


Journal of Transportation and Logistics

Research Article

 Open Access

Green Supply Chain from the Decision Makers' Perspective: A Field Study



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Abstract

This research investigates the perspectives and implementation levels of business executives in Adana and Mersin provinces towards green supply chain management (GSCM). Within the framework of qualitative research methodology, semi-structured interviews with 13 business managers were analyzed using tracing and exploratory techniques. The findings show that GSCM practices contribute positively to business performance in terms of ensuring environmental sustainability, reducing costs and increasing customer satisfaction. Strategies such as as green logistics, recycling processes, and green supplier selection support green production processes by increasing resource efficiency. In addition, government policies, industry standards, and external pressures are also found to be determinants of GSCM effectiveness and business performance. As a result, increasing the level of GSCM implementation is strategically important for companies to gain a competitive advantage and achieve sustainable growth.

Keywords




Green supply chain management • Sustainability • Company performance • Qualitative research • Managerial perspectives.


Author Note


This study is derived from the Master Thesis titled “Evaluating managers’ opinion on the place of sustainable production in green supply chain management” conducted by Sebahat Akdemir Ündağ at the Department of International Trade & Marketing, Çağ University, Institute of Social Sciences, under the supervision of Prof. Dr. Eda Yaşa Özeltürkay.



“ Citation: Akdemir Ündağ, S. & Yaşa Özeltürkay, E. (2025). Green supply chain from the decision makers’ perspective: A field study. *Journal of Transportation and Logistics*, 10(2), 501-518. <https://doi.org/10.26650/JTL.2025.1623157>

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 2025. Akdemir Ündağ, S. & Yaşa Özeltürkay, E.

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Green Supply Chain from the Decision Makers' Perspective: A Field Study

The concept of sustainability was first included in the report published by the Brundtland Commission in 1987, emphasizing that poverty and inequality are at the root of the ecological, social and economic crises in the world. In this report, sustainability was defined as meeting the needs and expectations of the present while taking into account the possibility of meeting the needs and expectations of future generations. Sustainability has emerged as a paradigm that addresses concepts such as basic human needs, world peace, fundamental rights and freedoms and democracy, especially climate change and environmental protection, with a holistic approach to economic and environmental problems (Tanco, Kalemkerian & Santos, 2021).

Sustainable development is defined by the World Commission on Environment and Development (WCED) as a development model that meets the needs of society and aims to meet the needs of the present without jeopardizing the ability of future generations to meet their own needs (OECD, 2020). Today, as environmental, social and economic concerns have become common issues affecting all societies of the world, the concept of sustainability has become central to development processes and sustainable development has become a global goal (Gedik, 2020). With the strategies developed based on these principles and determined within the framework of the European Green Deal (EGC), the circular economy model has also come to the agenda in Turkey and has accepted as one of the basic building blocks of sustainable development and transition to a green economy (Eccles, Ioannou, & Serafeim, 2014).

Today, the circular economy is seen as an advanced extension of the industrial ecology approach and aims to sustainably manage natural, cultural and man-made resources by aiming to reduce the inputs used in production processes, energy consumption and waste generation (Bocken & Short, 2021). In this context, it stands out as a promising approach to ensure sustainability, especially for production-oriented enterprises (Dikmen, 2001)

Although there have been improvements in the environmental performance of industrial activities in recent years, there is still a large amount of waste generation that can harm the environment (Ebner & Baumgartner, 2006). Moreover, despite increasing environmental awareness and green consciousness, many businesses are not fully integrating environmental and social sustainability practices into the way they do business. For this reason, sustainable production and consumption patterns have found a special place among the 2030 Sustainable Development Goals (SDGs) adopted by the United Nations (Hajer et al., 2015).

The European Green Deal put forward by the European Commission aims for European Union member states and trading partners to increase the use of green technologies, promote green investments and support secure energy supply by 2050. One of the main objectives of this process is to reduce greenhouse gas emissions to zero. According to the Ministry of Foreign Affairs Directorate for EU Affairs (2021), the sectors that play a key role in achieving the targets under the ECC are automotive, electrical-electronics, plastics, packaging, construction and building, textiles, water and food.

In these sectors; it is aimed to reduce fossil fuel consumption, support the transition to renewable energy sources and encourage the efficient use of natural resources. In this context, this study aims to reveal the perspectives of managers who are in decision-making positions in enterprises operating in the aforementioned sectors and having main production centers in Mersin and Adana provinces on green supply chain management that supports sustainable production and the current situation of these enterprises.

