Create a closed-loop system for reporting and reconciling inventory levels with front-office systems.
Distribution	Establish regional distribution centers to serve customers based on demand. Optimize distribution networks by requiring fewer trips and reducing overall delivery costs. Optimize and consolidate routes to reduce the number of shipments.
Transportation	Align inbound and outbound shipments to reduce carbon emissions by using less fuel. Connect with customers in real time to synchronize returns with maximum fleet utilization. Coordinate supplier shipments to consolidate freight costs and negotiate better rates. Automate transportation management systems. Synchronize with warehouse operations to increase efficiency. Monitor routes, fuel consumption, and idling time. Improve driver training with courses that enhance driving skills and teach simple techniques to reduce fuel consumption.

Source: Blanchard (2021)

These green supply chain practices reduce carbon footprints, optimize energy consumption, and make the supply chain more resilient to weather disruptions. The adoption of technological tools such as blockchain, artificial intelligence, and the IoT offers the possibility of risk prevention, transport optimization, and traceability (Dubey and al., 2025).

Impact on performance

The overall performance of a company is not only concerned with financial performance, but also with environmental and social performance. According to Hmioui and al. (2022), overall performance includes social

performance, which manifests itself in equal treatment, respect for human rights, a good working environment, economic performance, and environmental performance.

Overall performance focuses on stakeholder satisfaction while achieving the three main economic, social, and environmental goals. The performance that can be achieved through the green supply chain can therefore be classified into three categories: economic, environmental, and competitiveness (Huang and al., 2017). Green supply chain practices contribute to environmental performance by minimizing GHG emissions and waste (Tseng and al., 2019).

Several factors can be used to assess the impact of green supply chain practices on economic performance, including cost savings, new markets acquired, and profitability. The integration of green supply chain practices in the textile sector can lead to up to 20% in revenue gains (Roy and al., 2006).

The results of a 2020 survey of 141 service companies on the impact of green supply chain management on overall performance show that the overall performance desired by Moroccan companies focuses on improving financial profitability and social and organizational performance. The survey shows that there is a strong correlation between the two variables of green supply chain management and overall performance (Hmioui and al., 2022). Responsible sourcing, reverse logistics, and eco-design have a direct impact on environmental performance, while responsible sourcing also impacts economic performance. All other green supply chain practices have a positive influence on social performance.

The Japanese IT and electronics multinational Fujitsu Ltd has adopted a number of green supply chain management practices, including streamlining its distribution sites, optimizing transport distances, reducing the number of trucks, and modal shift, which have resulted in improved environmental performance in terms of lower transport-related emissions. For the American company Apple, green supply chain practices have resulted in energy savings of 30% in its data centers, facilities, and retail stores, and it was also able to reduce its CO2 emissions by 59% in 2013 compared to 2012 (Pourhejazy & Kwon, 2016). We can therefore consider that there is an interrelationship between supply chain management practices, overall company performance, and climate change. All research conducted to date shows that adopting the supply chain contributes significantly to protecting the environment and limiting the impact of climate change.

Supply chain performance must be measured using an effective evaluation system that is inclusive, covering the entire supply chain, universal, measurable, and consistent, with measures that are compatible with supply chain objectives (Agami and al., 2012). There are several measures of supply chain performance, such as on-time delivery, supplier

certification, customer satisfaction rates, inventory levels, etc. (TAIDI, 2020).

Performance measurement is necessary for the success of the green supply chain. Performance evaluation systems aid decision-making, the identification of areas for improvement, and the implementation of corrective actions (Agami and al., 2012). The evaluation of green supply chain performance is based on specific indicators and methods that take into account strategic environmental, economic, and social objectives. There are three approaches to measuring supply chain performance: the process-centered approach (ABC), the perspective-centered approach (Balanced ScoreCard and Supply Chain Operation), and the hierarchical-level approach (ELGHARBAOUI, 2020).

Effendi and al. (2019) propose the SCOR method for evaluating green supply chain performance. The SCOR model is considered the most credible. It is based on reliability, responsiveness, agility, logistics costs, and asset management, and helps to identify the appropriate performance indicators for the company and analyze supply chain performance by focusing on four elements: processes, performance, best practices, and staff competence (ELGHARBAOUI, 2020). The table below presents the main KPIs for monitoring the performance of the green supply chain selected using the SCOR method:

Table 4: Green supply chain KPIs

Activity	Objective	KPI
Green Purchasing	Minimize hazardous materials	- Percentage of hazardous materials in inventory
Green Manufacturing	Minimize the use of resources, energy, fuel, and waste Improve customer satisfaction	- Energy consumption - Water consumption - CO_2 emissions - Hazardous waste rate
Green Distribution	Enhance customer satisfaction and optimize packaging and storage	- Percentage of customer complaints - Percentage of damaged products in the warehouse
Reverse Logistics	Maximize reuse and recycling	- Percentage of materials that can be recycled/reused - Reusable waste rate

Source: (Effendi and al., 2019)

The adoption of green supply chain practices is therefore not limited to environmental issues, but also contributes to the overall performance of the company.

Conclusion

The aim of this study was to analyze supply chain practices that can address the challenges of climate change. Through a narrative review of the

literature, we highlighted the extent to which the ecosystem is suffering from the repercussions of human and industrial activities. Analysis of existing work shows that adapting supply chain management processes in this era of climate change is necessary in order to strengthen resilience, reduce CO2 emissions, and transform to more sustainable logistics chains. The results of the literature review analysis identified several green supply chain practices, such as responsible sourcing, massification of flows, eco-design, and digitalization. The most successful companies are those that adopt best practices to manage their logistics chains. These practices are considered levers for mitigating the effects of the supply chain on the ecosystem and anticipating climate risks that may influence supply chain activities while improving the overall performance of companies.

Furthermore, the majority of researchers agree that these practices have a positive impact on environmental performance by reducing negative effects on the ecosystem, as well as on the overall performance of companies by lowering costs and gaining more competitive advantages.

Finally, this article demonstrates the importance of paying more attention to the green supply chain and investing in new eco-responsible technologies in order to evolve in harmony with sustainable development objectives.

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