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## THE IMPACT OF GREEN SUPPLY CHAIN MANAGEMENT ON OPERATIONAL EFFICIENCY: A CASE STUDY

**Mahmut TEKİN**

Prof. Selcuk University, Faculty of Economics and Administrative Sciences,  
Department of Business  
ORCID: 0000-0003-0558-4271

**Derya ÖZTÜRK**

Assoc. Prof., Ordu University, Unye Faculty of Economics and Administrative  
Sciences, Department of Business  
ORCID: 0000-0001-5287-6600

**Aymen KHITER**

PhD Student, Selcuk University, Social Sciences Institute, Production Management  
and Marketing Department  
ORCID: 0000-0002-9030-0298

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### Abstract

Businesses should focus on an effective and equal use of natural resources to manage their supply chain, paving the way for the concept of “green supply chain management”. With its Sustainable Life Plan, Company X sets a perfect example of how a business should adapt to the needs of the 21st century. This qualitative study aimed to measure the effect of the adoption of green supply chain management on the operational efficiency of the business. The sample consisted of supply chain managers. Data were collected through interviews. The results show that green supply chain management generates value and boosts optimization.

**Keywords:** Sustainability, Green Supply Chain Management, Operational Efficiency.

### YEŞİL TEDARİK ZİNCİRİ YÖNETİMİNİN OPERASYONEL VERİMLİLİK ÜZERİNE ETKİSİ: BİR ÖRNEK OLAY ÇALIŞMASI

#### Öz

İşletmeler, doğal kaynakların etkin ve eşit kullanımını dikkate alarak, tedarik zincirini yönetmek durumundadırlar. Bu durum beraberinde yeşil tedarik zinciri kavramını getirmektedir. X işletmesi, Sürdürülebilir Yaşam Planı ile bu yüzyılın gereksinimlerine uyum sağlayan bir işletmeye mükemmel bir örnek teşkil etmektedir. Bu çalışmanın amacı, Yeşil Tedarik Zinciri Yönetimi ile ilgili uygulamaların benimsenmesinin işletmenin operasyonel verimliliği üzerindeki etkisinin ölçülmesidir. Araştırma nitel bir araştırma özelliği göstermekte olup, veriler ilgili işletmenin tedarik zinciri yöneticileri ile yapılan

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görüşmelerle elde edilmiştir. Yapılan araştırma sonucunda, Yeşil Tedarik Zinciri Yönetimi uygulamalarını benimsemenin işletmeye zincir boyunca değer yarattığı ve optimizasyonu artırdığı belirtilebilir.

**Anahtar Kelimeler:** Sürdürülebilirlik, Yeşil Tedarik Zinciri Yönetimi, Operasyonel Verimlilik.

## 1. INTRODUCTION

The changing understanding of competition drives businesses towards new pursuits. One of the important concepts that guide the new search of businesses is sustainability. The survival of individuals depends on natural resources. The importance of the concept of sustainability is understood at the point of preserving the balance between human and nature. Sustainability means the efficient use of resources by businesses in a way that they can use in future generations. In order to protect Ecology, Energy and economy, it is necessary to create awareness from the point of view of social, individual and business through the framework of the global system. This awareness is reflected in the supply chain applications of businesses (Hancıoğlu ve Türkoğlu, 2017).

The primary goal of supply chain management has always been to gain a competitive advantage and minimize costs by providing the same service and maintaining its activities (production, distribution, transportation, etc.). Environmental scarcity and global warming are causing a paradigm shift in profit maximization. Today, businesses are supposed to report their activities to interested parties. In other words, they are accountable to their stakeholders. Industrialists and managers address the significance of this function and its impact on the environment, leading to the emergence of the concept of “green supply chain”, which has gained the attention of practitioners for decades. It is considered a new and worthy challenge in a world that moves beyond its abilities and resources.

This study addresses how green supply chain management (GSCM) affects operational efficiency. The second section presents an overview of GSCM and related concepts and then focuses on the critical factors of operational efficiency, highlighting the processes employed to optimize it. The third section discusses the impact of GSCM on operational efficiency and the most important models for measure supply chain performance. The fourth section presents the conclusion based on the analysis.

