

Green Supply Chain Management in the Gastronomy Sector: Trends, Challenges, and Opportunities Based on a Literature Review

Budi Satria¹, Dhian Tyas Untari²

¹ Universitas Dian Nusantara, Jakarta, Indonesia, budi.satria@unindra.ac.id

² Universitas Bhayangkara Jakarta Raya, Jakarta, Indonesia, dhiantyasuntari@gmail.com

Corresponding Author: dhiantyasuntari@gmail.com

Abstract. The implementation of Green Supply Chain Management (GSCM) in the gastronomy industry presents a unique opportunity to enhance environmental sustainability while improving operational efficiency. This paper explores the key opportunities associated with adopting GSCM practices, including waste reduction, energy efficiency, and meeting growing consumer demand for sustainable food. By integrating sustainable sourcing, waste management, and energy-saving technologies, gastronomic businesses can reduce their ecological footprint and cut operational costs. Additionally, GSCM practices help improve brand reputation, contribute to regulatory compliance, and foster consumer loyalty. The research further examines the role of GSCM in meeting global sustainability goals, such as responsible consumption and production, climate action, and zero hunger. This paper highlights the significant potential of GSCM in reshaping the gastronomy industry, encouraging a shift toward more sustainable and ethically responsible practices in food production and service.

Keywords: Green Supply Chain Management, Gastronomy Industry, Sustainability, Food Waste

INTRODUCTION

The gastronomy industry, encompassing restaurants, catering, and other food services, plays a crucial role in the global economy. However, this sector also significantly contributes to environmental impacts, such as food waste, energy consumption, and carbon emissions. As a result, the implementation of Green Supply Chain Management (GSCM) has become essential for reducing ecological footprints and enhancing operational sustainability.

Food waste is one of the most significant environmental issues. According to a report by Food Science and Technology (2022), approximately 30% of the total food produced globally ends up as waste, contributing substantially to greenhouse gas (GHG) emissions and the waste of natural resources. In the UK, for example, food production accounts for about 30% of the country's total GHG emissions. Furthermore, food waste also generates methane, a much stronger greenhouse gas than carbon dioxide, especially when disposed of in landfills without proper treatment.

The food processing industry also has a significant environmental impact. Emissis (2024) reports that the food industry consumes around 30% of the total energy available globally, with more than 70% of energy consumption occurring after the agricultural stage. Processes such as heating, cooling, and electricity usage within the food supply chain contribute to global GHG emissions. In the UK, the food processing industry is the largest manufacturing sector and the fourth-largest industrial energy consumer.

To mitigate these environmental impacts, the adoption of Green Supply Chain Management (GSCM) becomes crucial. GSCM involves practices such as efficient waste management, the use of renewable energy, and the reduction of emissions throughout the supply chain. By integrating sustainability principles into supply chain management, the gastronomy industry can reduce its ecological footprint and improve operational efficiency.

The gastronomy industry has a significant environmental impact through food waste and energy consumption. The application of GSCM can help reduce these impacts by integrating environmentally friendly practices across the entire supply chain. Thus, GSCM not only benefits the environment but can also enhance the efficiency and sustainability of the gastronomy industry's operations.

This study aims to conduct a literature review on the implementation of Green Supply Chain Management (GSCM) in the gastronomy industry. The main objectives of this research are:

1. Analyze the Implementation of GSCM in the Gastronomy Industry. To review existing studies on the application of GSCM in the gastronomy sector, including restaurants, catering, and other food services.
2. Assess the Environmental Impact of GSCM Implementation. To evaluate the positive impacts of implementing GSCM in reducing food waste, energy consumption, and carbon emissions within the gastronomy industry.
3. Identify Challenges in Implementing GSCM. To identify the barriers and challenges faced by the gastronomy sector in implementing GSCM, based on previous studies.

4. Explore the Benefits of GSCM Implementation in the Gastronomy Industry. To explore the benefits achieved by the gastronomy industry that has adopted GSCM, such as improved efficiency and brand image.
5. Provide Recommendations for More Effective GSCM Practices. Based on the literature review, this study aims to provide recommendations for enhancing the implementation of GSCM in the gastronomy sector.