The study consists of two parts: The first part deals with the basic concepts and previous research on the subject; the second part includes the research methodology, findings, conclusion and discussion.

Literature Summary

Green Supply Chain Management: Concept, Components and Importance

Today, increasing environmental awareness is reshaping societies around the concept of sustainability, and in this direction, practices such as responsible production, consumption and recycling come to the fore. This change forces businesses to transform in line with environmental responsibilities, and in this context, the concept of green supply chain management (GSCM) gains importance (Acar, Yılmaz & Demir, 2021). SCM refers to the integration of environmental sensitivity into all production and distribution processes from raw material entry to the final consumer. This system offers businesses the opportunity to both comply with legal regulations and gain competitive advantage in the market (Sarkis, 2001). The success of GSCM depends on identifying driving and enabling factors in processes such as production, transportation, distribution and packaging (Achillas et al., 2019). This approach not only reduces environmental impacts but also improves the economic and social performance of businesses (Yan, Yin & Zhang, 2021). The implementation stages consist of planning, monitoring, execution and control steps, which enable businesses to act in line with sustainability principles (Liu, 2020). In order to provide environmentally sustainable products and services, businesses strive to reduce pollution, manage waste, use energy and renewable materials, and conduct business processes with green practices (Hendiani, Bagheri & Farsad, 2020).

Green Supply Chain Components

GCC requires consideration of environmental factors throughout the entire supply chain, from raw material procurement to customer relations. Green purchasing, one of the most critical stages in this process, is important for the selection of environmentally sensitive suppliers and the holistic environmental compliance of the supply process (Zhu, Sarkis & Lai, 2008). Purchasing activities include the preference for recycled, recyclable or reusable materials (Min & Galle, 2001). In addition, in this process, suppliers' environmentally compatible behaviors should be audited and monitored (Hsu et al., 2012). Green production refers to environmentally friendly production processes that conserve natural resources and use less energy and harmful substances (Aydin, 2017). Product design has an important impact at this point because most of the environmental impacts of the product are determined at the design stage (Luttropp & Lagerstedt, 2006). Eco-design aims to improve environmental performance and reduce costs by taking into account the life cycle of the product (Handfield et al., 2001). In this process, environmental awareness is increased by developing designs that enable the reuse and recycling of products (Khan & Qianli, 2017).

Green Logistics and Packaging

Green logistics involves the transportation, storage and packaging of products from production to consumption in a way that does not harm the environment (Chopra & Meindl, 2017). Reducing the carbon footprint is one of the main goals of this process (Demirci & Manavgat, 2019). The impact of logistics activities on greenhouse gas emissions is tried to be limited by global sanctions such as carbon tax and carbon trading (Çevik & Gülcan, 2011; Bashir, Khan & Kattatak, 2021). Such sanctions lead businesses to develop new strategies to improve their environmental performance (Parry, Black & Zhunnossova, 2022).

Green packaging involves packaging products with materials that cause minimal damage to the environment. Correctly sized and environmentally friendly packaging materials provide environmental and economic contribution by reducing fuel consumption during transportation (Zengin & Akunal, 2017). Ecological packaging types both ensure product safety and create a positive environmental image in the eyes of consumers (Lai, Cheng & Tang, 2012).

Reverse Logistics

Reverse logistics, which is another important component of FDI, involves the recycling, remanufacturing or disposal of products in post-consumer processes (Nylund, 2018). This process consists of three stages: collection, classification and processing (Erdem & Göksu, 2018). Recycling allows products to be separated into raw materials and included in the remanufacturing process (Sangwan, 2017). While reuse refers to the reuse of the product without losing its function, the remanufacturing process is based on the remanufacturing of products by separating them into parts (Ilgın & Gupta, 2010). Disposal should be carried out with disposal methods that minimize environmental damage (Dirik, 2012).

Importance and Advantages of Green Supply Chain

The practices of CEFM provide benefits to businesses not only in terms of environmental but also economic and social performance (Khan & Quinli, 2017). Practices such as green production, information systems, customer collaboration, and environmentally friendly design stand out as factors that directly affect organizational performance (Chin, Tat & Sulaiman, 2015). Under pressure from customers, governments, and non-governmental organizations, environmentally responsible production has become a necessity (Alshawabkeh, Masa'deh, & Bontis, 2022; Al-Nawafah, Alzoubi, & Haddah, 2022).