## 2. CONCEPTUAL FRAMEWORK

### 2. 1. Overview of Green Supply Chain Management

Supply chains always change, and therefore, businesses are always in need of help to keep up with these changes to measure the impact of their decisions. A consequence of those decisions is integrating eco-friendly and sustainable practices, paving the way for GSCM.

#### Supply Chains

Supply chain management is defined differently due to its revolutionary and multidisciplinary nature. However, the term was first coined in the 1980s and came into widespread use in the 1990s. Before its spread, “logistics” and “operations management” were the terms commonly used (Kot, 2013).

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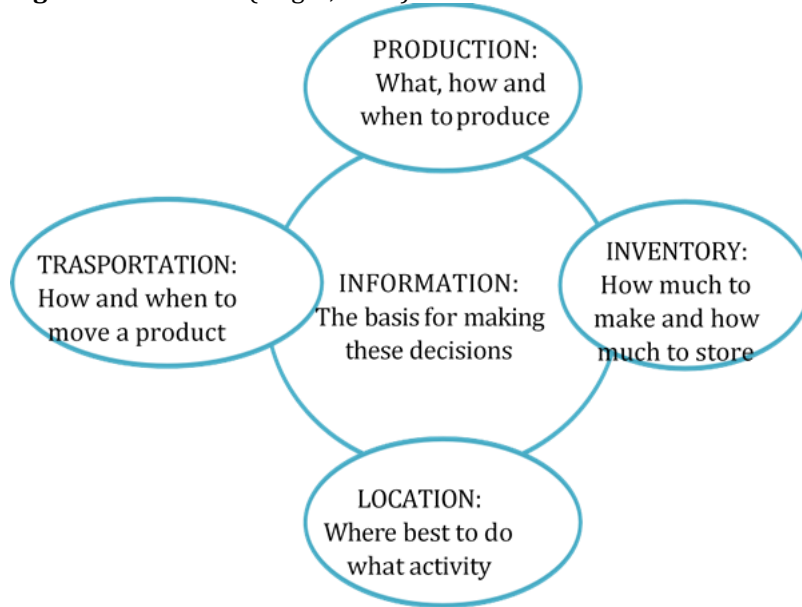
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Supply chain management is the active management of supply chain activities and relationships to maximize customer value and achieve sustainable competitive advantage. It refers to a conscious effort to develop and run supply chains in the most effective and efficient ways possible (Bozarth and Handfield, 2008).

Given different definitions, we can state that supply chain management concerns all activities necessary to plan and supervise the flow of products. This operation ranges from acquiring raw materials to manufacturing and distributing the end products through intermediates as cost-effectively as possible.

Supply chain efficiency depends on business decisions on supply chain drivers. It is a tradeoff between efficiency and responsiveness. Therefore, the major drivers of supply chain performance are as follows (Figure 1) (Hugos, 2011):

**Figure 1.** SC Drivers (Hugos, 2011)



The tradeoff between responsiveness and efficiency is about deciding whether to share information with other companies or not, and if, how much information to share.

### **Green Production**

According to (Leff, 1995), green production integrates creative measures and eco-friendly activities into assembling. It is the "greening" of production, involving reduced raw material consumption, less contamination, more reusability, and moderate outflows. Green producers search for and use new methods to lessen their impact on the environment.

### **Green Innovation**

Green innovation includes technological advances that save energy, prevent pollution or recycle waste, and can include green product design and corporate environmental management. Green innovations; It brings benefits such as the production of products and services that are less harmful to the environment, making production processes more environmentally sensitive, using natural resources more effectively and efficiently, reducing greenhouse gas emissions, and using recycling more in the production process (Hancioğlu, 2018a).

### **Green Technology**

Green technology is an umbrella term for innovation to manufacture eco-friendly products. The objective of green technology is to mitigate and undo the harm done to the planet by humans (Green et al., 2012).

### **Green Supply Chain**

According to (Green et al., 2012), a green supply chain refers to an organization adopting innovative practices and policies on the supply chain operation and management to ensure environmental sustainability.

### **Eco Efficiency**

Eco-efficiency refers to a process in which competitively priced goods and services are delivered through eco-friendly systems to maximize the effectiveness of business processes and minimize their impacts on the environment (Ehrenfeld, 2005).

### **From Supply Chain Management to Green Supply Chain Management**

Supply chains have a significant impact on the environment. To minimize that adverse impact, all aspects of supply chains are transformed, from using eco-friendly raw materials to the delivery of end-products and from recycling to strengthening the secondary raw material market.