This study holds several key significances, both in academic and practical contexts, that can make a meaningful contribution to the field of Green Supply Chain Management (GSCM) in the gastronomy industry. The key significances of this study are as follows:

1. Filling the Research Gap in the Gastronomy Industry. Most research related to Green Supply Chain Management (GSCM) focuses on the manufacturing or logistics sectors, with limited attention given to the gastronomy industry. This study fills this gap by investigating the implementation of GSCM in the context of the gastronomy industry, which includes restaurants, catering, and other food services. Thus, this study broadens the understanding of how sustainability practices can be applied to a sector that is often underrepresented in academic literature on supply chain management.
2. Enhancing Practical Understanding of GSCM in Gastronomy. This study also provides deeper insights for gastronomy industry practitioners on how to apply GSCM in their daily operations. The gastronomy sector often faces unique challenges such as food waste management, high energy consumption, and the need to comply with increasingly stringent environmental regulations. By analyzing trends and challenges in GSCM implementation within this industry, this study offers practical guidance for restaurant and catering managers to adopt more sustainable and environmentally friendly practices. Therefore, the findings can help improve operational efficiency as well as brand image, which is becoming increasingly important for consumers who prioritize sustainability.
3. Contributing to Environmental Sustainability. This research highlights the importance of implementing GSCM in reducing the ecological footprint of the gastronomy industry, particularly in relation to food waste management and energy consumption. By providing a clearer picture of how GSCM can be applied to mitigate environmental impacts, this study contributes to global efforts toward environmental sustainability. Amid growing concerns about climate change and environmental degradation, the research supports broader sustainability goals and could encourage more gastronomy businesses to commit to environmentally responsible practices.
4. Opportunities for Policy and Regulatory Development. The findings of this study could also provide guidance to policymakers and regulators for developing policies that support the adoption of GSCM in the gastronomy sector. Given the importance of this sector in the global economy, policies that encourage the adoption of environmentally friendly practices can have a broad positive impact. This research can help identify specific challenges faced by gastronomy businesses and offer recommendations for more effective and supportive policies that promote sustainability.

5. **Foundation for Future Research.** This study also opens the door for future research on GSCM within the gastronomy industry. By identifying existing gaps, such as the lack of empirical studies evaluating the implementation of GSCM in practice, this research can serve as a starting point for further investigations into the long-term effects of GSCM implementation in this sector. Future studies can explore in greater depth the factors influencing the success of GSCM implementation, as well as the potential role of new technologies, such as IoT or artificial intelligence, in supporting sustainability in the gastronomy industry.
6. **Relevance for Developing Sustainable Business Practices.** With growing consumer demand for eco-friendly products and services, this study provides valuable insights for business owners in the gastronomy industry to develop more sustainable business models. The implementation of GSCM can provide a competitive advantage for restaurants or catering services that can demonstrate their commitment to sustainability. Additionally, this study contributes to raising awareness of sustainability as a strategic factor in supply chain management, which is increasingly a key element in business success in the modern era.
7. **Understanding the Role of Technology in GSCM.** This study also initiates a discussion on the role of technology in supporting the implementation of GSCM in the gastronomy industry. In an increasingly connected world, the use of technologies such as energy management systems, waste management platforms, or technology to optimize environmentally friendly food supply chains can provide innovative solutions to the challenges faced by the gastronomy industry. By introducing technology as part of GSCM, this research can motivate gastronomy businesses to invest in technologies that are not only environmentally beneficial but also economically efficient.

Overall, this study not only enriches the existing literature on GSCM but also provides practical and policy-relevant insights for the gastronomy industry. By delving into the implementation of GSCM within this sector, this research introduces concrete steps that can be taken to reduce environmental impacts, improve operational efficiency, and create more sustainable business models. Therefore, this study holds wide significance in driving positive change both in academic, practical, and policy contexts.

LITERATURE REVIEW

Green Supply Chain Management (GSCM)

Green Supply Chain Management (GSCM) is a management approach that integrates environmental sustainability principles throughout the supply chain, from raw material selection to the distribution of finished products to end consumers. GSCM aims to reduce the negative environmental impacts, optimize resource use, and minimize waste and emissions generated during production and distribution processes. In practice, GSCM involves various activities such as designing environmentally friendly products, waste management, the use of renewable energy, and reducing the carbon footprint within the supply chain. GSCM not only provides environmental

benefits but can also improve operational efficiency and offer competitive advantages for companies that adopt it (Srivastava, 2007; Seuring & Müller, 2008).