The main factors that trigger the orientation towards FDI practices are the necessity to achieve cost savings in large enterprises and to meet customer demands in small enterprises (Wang et al., 2018). In this context, environmentally oriented strategies provide a significant advantage in market competition (Thun & Müller, 2009; Feng, Zhu & Lai, 2018). For businesses, financial performance does not only stem from environmental practices, but also from the execution of these practices in a strategic integrity (Wandosell et al., 2021).

Environmental performance is measured by indicators such as greenhouse gas emissions, green design level and energy consumption, while economic performance includes waste reduction, inventory costs and long-term profitability (Seman et al., 2012). Social performance, on the other hand, includes factors such as corporate image, community relations, and social responsibility, and plays a critical role in the success of FBM (Sroufe, 2017).

Research Methodology & Findings

In this study, which was conducted to determine the perspectives of managers with decision-making authority in enterprises towards green supply chain management that supports sustainable production, the Tracer method, also known as process tracing, was used as a qualitative research method. The Tracer method was first developed in the 1960s by Joan Woodward at Imperial College, University of London, within the scope of studies conducted to explore and explain the nature of management control systems (Chau & Witcher, 2005). The method focuses on understanding the actual work practices and experiences of the interviewees, rather than relying on theoretical perspectives to address data overload and difficulties in conceptualizing the data (Woodward, 1970). The tracer method provides researchers with flexibility and depth of meaning in data collection and analysis processes, allowing them to obtain more qualified and applicable answers to research questions (Meireles, Jabbour, & Jabbour, 2019). Tracer studies aim to analyze existing processes to identify inefficient or inefficient points that need to be improved and to redesign the processes accordingly (Redhatama, Irwansyah, & Harjanto, 2020). A comprehensive review of tracing and process monitoring methods was conducted by Hornby and Symon (1994) and concluded that these methods are used in various disciplines such as geography, neuropsychology, and information technology.

While preparing the interview form, the interview questions in Bandoophanit's (2024) study were taken as a basis; in order to test the comprehensibility of the questions, test interviews were conducted with middle and senior managers of private enterprises operating in different sectors and expert opinions were obtained. The interview form was finalized after these tests. In the research, an interview form consisting of fourteen open-ended questions was used to determine the opinions and suggestions on how to achieve a green supply chain more effectively. Judgmental sampling method was preferred in sample selection. In this method, the researcher aims to obtain data suitable for the research purpose by consciously selecting individuals who represent the universe and have knowledge about the subject (Robson, 2002). Judgmental sampling is based on the researcher's determination of appropriate interviewees in line with his observations (Gürbüz & Şahin, 2016). In qualitative research, data saturation refers to the state of decreasing or stopping new information (Namey, Guest, Thairu, & Johnson, 2016). Onwuegbuzie and Leech (2007) suggest that data saturation obtained from previous similar studies should be taken into account in determining the appropriate sample size. Boddy (2016) states that 12 participants are sufficient when the participants are homogeneous, while Creswell (2023) emphasizes that the sample size should be determined depending on the research design. On the other hand, Majid, et al. (2017) state that there is no definite number of interviewees in qualitative studies.

The population of the study consists of senior managers in private sector enterprises operating in Adana and Mersin provinces and authorized to make decisions in green supply chain management. Within the scope of the Tracer method, 52 manufacturing enterprises operating in sectors related to the European Green Deal were identified by visiting the websites of Adana and Mersin Chambers of Commerce and Industry and Adana Hacı Sabancı and Mersin Tarsus Organized Industrial Zones. These enterprises were selected from Adana and Mersin provinces due to time and cost constraints. In line with the consultant's opinion, it was decided that 25 enterprises whose sustainability practices were examined through their websites could contribute to the study, and human resources, factory, production managers and R&D managers of these enterprises were contacted directly or by reference. The research data were collected with the approval of Çağ University Scientific Research and Ethics Committee, dated 06.06.2024 and numbered E-81570533-044-2400004596. In cases where key informants could not be reached, referrals were made through responsible key informants. Participation was limited due to workload, annual leaves and other reasons, but data saturation was considered to have been reached with the 13th interview as the answers obtained in the interviews started to repeat. In this context, data were collected with a total of 13 participants in the interviews conducted between June 10 and August 30, 2024, and the interviews were recorded and analyzed with the consent of the participants. Six of the interviews were conducted via Zoom application due to remote working, location differences and time constraints. The total interview duration was 686 minutes and each interview lasted 52.76 minutes on average.