The objective of GSCM is to lessen the adverse impact of supply chain on the environment in every stage of production: conception, purchasing, manufacturing, packaging, logistics, distribution, and recycling (Hervani et al., 2005). Green supply chain management mostly refers to integrating green components into supply chains to use energy more effectively, reduce the use of natural resources, cause less environmental pollution, and recycle more waste.

Green supply chain management is not limited to environmental regulation because it helps eliminate waste and enhance productivity (Porter and Van Der Linde, 1995), reduce logistics costs, and enhance efficiency and flexibility (Wilkerson).

The linear model of traditional supply chains has been replaced with a cyclic model, where supply chains concern all parties contributing to the economy: suppliers, third parties, distributors, clients, and consumers.

Supply chain management is a cross-functional approach. The management of production activities aims to turn materials into intermediate and end-products and deliver them to consumers through a distribution system (Bowersox et al., 2007).

Business activities have reached a critical point where they have adverse impacts on the environment. This is the primary reason that GSCM has emerged, making it possible for businesses to integrate eco-friendly processes into supply chain management.

While managers are being forced by strategic motivations to adopt a green supply chain, consumers are becoming more and more environmentally conscious about the environmental impacts of what they consume.

**The following are the essential principles and concepts on which supply chain management is based:**

- **Regulations:** Most companies would like their manufacturers to conform to legislations and regulations to meet and anticipate future requirements.
- **Enhancing brand image:** Brand image requires firms to meet consumers' ever-changing needs and demands.
- **Reducing costs:** This is mainly about using less energy and raw material for production, recycling, reprocessing, and proactive management to reduce costs.
- **Innovation:** Implementing a green supply chain drives firms for constant innovation in production processes and organizations to gain a competitive advantage.
- **Environmental concerns:** This is a genuine approach involving precautions, concerns, and the desire to minimize the negative impacts of supply chains on the environment.

**Companies can be encouraged to adopt eco-friendly approaches for the following reasons:**

**1- Meeting the challenge of global, environmental, and socio-economic issues, contributing to the general interest:**

Businesses and communities play a crucial role in preserving the environment because their actions significantly impact the environment and natural resources. All production processes (purchasing raw materials, manufacturing, using natural sources, generating waste, transporting goods) have a direct or indirect effect on the environment. Eco-friendly businesses assume all economic, social, and environmental responsibilities.

**2- Improving the quality of service and economic efficiency:**

Eco-friendly businesses and communities participate in the public service mission while maintaining and seeking to improve the quality of the service they provide. In other words, they respect the environment and take into account the interest of future generations.

**3- Creating a transversal synergy through meetings on shared goals and projects:**

Being eco-friendly means engaging in transversal projects within the teams and the structure. Sustainable development is a source of innovation and value creation, and therefore, a source of efficiency.

**4- Establishing credibility and consistency and being exemplary in internal practices:**

Businesses interested in establishing credibility should be role models for sustainable development by ensuring that their decisions and actions respond to environmental and social concerns.

**5- Meeting the expectations of citizens and stakeholders and creating a synergy:**

Citizens (customers, suppliers, or partners) are becoming more and more aware of the importance of sustainable development and, in particular, of the need to adopt new actions to help address global issues. They also expect businesses to take that path in their operation and management.

GSCM improves financial performance by reducing costs and providing competition and innovation opportunities, benefiting consumers, employees, society, and government.

**Three reasons companies should adopt sustainable development are as follows:**

**- Creating value to survive**

Although some companies benefit from the ongoing climate crisis, if global warming continues at its present rate, even the most pessimistic scenarios will have to be abandoned as too optimistic. By the end of this century, people will face numerous challenges. In other words, the survival of businesses depends on how environmentally responsible they are and whether they cause pollution or not (Widloecher and Querne, 2009).

**- Improving financial efficiency**

As has been stated before, the decisions and actions of businesses determine their success in sustainable development and its impact on their financial performance. Therefore, businesses that adopt sustainable development are more likely to have organizational efficiency.

**- Adapting to sustainable development**

The global economic system in which businesses operate is in a constant state of change. Therefore, they need to engage in sustainable development depending on consumer behavior, laws, regulations, the media, politicians, local authorities, and NGOs (Widloecher and Querne, 2009).