GSCM involves five key components: (1) green supply chain management, (2) waste and emission reduction, (3) the use of environmentally friendly technologies, (4) energy-efficient management, and (5) product life cycle management. By integrating sustainability into supply chain operations, GSCM helps companies achieve economic goals while contributing to environmental preservation (Zhu & Geng, 2013).

Green Supply Chain Management (GSCM) has several important components that focus on integrating environmental sustainability principles throughout the supply chain. Below are the key components of GSCM:

1. **Efficient Natural Resource Management.** Ensuring that natural resources are used efficiently and sustainably throughout the production and distribution processes. This includes reducing the use of water and energy and managing raw materials in ways that minimize environmental impact.
2. **Environmentally Friendly Product Design.** Designing products with consideration for the environmental impact throughout their life cycle, from raw materials to disposal or recycling. This includes choosing more eco-friendly materials and those that are easier to recycle.
3. **Waste Management and Recycling.** Reducing, managing, and recycling waste generated during the production and distribution processes. This also involves using technologies to process waste in ways that do not harm the environment.
4. **Use of Renewable Energy.** Replacing fossil fuel-based energy sources with renewable energy sources, such as solar or wind power, to reduce carbon footprints and increase energy efficiency in supply chain processes.
5. **Reduction of Carbon Emissions and Pollution.** Implementing strategies to reduce greenhouse gas (GHG) emissions produced during production, transportation, and product distribution. This includes using eco-friendly technologies and optimizing processes to reduce emissions.
6. **Green Supply Chain Management.** Involving the selection of suppliers who also adhere to environmental standards, as well as collaborating with business partners to ensure sustainable practices are applied throughout the supply chain. This includes conducting environmental monitoring and audits on suppliers.
7. **Sustainability in Transportation and Logistics.** Applying greener logistics practices, such as optimizing delivery routes to reduce fuel consumption and carbon emissions, and using more environmentally friendly vehicles.
8. **Product Life Cycle Management.** Managing every stage of the product life cycle, from design, production, distribution, use, to disposal or recycling. This aims to minimize environmental impact throughout the entire product life cycle.

9. Green Technology Innovation. Adopting and implementing new technologies that support sustainability principles, such as the use of alternative fuels, energy-efficient technologies, and solutions to reduce emissions in supply chain processes.

By integrating all of these components, GSCM helps companies achieve economic goals while reducing their negative environmental impact.

Gastronomy and the Gastronomy Industry

Gastronomy refers to the study or art of food and drink, including the process of making, presenting, and consuming food. More than just the art of cooking, gastronomy is a discipline that combines elements of culture, history, and science to create a deep culinary experience. It involves an understanding of ingredients, cooking techniques, as well as the factors that affect food quality, including visual aspects, texture, and taste. Additionally, gastronomy also explores the relationship between food, society, and the environment, and how food reflects the cultural and social identity of a community.

Gastronomy has a strong cultural dimension, influencing how people perceive and enjoy food. Each society has its own unique gastronomic approach, shaped by history, geography, and culinary traditions. Gastronomy is not only concerned with the process of cooking, but also with the social context in which food is consumed, such as the way food is presented, table manners, and rituals associated with eating (Sims, 2009).

In the modern context, gastronomy also includes the concept of sustainability, where culinary experts are striving to reduce the environmental impact of their culinary practices. For instance, many restaurants and chefs now focus on using local, organic, and environmentally friendly ingredients in an effort to support a more sustainable food system and reduce the carbon footprint of the culinary industry (Bordes & Coudel, 2019).

The gastronomy industry refers to the economic sector that focuses on the production, distribution, and presentation of food and beverages to consumers. This sector includes various types of businesses directly related to food processing, such as restaurants, hotels, catering services, food manufacturing, and other foodservice operations. The gastronomy industry is crucial to the global economy as it significantly contributes to job creation, gross domestic product (GDP), and food-related tourism.