Findings

In the analysis of the data, frequency and percentage analyses were made and Excel program was used for these processes. The findings are presented in the tables below and also supported by participant opinions

Participant business profile: The findings obtained from the interviews with 13 business managers participating in the study are presented in this section. The fields of activity, duration, cities and number of employees of the enterprises are given in Table 2. 11 enterprises operate in Adana and 2 enterprises operate in Mersin. One enterprise employs more than 10,000 employees, while three enterprises employ 1,000-1,500 employees. The other eight enterprises are small and medium-sized enterprises employing less than 250 employees per year.

Table 1*Field of Activity, Duration of Activity, Location and Number of Employees*

| Business | Field of Activity | Duration of the activity | Location | Number of employees |
|----------|-------------------------------|--------------------------|----------|---------------------|
| 1 | Thermal Insulation | 20+ | Adana | 0-250 |
| 2 | Construction Materials | 50+ | Adana | 0-250 |
| 3 | Food (Beverage) | 20+ | Adana | 0-250 |
| 4 | Micro Irrigation Systems | 50+ | Adana | 0-250 |
| 5 | Hygienic Products | 10+ | Adana | 0-250 |
| 6 | Glassware and Glass Packaging | 80+ | Mersin | 10.000 + |
| 7 | Automotive | 50+ | Mersin | 0-250 |
| 8 | Food (vegetable oils) | 35+ | Adana | 1.300 |
| 9 | Building and Infrastructure | 65+ | Adana | 250-500 |
| 10 | Cleaning Products | 15+ | Adana | 1.500 |
| 11 | Textile | 35+ | Adana | 0-250 |
| 12 | Compressor | 50+ | Adana | 0-250 |
| 13 | Textile | 15+ | Adana | 1.300 |

Respondent profile: Table 2 shows the position, tenure and eco-knowledge level of the unit managers participating in the study. 10 managers with 0-5 years of tenure, 1 manager with 5-10 years of tenure and 2 managers with 15 years or more of tenure were interviewed. The participants were asked to rate their level of eco-knowledge in the categories of *very bad* - *bad* - *average* - *good* - *very good*, using a 5-point rating scale. 6 average, 4 good and 3 very good responses were received.

Table 2*Descriptive profile of participating managers*

| Business | Duties of Unit Managers | Length of Service in the Company | Eco - Knowledge Level (5point Scale) |
|----------|---|----------------------------------|---------------------------------------|
| 1 | Production Manager | 2 years | Good. |
| 2 | Foreign Trade Manager | 1 year | Average |
| 3 | Purchasing Manager | 3 years | Average |
| 4 | Strategy Development Manager | 2 years | Very good |
| 5 | Production Manager | 4 years | Average |
| 6 | Supply Chain and Fulfillment Manager | 25 years | Very good |
| 7 | R&D Manager | 5 years | Good. |
| 8 | Sustainability Management Manager | 8 years | Good. |
| 9 | Production and Material Planning Manager | 2 years | Good. |
| 10 | Production Manager | 5 years | Average |
| 11 | Sales Manager | 2 years | Average |
| 12 | Production Planning Manager | 3 years | Average |
| 13 | Industrial Engineering and Sustainability Manager | 15 years | Very good |

Determination of the Green FMS Implementation status of the participating enterprises

Table 3

Use of Green Practices

| Use Green Apps | n | (%) |
|----------------|----|-------|
| Yes | 6 | 46,16 |
| Partial | 4 | 30,76 |
| No. | 3 | 23,08 |
| Total | 13 | 100 |

Eco-activity refers to proactive environmentally friendly strategies that provide environmental, economic and social benefits, including environmental awareness, sustainable practices, corporate social responsibility and community involvement. Regarding the duration of eco-activity of the enterprises, 15.39% of them have been active in this field for more than 10 years, 15.39% for 5-10 years, 15.39% for 3-5 years, 30.76% for approximately 3 years and 23.07% for less than 1 year.