In conclusion, supply chains play a key role in sustainability, and therefore, provides a competitive advantage for businesses in terms of cost reductions, generating new revenues and innovative sources of income, risk management and reduction, staff motivation, and means of satisfying environmental compliance requirements.

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### Advantages of Green Supply Chain Management:

Table 1 presents a summary of all GSCM practices to maximize the advantages of each one of these steps.

The practices are interconnected actions based on the formula of 4R (reduce, refuse, reuse, and recycle), and therefore, have a shared goal of achieving efficiency, allowing businesses to maximize their value with minimum consumption of resources.

**Table 1:** Green Practices in Supply Chain Management and Their Benefits

	Green Supply Chain Management	Talent Supply Chain Management
Goal	Maximizing economic returns, using fewer resources, reducing toxic emissions, creating a socially responsible business, striking a balance between economic returns and social and environmental effects	Reducing costs and improving supply chains to maximize economic returns
Management Structure	Environmental performance includes internal and external management	Environmental performance does not include internal and external management
Business Model	A complete business model through the whole life cycle as it includes low carbon emission and environmental conservation	The business model is less complete in traditional supply chain management than in GSCM
Business Process	Transforming the traditional management mode and realizing "Cradle- to-Reincarnation". In green supply chain thinking, product flow is circular and reversible, and all products should be managed throughout the entire life cycle and beyond. As a result, "waste" is granted a second life or becomes the raw material for new products or other purposes.	Starting with suppliers and ending with users  Product flow is one-way and irreversible, known as "Cradle-to-Grave".

Consumption Pattern	Green supply chains can be promoted through green government procurement, corporate social responsibility, and sustainable consumption education and practices	A voluntary initiative governed by consumer interests and business activities
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## 2.2. Key Factors of Operational Efficiency

Efficiency is defined as the ability to achieve a goal with minimum resources, energy, and effort. The aim is to make sure that there is little difference between the expected and actual outcome. Therefore, the term “operational efficiency” refers to the ability of a business to obtain the maximum output with minimum input.

Operational efficiency is defined as the capability of a business to produce goods or services of high quality and deliver them in the most cost-efficient manner. Operational efficiency can be achieved by minimizing waste and redundancy and searching for the best way to leverage the resources at hand, whether it be a workforce or technology. Operational efficiency is also attained by adapting core processes to meet changing consumer demands and market forces in the most cost-efficient way, reducing internal costs, thereby enabling the business to increase its profit margins and gain a competitive advantage. Efficiency is mostly associated with how well an action is performed. In other words, it is about “doing the right thing” (Chia-Yen and Johnson, 2012). The following steps achieve efficiency:

- Redundancy reduction
- Waste minimization
- Streamlining production

These steps not only reduce costs but also brings a competitive advantage in the market.

### The following are tools to achieve operational efficiency in a supply chain:

#### - **Just In Time (JIT)**

Just-in-time is a management philosophy developed in Japan in the 1980s to achieve high-volume production using minimal inventory. This is achieved by coordinating the flow of materials to ensure that the right part arrives at the right place in the right quantity at the right time, hence the term “just-in-time”. However, JIT is much more than that. It is all-inclusive organizational philosophy involving teams of workers continuously improving organizational performance by eliminating all organizational waste. Just-in-time was first used in manufacturing and then expanded to the service sector, for example, the catering industry. Just-in-time has a profound impact on the way businesses manage their operations, such as Honda, Toyota, and General Motors (Reid and Sanders, 2016).

#### - **Six Sigma**

Six Sigma is based on identifying and eliminating the flaws of a process. In a sense, it is about reducing the variability of a process through units of measurement. Many experts have defined the concept of “six stigma”. According



to Eckes (2001), Six Sigma is a powerful method for addressing the strategic and managerial aspects of a business as a whole to offer a permanent chance of progress for it.