The gastronomy industry is not limited to providing food but also encompasses the development of culinary experiences that involve culture, innovation, and creativity in food preparation. Activities within this industry include managing food supply chains, implementing technology in food presentation, and marketing efforts to enhance the image and attractiveness of restaurants or foodservice providers. Moreover, in recent years, there has been a shift toward sustainability in the gastronomy industry, with many restaurants and food businesses adopting eco-friendly principles, such as using organic ingredients, managing food waste, and reducing their carbon footprint (Kivela & Crotts, 2006). The gastronomy industry also plays a key role in the tourism sector, particularly in culinary tourism. Many tourist destinations now leverage local food as a major attraction to draw visitors, developing food festivals, culinary tours, and unique dining

experiences that add value for tourists (Sims, 2009). Gastronomy has become a significant driver of tourism development and local economic growth, providing opportunities for food entrepreneurs to introduce their food and beverage products to international markets.

METHOD

This study uses a descriptive approach with the aim of reviewing the implementation of Green Supply Chain Management (GSCM) in the gastronomy industry through an existing literature review. This method is chosen because the research aims to provide a general overview of the relevant topic and offer a deeper understanding of the GSCM practices applied in the gastronomy sector.

This study relies on secondary data sources obtained from various relevant literatures, including journal articles, books, industry reports, and case studies related to the implementation of GSCM in the gastronomy sector. The literature sources selected are limited to publications published within the last ten years to ensure the information is current and relevant to the context of the modern gastronomy industry. Articles are selected based on strict inclusion criteria, focusing on those that directly or indirectly address GSCM, sustainability in the gastronomy industry, and environmentally friendly practices implemented in restaurants, catering, and other food services.

The data collection process involves searching for academic publications through accessible databases such as Google Scholar, Scopus, and JSTOR. Keywords used in the search include "Green Supply Chain Management," "GSCM in Gastronomy," "Sustainability in Food Industry," "Environmental Impact of Food Supply Chain," and other relevant variations. The articles obtained are then filtered to ensure their quality and relevance to the research topic. Additionally, the author also analyzes industry reports and documents related to government policies or regulations concerning sustainability in the gastronomy sector, as supplementary sources of information that can enrich the research findings.

The data obtained from the literature review are analyzed qualitatively to describe the key findings from various previous studies. This analysis aims to identify best practices in GSCM implementation within the gastronomy industry, the challenges faced, the environmental impacts caused, and the benefits gained by companies that have implemented GSCM. The analysis also involves categorizing information based on main themes, such as food waste management, energy efficiency, carbon emission reduction, and the implementation of environmentally friendly technologies in the food supply chain.

After the data are analyzed, the next step is to synthesize the findings to provide a comprehensive overview of GSCM implementation in the gastronomy industry. In this synthesis, the author will identify key trends emerging from the existing literature and highlight research gaps that need further exploration. The results of this synthesis will be used to provide practical and theoretical recommendations for stakeholders in the gastronomy sector who are interested in implementing GSCM principles.

This research method is descriptive, and thus the main limitation is the absence of primary data or direct interviews with gastronomy industry practitioners. As a result, the findings rely

entirely on the available literature and may not reflect specific practices or situations in the field. Additionally, while this study relies on literature published in the last ten years, it is possible that some of the most recent practices or newly emerging policies may not be fully captured in this review.

RESULTS AND DISCUSSION

Challenges in Implementing Green Supply Chain Management (GSCM) in the Gastronomy Industry

Green Supply Chain Management (GSCM) is a concept that emphasizes the integration of environmentally sustainable practices throughout the entire supply chain, from sourcing raw materials to waste management. In the gastronomy industry, which includes restaurants, catering services, food processing, and other food-related services, GSCM has gained attention as a way to reduce environmental impact and improve overall sustainability. However, the implementation of GSCM within this industry faces several challenges, which hinder its widespread adoption. These challenges range from operational constraints, financial barriers, and cultural issues to technological limitations and consumer behavior.