Eco Activation times

Table 4

Duration of being Eco-active

| Echo - Altitude Duration | n | (%) |
|--------------------------|----|-------|
| 0-1 Year | 3 | 23,07 |
| 1-3 Years | 4 | 30,76 |
| 3-5 Years | 2 | 15,39 |
| 5-10 Years | 2 | 15,39 |
| More than 10 years | 2 | 15,39 |
| Total | 13 | 100 |

Examples of the views shared by the participants are given below.

R.No. 5: "Since our establishment, which corresponds to about 10 years, we owe it to ourselves to protect the national wealth while making a profit. We have been against the use of unnecessary raw materials and resources since day one. Our perspective on savings has been focusing on the environment and sustainability for about 3 years, and we have started discussions with the management team on how we can improve our business in this direction. As a business that exports to Europe, we intend to adapt to the processes within the scope of the upcoming European Green Deal without being harmed. I believe that we will have more green and environmentally friendly practices in the coming years."

R. No. 7: "Actually, we have been aware of this for the last 2 years, but before that, we have been working on KAIZEN processes within the scope of energy. If we go through the data, we can say that the first studies started in 2017 with both legislative obligations and environmental motivation."

Adopters of green and sustainable practices

Table 5 shows the most used practices of the 10 enterprises that partially or fully adopted green and sustainable practices. The practice with the highest frequency is "utilizing solar energy in production with solar panel applications (10)". This is followed by "recycling and reuse practices (9)" and "using electric-hybrid vehicles (9)". "environmentally friendly raw material selection (7)" and "waste management systems (7)" are also widely used, while the practices with the lowest frequency are "use of innovative technology" and "utilization of wind energy with wind turbines".

Table 5*Benmisenen practices*

| Main Applications | n | (%) |
|---|----|-------|
| 1. Utilization of solar energy in production with solar energy panel application | 10 | 12,83 |
| 2. Reuse through recycling activities | 9 | 11,54 |
| Electric & hybrid vehicle usage | 9 | 11,54 |
| 3. Selection of raw materials that are environmentally friendly and contain fewer chemicals | 7 | 8,97 |
| Waste Management Systems | 7 | 8,97 |

Examples of the views shared by the participants are given below.

R. No. 6: "Expanding the use of solar energy and wind power plants are our priorities and we are moving very fast. At least they are trying to meet at least some of their electrical energy in this way. We also have a serious burden of company vehicles. 3 years ago we switched to Hybrid vehicles. The company has already declared this in all publications under the heading of our sensitivity towards the environment. In the next step, we will most likely switch to electric vehicles, as long as the appropriate infrastructure can be provided. In addition, the company is trying to solve the issue of green supply chain. As a company that operates in mining, produces glass, consumes significant energy and tries to sell its products all over the world, it primarily works to reduce its carbon footprint and pollution. We are looking for alternative methods so that we can ensure minimum carbon emission, but there is a bottleneck here because it is a field where you work with subcontractors, suppliers, we do not have our own vehicles / trucks, etc. You have to have them make this investment. You have to get them to make this investment, time is tight, but we need to solve the transportation problem, solve the problems in the mining sector and push other stakeholders in this direction because we are also responsible for them."

R.No. 7: "We recycle transportation packaging. We use the material until the end of its life. We use bicycles for transportation within the industry. 80% of the forklifts used are electric. We do not have a panel application in the factory because our land is not suitable, but we have a feasibility study on a different land. Solar energy is used for hot water supply. We have robotic works in production, thanks to our new technology robots, it is effective in reducing welding gas and saving labor. In our paint shop, we are working with different types of dyeing and robotic systems for less chemical and less emission. We are working on the correct disposal of the hazardous / non-hazardous wastes we produce. Non-hazardous waste is also a source of income, to put it bluntly, and we have wastes that are very suitable for recycling, especially if the use of pure metal is demanded. Iron, plastic and wood can be recycled and put back into production. Recycling is very important, as you can see. Our aim is to reduce the use of non-recyclable materials in production. We have studies that we call round tables within ourselves. We have Green KAIZEN practices that will contribute to green transformation. Last year, 32 KAIZENs were carried out and a total of 144,122 kg of carbon dioxide was saved. This corresponds to an average of 3,352 trees."