- **Total Quality Management (TQM)**

Businesses should improve the quality of their goods and services to meet their customers' ever-changing demands to gain and maintain a competitive advantage in the market. Quality is defined differently. In general, quality is defined as the capability of all components of a business to meet consumers' stated or implied needs. Quality is also referred to as "fitness for use", "fitness for purpose", "customer satisfaction," and "conformance to the requirements" (Kiran, 2016). Total Quality Management is a philosophy that allows businesses to stand out among their rivals and maintain their competitive advantage by continually searching for progress. Although some businesses implemented TQM in the 1980s, it became a widespread concern in the 1990s, to which no business could afford to turn a blind. Numerous businesses seek to achieve ISO9000 certification, indicating the increased significance of TQM (Reid and Sanders, 2016).

Measuring operational efficiency is the first step to improve it. As has been stated earlier, operational efficiency is the ratio of output to input. Therefore, it should be measured on both sides for precise and credible results. To measure operational efficiency, a business should identify and measure several performance indicators on both inputs and outputs, the definitions of which vary across industries.

### 2.3. Key Performance Indicators (KPI)

Traditionally, performance is measured to reduce costs. However, today, it is based on customer satisfaction, the fulfillment of objectives, the quality of service, and most importantly, service cost/service rate 48.

Service cost:

Service cost refers to all aspects and operations that contribute to the desired service rate:

- **Costs of holding inventory:**

- Product insurance, deterioration risks coverage, theft, etc.
- Rent and warehouse maintenance in addition to insurance.

- **Costs of transportation and handling of goods:**

- Proper transport and insurance of equipment during transportation
- Activities regarding international transportation; customs

- **Costs of administration and management of the distribution of goods and services:**

- Inventory tracking
- Planning and programming logistics

Service rate: Service rate refers to all elements ensuring the delivery of the right product, in the right quantity and the right condition, to the right place at

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the right time for the right customer at the right price. Therefore, the service rate includes the same elements of service cost plus follow-up and evaluation.

## 2.4. Supply Chain Performance

It is necessary to set a primary objective and then derive secondary objectives to measure supply chain performance. Secondary objectives are objectives that are adaptable to changes in today's market. They are based on the value they add to the global performance of a supply chain, and therefore, they should focus on achieving the ultimate objective of producing and providing high-quality goods and services and devising a follow-up system to detect and prevent defects in production and distribution. In short, the three pillars of a total quality management system are evaluation, correction, and prevention (Laurentie et al., 2013).

### 2.4.1. Supply Chain Performance Indicators

Performance indicators are defined differently, but they are, in general, defined as quantifiable data that measure the efficiency of part and/or a whole process of a system compared to a norm, a plan, or an objective based on company strategy (Cerutti and Gattino, 1992). Each business has multiple objectives based on its managerial, tactical, or operational dimensions. Those objectives require a certain number of performance indicators necessary to achieve objectives set in accordance with the intended system objectives. (Berrah, 2002). These indicators are interrelated in that the performance of an indicator at a certain level may affect that of another at a higher level. Therefore, indicators should be simultaneously analyzed to evaluate supply chain performance and coherence. Gruat La Forme-Chretien (2007) proposes a diagram of the most common indicators used to measure supply chain performance (Table 2):

**Table 2.** Most Common Indicators for Supply Chain Performance

Phase	Procurement	Production	Inventory and Distribution	Sales
Strategic	-Degree of Customer/Supplier relationship -Delay in product development -Cost of procurement	-Profit -Total cost of production	-Offering flexibility to adapt to costumers' needs -Perceived added value -Deadline for order placement	

Tactical	-Deadline for a purchase order -Savings achieved thanks to supplier initiatives - Performance of suppliers -Suppliers' delivery time	-Production time -Production flexibility -Performance of production plans performance	- Precision of delivery plans -Percentage of End-products in transit	-Sales precision. -Suppliers' time.
Operational	-Efficiency of purchase -Order cycle time.	-Resources consumption rate. -Inventory levels.	-Quality of delivery. -Distribution errors' rate.	

Source: Gruat La Forme-Chretien, 2007.

There are many characteristics associated with performance indicators. Authors generally use the SMART rule to identify those characteristics (Kerzner, 2013):

- **Specific:** Indicators should be clear, precise, well defined, and oriented towards a performance target or business purpose.
- **Measurable:** Indicators should be quantifiable and measurable.
- **Achievable:** Indicators should be reasonable enough to attain objectives.
- **Relevant:** Indicators should be directly pertinent to the work done on a project
- **Time-based:** Indicators should focus on completing objectives and measuring them in a specific time frame.