1. High Operational Costs

One of the most significant challenges in implementing GSCM in the gastronomy industry is the associated increase in operational costs. Sustainable practices, such as sourcing organic ingredients, using renewable energy, and adopting waste management systems, often come at a premium compared to conventional methods (Jaggi & Sharma, 2014). In a highly competitive and cost-sensitive industry like gastronomy, restaurants and catering businesses may be hesitant to adopt GSCM practices due to the financial burden. For instance, switching to sustainable packaging or sourcing locally grown ingredients may incur higher costs for raw materials and logistics. Furthermore, the installation of energy-efficient appliances or renewable energy sources, such as solar panels, can require substantial upfront investments (Liu et al., 2018). These higher initial costs can make it difficult for small and medium-sized enterprises (SMEs) to adopt GSCM practices, as they may not have the financial resources to support such initiatives. Despite these challenges, studies suggest that while the initial costs are high, long-term benefits in the form of reduced waste, lower energy consumption, and improved brand image may eventually outweigh these expenditures (Niemann et al., 2017). Nevertheless, the financial constraints remain a significant barrier to the full implementation of GSCM in the gastronomy sector.

2. Supply Chain Complexity and Fragmentation.

The gastronomy industry often relies on complex and fragmented supply chains, making it difficult to implement sustainable practices across all stages. Many restaurants and foodservice operators depend on multiple suppliers for ingredients, packaging, and other resources, creating challenges in ensuring that all suppliers adhere to sustainable practices. As noted by Kumar and Garg (2020), a major barrier to implementing GSCM in the foodservice industry is the lack of control over the environmental practices of suppliers,

especially those located in distant regions or countries. Suppliers may not prioritize sustainability in their operations, making it difficult for gastronomic businesses to ensure that all materials and ingredients are ethically sourced and environmentally friendly. Moreover, the gastronomic supply chain is often highly dynamic, with products changing rapidly based on seasonal availability and customer preferences. This makes it challenging to develop long-term, stable relationships with suppliers who are committed to sustainable practices. In some cases, it may be difficult for operators to track the environmental impact of their suppliers, as many may not provide the necessary transparency regarding their sustainability efforts (Seuring & Müller, 2008). The lack of coordination and communication between various stakeholders in the gastronomy supply chain can lead to inefficiencies and missed opportunities for reducing environmental impact. Establishing clear sustainability standards and building partnerships with like-minded suppliers are key strategies to overcome these challenges (Jaggi & Sharma, 2014).

3. Cultural and Organizational Resistance to Change.

Implementing GSCM in the gastronomy industry often requires significant changes in organizational culture and practices. Many businesses in this sector have long-established routines and operational methods that prioritize efficiency and cost over sustainability. As a result, there is often resistance to adopting new practices that may disrupt these routines. A study by Liu et al. (2018) highlighted that employees and managers in restaurants and catering services may resist GSCM initiatives because they perceive them as too complicated or time-consuming. Staff may also lack the necessary training to implement environmentally friendly practices, such as waste sorting or energy-efficient cooking methods. Additionally, the leadership in many gastronomic businesses may not prioritize sustainability as a core value, focusing instead on profitability and customer satisfaction. This lack of commitment from top management can hinder the development of a culture that embraces GSCM (Niemann et al., 2017). Without strong leadership and a clear sustainability vision, efforts to implement GSCM can be fragmented and poorly coordinated.

4. Consumer Behavior and Awareness.

Consumer behavior plays a crucial role in the adoption of sustainable practices in the gastronomy industry. While there is a growing awareness of environmental issues among consumers, the demand for sustainably sourced and environmentally friendly food products is still limited in many markets (Kivela & Crotts, 2006). Many consumers may prioritize factors such as taste, price, and convenience over sustainability when making food choices. As a result, businesses in the gastronomy industry may struggle to justify the higher costs associated with sustainable practices if customers do not actively seek out or demand green alternatives. Moreover, there is often a lack of consumer education regarding the environmental impact of food production and consumption. Even if businesses implement sustainable practices, they may not effectively communicate these efforts to customers, resulting in missed opportunities to enhance brand image and loyalty (Sims, 2009).

Therefore, educating consumers about the benefits of sustainable gastronomy practices and creating demand for green food options is crucial to overcoming this barrier.

5. Regulatory and Policy Barriers.

The implementation of GSCM in the gastronomy industry is also influenced by the regulatory environment. While there are some governmental policies that encourage sustainability, such as subsidies for renewable energy or waste reduction initiatives, there are often few regulations specifically aimed at the foodservice sector. According to Kumar and Garg (2020), the lack of comprehensive regulations and incentives in some regions makes it difficult for businesses to invest in green practices. Without clear legal frameworks or financial incentives, many gastronomy businesses may not see the need to adopt GSCM or may delay implementation until regulations become more stringent.