Green Benchmarks

According to the representatives of 10 enterprises that integrate green and sustainable practices into their processes, the most frequently mentioned criteria for sustainable production and green practices are as follows: "production efficiency and high profitability (7)", "cost minimization (6)", "maximum profit-minimum loss balance", "waste reduction", "reuse rates" and "energy saving" ranked second. "Quality production" ranked the lowest with 4 references, while "a more sustainable future" and "preparedness for new regulations" were the least repeated criteria with 5 references.

Table 6*Green Criteria*

| Green Benchmarks | n | (%) |
|--|---|-------|
| 1. Production efficiency and high profitability | 7 | 10,30 |
| 2. Cost minimization | 6 | 8,82 |
| Max profit - Min loss balance | 6 | 8,82 |
| Decrease in waste & increase in reuse rate | 6 | 8,82 |
| A way of production that consumes less natural resources | 6 | 8,82 |
| Energy savings | 6 | 8,82 |
| Green image | 6 | 8,82 |
| Use of alternative energy sources | 6 | 8,82 |

An example of the views shared by the participants is presented below.

R.No. 13: *"Ufff that's a good question... And it's hard to answer... Actually, we can summarize with this question that new forms of production that cause less waste, or new forms of production where waste can be recycled, should be adopted. Waste management, as well as the right choice of raw materials and inputs, has a very important place in this process, especially for the textile industry. In the production process, unnecessary processes should be eliminated and if possible, applications such as mass production should be included to support efficiency with minimum input amount. Energy saving is certainly one of the most important issues due to high production costs. Transition to environmentally friendly energy sources should be encouraged through green investments. What is necessary for this cycle to continue is to ensure that green products that go through green processes are in demand in the market and customer satisfaction, and we need to convey the image of a green company and sustainability to customers with the right information and good marketing"*

Guiding External factors

Representatives of 10 enterprises that partially or fully integrated green and sustainable practices into their processes were asked about the external factors that influenced them to adopt these practices. The external factor with the highest frequency was "Legislation and Legal Requirements" (9), followed by "Customer Demands", "Government Incentives" and "International Regulations" (8). The factors with the lowest frequency were "Costs", "Competitor Practices" and "Major Players in the Industry" (2).

Table 7*External Drivers*

| Guiding External Factors | n | (%) |
|-------------------------------------|---|-------|
| 1. Regulations & legal requirements | 9 | 20,94 |
| 2. Customer demands & expectations | 8 | 18,60 |
| Government support and incentives | 8 | 18,60 |
| International regulations | 8 | 18,60 |

Examples of the views shared by the participants are given below.

R.No. 7: *"Besides the green memorandum of understanding that we signed, there are some sanctions that European countries impose on other countries. Not now, but in the coming years, these sanctions will include us and we want to reduce the tax bracket we will pay at that point. Under normal circumstances, these are issues that many small businesses would not dwell on, but especially if you are a big business and export to"*

Europe, no official wants to face a bad image and big monetary fines. This is actually why they are bringing us together and expecting us to prepare for something."

Guiding Internal Factors

When the 10 business representatives who integrated green practices into their processes were asked about the impact of these practices on performance and the factors that support success, the most frequently mentioned factors were: "Cost and Resource Savings" (8), "Environmentally Friendly Production" (7), "Production Efficiency" (6), "Maximum Profit-Minimum Loss Balance" (5) and "Employee Participation" (4). Other factors mentioned with lower frequency but considered important are "Competitive Advantage", "Executive Support" and "Prioritization of Green Processes".

Table 8

Internal Drivers

| Guiding Internal Factors | n | (%) |
|--------------------------------------|----|-------|
| 1. Business vision & culture | 10 | 20,83 |
| 2. Boss/Manager incentive | 9 | 18,75 |
| 3. Performance targets & assessments | 7 | 14,58 |

Examples of the views shared by the participants are given below.