Supply chain performance depends not only on the indicators above but also on descriptive indicators, such as the number of delivery points, inventory level, etc.

## 2.5. Supply Chain Management and Operational Efficiency

Efficiency is the golden standard for supply chain performance. It equals input (labor and resources) subtracted by output, indicating whether a process results in maximum output with available resources.

Supply chain efficiency is about making the best use of resources (financial, human, or technological) at hand. Suppliers and stakeholders play a critical role in enhancing operational efficiency. However, supply chain managers are also under pressure and face multiple challenges affecting operational efficiency.

Supply chain management allows businesses to plan and manage interactions with suppliers to harness as much value as possible from those interactions. Supply chain management helps businesses develop relationships with third parties responsible for supplying them with goods and/or services to achieve higher goals with fewer risks.

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A well-executed supply chain management can provide competitive advantage, growth, branding, efficiency, and help businesses reduce costs and supply-related risks or help them understand and mitigate those risks. However, supply chain management cannot simply be “bolted on”, but it is an organization-wide philosophy that needs to be embraced by all (O’Brien, 2014).

Supply chain management can offer numerous benefits, some of which are associated with the degree of work and focus on achieving objectives.

- **Increasing efficiency:**

Businesses understand the importance of the supply base better. New means of communication helps them identify and eliminate possible problems and risks. The free flow of information makes the supply base more flexible, thereby making businesses more willing to adapt and thrive by eliminating all sorts of redundancy throughout the streamlined process.

- **Revenue growth:**

Revenue growth is advantageous for both suppliers and buyers who can always communicate, whether through joint ventures or closed collaborations. They can use this relationship to penetrate new markets and gain further opportunities while sharing the potential risk and/or growth.

- **Cost savings:**

Supply chain management helps businesses secure a firm footing to avoid unnecessary or additional expenses for quality and delivery and establish and develop long-term relationships, which play a major role in decreasing the frequency of incidents or poor performance, resulting in cost reductions.

## **2.6. Green Supply Chain and Operational Efficiency**

Most businesses believe that they can achieve green supply chains by avoiding using chemicals and concentrating on recycling. However, these precautions are just the beginning. Businesses should recognize that “going green” is more than just a buzzword and apply GSCM to all departments and processes to make the most of it.

Research shows that GSCM offers many advantages in terms of operational efficiency:

- Sustainability and efficient use of resources
- Cost reduction and efficiency improvement
- Product differentiation and a competitive advantage
- Compliance to regulation and risk reduction
- Branding and credibility
- Higher quality with lower costs
- Boosting employee morale and ethical compliance
- Fast return on investment
- Waste reduction and green production

Green supply chains guarantee the lowest possible environmental impact and improve operational efficiency and image, and profitability.

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### 3. DISCUSSION

Green supply chain management is about the environmental impacts of production processes and employees' actions because the depletion of natural resources causes preventable losses, negatively affecting the national economy and business performance.

Countries should formulate environmental strategies to make sure that businesses operating in those countries can build up credibility and reputation because environmental strategies allow them to:

- Maintain their operation in the face of resource depletion and rising energy prices.
- Control and reduce their carbon footprint while continuing to grow

This is why such businesses as X integrate GSCM into their operations and set out such plans as the Unilever Sustainable Living Plan (USLP).

Company X tries to curb the consumption of natural resources by half, reduce waste at all levels of the chain, and access sustainable and responsible sources from suppliers who respect environmental standards. The advantages that Company X has gained related to cost, quality, and branding have proven it wrong that going green would be too costly.