Additionally, there are often disparities in regulations across different countries or regions, making it difficult for multinational companies in the gastronomy sector to implement uniform sustainability practices. This regulatory fragmentation can lead to confusion and inefficiencies, further hindering the adoption of GSCM (Jaggi & Sharma, 2014).

Opportunities in Implementing Green Supply Chain Management (GSCM) in the Gastronomy Industry

Green Supply Chain Management (GSCM) is the practice of integrating environmentally sustainable practices into every stage of the supply chain, from the acquisition of raw materials to product delivery, while simultaneously reducing the ecological impact of the operations. In the gastronomy industry, which includes restaurants, hotels, catering services, and food production, GSCM offers a range of opportunities. As sustainability becomes a growing concern globally, the gastronomy industry has the potential to play a pivotal role in driving positive environmental change.

The implementation of GSCM in the gastronomy sector offers multiple advantages, from enhancing environmental performance to providing competitive advantages in the marketplace. This section discusses some of the key opportunities associated with the adoption of GSCM within the gastronomic industry, including sustainability benefits, economic advantages, and the potential to meet evolving consumer demand for ethical and environmentally responsible food production.

1. Enhanced Environmental Performance.

One of the most significant opportunities in implementing GSCM in the gastronomy industry is the potential to reduce the environmental footprint of food-related operations. By adopting green practices, such as sourcing local and organic ingredients, reducing food waste, and minimizing energy consumption, restaurants and foodservice businesses can drastically reduce their environmental impact.

Waste Reduction: In the gastronomy industry, food waste is a major environmental concern. According to the Food and Agriculture Organization (FAO, 2011), around one-third of the food produced globally is wasted. Through GSCM practices such as waste reduction,

composting, and recycling, gastronomic businesses can contribute significantly to minimizing food waste. Additionally, innovative waste management strategies, such as converting food scraps into compost for local farms or transforming them into bioenergy, can further promote sustainability.

Energy Efficiency: The gastronomy industry is energy-intensive, with significant energy consumption required for cooking, refrigeration, and lighting. By implementing energy-efficient appliances, using renewable energy sources (such as solar panels), and optimizing energy use, businesses can reduce their carbon footprint while simultaneously lowering energy costs. Such practices not only contribute to environmental conservation but also improve the overall operational efficiency of the business (Becken, 2013).

Reduced Carbon Emissions: GSCM also presents an opportunity for the gastronomy industry to reduce greenhouse gas emissions. By utilizing sustainable transportation methods (e.g., electric vehicles), selecting local suppliers to reduce transportation emissions, and focusing on reducing energy consumption, businesses can lower their contribution to global warming and climate change.

2. Cost Savings and Increased Operational Efficiency.

Implementing GSCM in the gastronomy industry can result in substantial cost savings over time. While initial investments may be higher, such as costs associated with renewable energy infrastructure, sustainable packaging, and eco-friendly equipment, these investments often lead to long-term operational savings.

Energy and Resource Efficiency: By adopting energy-efficient technologies and optimizing resource usage, restaurants and catering businesses can reduce waste and lower operational costs. For example, efficient energy use in refrigeration and cooking reduces energy bills, and the use of water-saving practices reduces water consumption costs. Also, sustainable sourcing practices can help businesses secure lower-cost raw materials in the long term by building direct, long-term relationships with local producers (Thompson & McDonald, 2016).

Waste Management Savings: Reducing waste and improving waste management practices not only benefits the environment but can also save businesses money. For instance, by composting organic waste or implementing zero-waste practices, gastronomic businesses can avoid disposal fees, reduce landfill contributions, and create new revenue streams (such as selling composted materials). Efficient waste management practices may also help businesses save on packaging and disposal costs, which are traditionally high in the foodservice industry.

Supply Chain Optimization: A key part of GSCM is optimizing the supply chain to reduce inefficiencies, such as long transportation routes, overstocking, and supply chain disruptions. By building partnerships with local suppliers, gastronomic businesses can reduce transportation costs, support local economies, and ensure a more reliable supply of high-quality ingredients. In the long run, supply chain optimization leads to a more sustainable and cost-efficient operation (Liu et al., 2018).

3. Meeting Consumer Demand for Sustainability.

Consumers are increasingly seeking sustainable, ethically produced food, and are becoming more environmentally conscious in their purchasing decisions. This shift in consumer behavior presents a significant opportunity for gastronomy businesses to meet the demand for sustainable food practices.

Consumer Preferences for Sustainability: A growing number of consumers are willing to pay a premium for sustainably sourced and environmentally friendly food. According to studies by Nielsen (2015), over 66% of global consumers are willing to pay more for sustainable products. By adopting GSCM practices, gastronomic businesses can position themselves as leaders in sustainability, attracting a more eco-conscious clientele and enhancing customer loyalty. This can lead to increased brand reputation and competitive advantage in the marketplace.

Transparency and Traceability: With the increasing interest in food sourcing and environmental sustainability, consumers are demanding more transparency about where their food comes from. By implementing GSCM, businesses can enhance the traceability of their products, ensuring customers know the origins of the ingredients they consume. This transparency can improve consumer trust and brand loyalty, as consumers are more likely to support companies that align with their values (Kivela & Crotts, 2006).

Aligning with Ethical Standards: As public awareness of environmental issues such as climate change, deforestation, and biodiversity loss increases, consumers are more concerned with the ethical implications of their purchasing decisions. By integrating GSCM into their operations, gastronomic businesses can demonstrate their commitment to ethical practices, appealing to customers who value sustainability and corporate social responsibility (Cai, 2020).

4. Compliance with Regulations and Enhancing Brand Image.

Another opportunity presented by GSCM is the potential for gastronomic businesses to comply with growing regulatory demands regarding sustainability. Many governments are introducing stricter environmental regulations and guidelines for businesses, particularly in terms of waste management, emissions reduction, and energy efficiency. By adopting GSCM practices, businesses can stay ahead of regulatory requirements and avoid potential fines or reputational damage (Zhu et al., 2007).

In addition, adopting GSCM can enhance a business's brand image. In an era where consumers are increasingly seeking out ethical and sustainable brands, businesses that implement green practices are likely to be seen in a positive light. A strong sustainability-focused brand can differentiate a business from its competitors and generate positive publicity, leading to an enhanced market position (Thompson & McDonald, 2016).

5. Contributing to Sustainable Development Goals (SDGs).

The United Nations Sustainable Development Goals (SDGs) outline the global agenda for achieving a sustainable future by 2030. The gastronomy industry, by adopting GSCM practices, can make significant contributions to several SDGs, including:

- SDG 12 – Responsible Consumption and Production: By reducing waste, conserving resources, and promoting sustainable sourcing, gastronomy businesses can contribute to more sustainable consumption and production patterns.
- SDG 13 – Climate Action: GSCM practices such as reducing carbon emissions, improving energy efficiency, and using renewable energy sources directly contribute to climate change mitigation efforts.
- SDG 2 – Zero Hunger: Supporting sustainable farming practices and local food systems helps improve food security and contribute to the eradication of hunger (UN, 2015).

CONCLUSION

The implementation of Green Supply Chain Management (GSCM) in the gastronomy industry offers significant opportunities for businesses to enhance environmental performance, reduce costs, meet consumer demand for sustainability, and improve brand image. Despite the challenges associated with GSCM adoption, the long-term benefits—both environmental and economic—underscore its importance for the future of the gastronomy sector. Gastronomy businesses that embrace GSCM practices will be better equipped to navigate the increasing consumer demand for sustainable food and contribute to global sustainability efforts.

While the adoption of Green Supply Chain Management in the gastronomy industry presents a promising pathway toward environmental sustainability, several challenges must be overcome. High operational costs, supply chain complexity, cultural resistance to change, consumer behavior, and regulatory barriers all present significant obstacles. However, addressing these challenges through strategic planning, strong leadership, consumer education, and collaboration with suppliers can help pave the way for a more sustainable gastronomy industry. Future research and policy interventions should focus on supporting businesses in overcoming these barriers and facilitating the widespread adoption of GSCM in the foodservice sector.

CONFLICT OF INTEREST

There is no conflict of interest in this paper

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