**Figure 2.** Quantity of Goods (X Company Algeria's internal DATA, provided by finance Department, 2020).

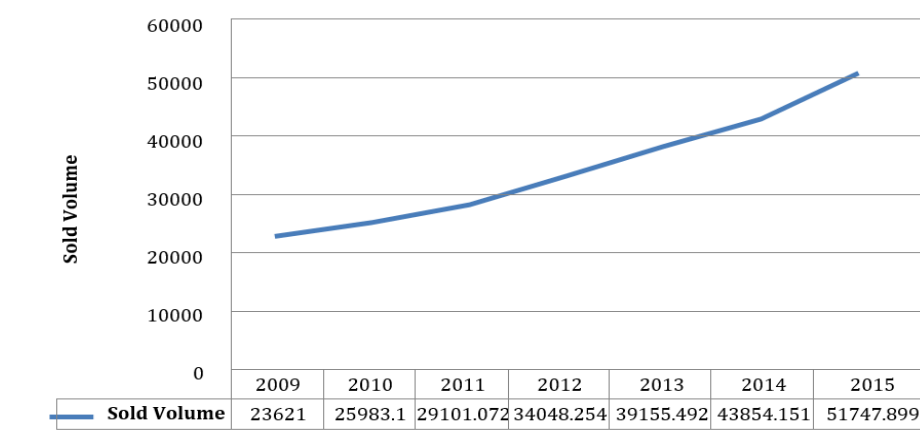


Figure 2 represents the number of goods in the past years. We can conclude that the GSCM initiatives did not negatively affect production because the costs saved by them were invested in production, increasing the turnover.

Company X implemented several green initiatives (e.g., 4Rs) to optimize its resources and added a fifth R (refuse) to the process for waste reduction at the source, which is better than recycling for cost reduction. Some of the other green initiatives that Company X implemented were green purchasing, reducing toxic footprints, and achieve zero waste to landfill.

These initiatives allowed Company X to:

- Reduce its water consumption and secure zero water waste
- Position itself as an eco-conscious company and living up to that image
- Reduce waste, and thus, costs
- Improve environmental performance.

Company X has shown its interest in reducing resources over-consumption (electricity, gas, and water) by planning to implement a Monitoring Measurement & Tracking System. The company has achieved its objective of zero waste landfill ahead of schedule, which allowed it to take further actions to optimize production by minimizing quality-related malfunctions, resulting in financial growth.

The company was also certified ISO 9001 and ISO 14001. The former is an internationally recognized total quality management system, while the latter lays down requirements for an effective environmental management system. This also indicates that the company is interested in improving its products and supply chain processes.

#### **4. CONCLUSION**

Increasing environmental problems and approaching an irreversible point of damage to the environment have brought to light the fact that businesses and stakeholders are becoming more sensitive to the environment. The rapid deterioration in environmental conditions and the idea that an irreversible point has been reached emphasize that business managers also need to differentiate their environmental suffering as soon as possible (Hancıoğlu, 2018b). The reflection of this situation on supply chain applications has revealed the concept of green supply chain management. The importance of the concept is understood more and more by businesses.

The green initiatives provided Company X with important benefits. Global environmental challenges provide companies with the opportunity to stand out among their rivals. In relation to this, the environmental consciousness that Company X has developed has provided it with a competitive advantage. Therefore, we can state that GSCM improves environmental and economic performance, albeit indirectly, through cost reduction and adaption of new approaches. However, economic performance, and thus, operational efficiency, is also affected by intermediate variables, such as waste reduction, customer loyalty, and branding. Company X cannot make use of GSCM to the fullest, and therefore, it has room for improvement and adoption of other GSCM initiatives. The GSCM initiatives executed by Company X are part of its "USLP" to make sustainability a common practice" not only to reduce environmental pollution but also to ensure growth through multiple strategies:

- Reducing waste and achieving zero-waste landfill via 4Rs
- Using resources efficiently through monitoring

These practices had significant advantages for Company X, answering the first research question, "How does green supply chain management affect operational efficiency?"

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Company X was the company of choice due to its involvement and interest in sustainability and environmental responsibility.

The results confirmed the initial assumptions:

- Green supply chain management helps improve environmental sustainability.
- Green supply chain management helps increase resource efficiency and reduce production costs.

Therefore, the new environmental practices transformed the supply chain of Company X, resulting in positive outcomes.

The results indicate that GSCM reduces environmental pollution, improves economic performance, and provides a competitive advantage. Therefore, more and more companies strategically choose to “go green” and adopt GSCM, bearing in mind that different green initiatives have different advantages. GSCM, even if partially implemented, has positive effects on resource efficiency, cost and waste management, and competitive advantage. However, only 67 employees of Company X received training on environmental management initiatives in 2019, despite their long-term contributions to the company. Therefore, we recommend that Company X rely on new ecological indicators and undertake more green initiatives. We also recommend that future studies look into this subject matter in different companies in different industries. GSCM is a sustainable way to increase operational efficiency and reduce costs, which companies can adjust in the face of ever-changing needs and demands and environmental conditions.

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