R.No.8: *"Everything actually starts with the vision of the business, but the key point that will lay this vision is definitely the bosses first and then the management team. Now, first of all, you will determine new strategies or development plans that will ensure the formation of this culture within the enterprise, but before that, you will provide trainings so that you can raise awareness. Rewards and punitive practices are certainly effective when necessary, but no matter what reward you give in return, this responsibility must first be established conscientiously. Previously, you need to instill this morally in your teams, you will guide people without forcing them. Therefore, this process should be supported through in-company trainings and voluntary employee participation."*

R.No.1: *I think the most important part here is the business culture and the vision of the boss who is instrumental in this culture. Unfortunately, this is the main problem we face not only in these green practices and sustainability issues, but in all the decisions and practices we take. Let's convince the boss and senior management, is it enough, not enough. The right management teams and all employees, regardless of blue and white collar, who report to these managers are part of this process. Because timely and accurate information flow from the bottom to the top is critical in recognizing and intervening in many flaws, preventing undesirable situations and improving the process. Teams should be formed from each unit and regular trainings should be provided to ensure that the organization serves the same purpose so that real results can be achieved."*

Representatives of 10 enterprises that have partially or fully integrated green practices into their processes were asked about the impact of these practices on performance and the factors that facilitate success. The factors with the highest frequency were "Cost and Resource Savings" (8), "Environmentally Responsible Production" (7), "Production Efficiency" (6), "Maximum Profit-Minimum Loss Balance" (5) and "Employee Participation" (4). Other lower frequency but important factors are "Competitive Advantage", "Executive Support" and "Prioritization of Green Processes".

Table 9*Success Factor*

| Success Factor | n | (%) |
|---|---|-------|
| 1. Cost & resource utilization savings | 8 | 20,51 |
| 2. Environmentally responsible production | 7 | 17,95 |
| 3. Production efficiency | 6 | 15,38 |

Examples of the views shared by the participants are given below.

R.No.6: *"When you look at the purpose of every company is to make profit, companies have to make money. No matter how environmentally sensitive you are, if you are not making money, you are doomed to disappear. To minimize damage to the environment while earning this money. Because you will inevitably cause damage. 0 damage is not a very realistic goal, but minimizing it is a realistic goal. Therefore, it is very important to establish the Max Profit - Minimum Loss balance. It is necessary to calculate very well what it will bring and what it will take away. Sometimes you don't make a profit, you don't make money, but you still have to do it. Sometimes the opposite is the case. It is very difficult to strike this balance and make these decisions. Establishing a team that will ensure this balance, establishing a team that can guide the managers, I'm not talking about the person at the head of the company, but establishing a real competent team at the bottom, providing the right data to make these decisions and gradually directing the management correctly, and being able to make these decisions, balance."*

Reasons for businesses that are in the process of adopting green practices/not in the process of adopting green practices

While 3 enterprises that have not yet adopted green practices or are in the process of adaptation stated the factors "Boss/Management Vision", "Entry Costs" and "Lack of Mandatory Rules and Laws" as obstacles, 2 enterprises stated that they do not feel obliged to this process because they do not export to European Union member countries (Table 10).

Table 10*Reasons for Businesses that have not Included Green Practices in their Processes*

| Reason | n | (%) |
|--|----|-------|
| Boss / Management vision | 3 | 27,27 |
| Entry costs | 3 | 27,27 |
| Lack of mandatory rules and laws in practice | 3 | 27,27 |
| Not exporting to EU member states | 2 | 18,19 |
| Total | 11 | 100 |

Examples of the views shared by the participants are given below.

R.No.5: *"It all boils down to the top management's perspective on the issue. Unfortunately, issues such as green processes, sustainability, climate crisis and inequality are not of interest to the bosses because they are not directly reflected in their pockets as a minus. How should I put it, because they don't actually have a point of view... in short, they are not on their agenda. But when the state starts to force and legal processes come into play, or practices such as tax reductions or incentives and penalties begin, or this situation may change. I am sure that the practices of competitor companies that we sell products to the same market will also speed up the processes."*

When asked about the reasons for businesses to go green, the most common answers were "Cost Reduction" and "Responsible Production" (7), followed by "Business or Brand Image", "Government Policies and Legal Obligations" and "Protecting the Future and Conscience of Sustainability" (6). The least common

reasons are "Gaining Superiority over Competitors", "Making the Most of Scarce Resources" and "Benefiting from Government Support and Incentives".

Table 11

Real Reasons for Going Green

| Real Reasons for Going Green | | n | (%) |
|------------------------------|---|---|-------|
| 1. | Reducing costs | 7 | 15,90 |
| | Responsible production | 7 | 15,90 |
| 2. | Business / Brand prestige | 6 | 13,64 |
| | Government policies & legal obligations | 6 | 13,64 |
| | Protecting the future & sustainability conscience | 6 | 13,64 |
| 3. | Benefiting from government support & incentives | 5 | 11,36 |

Examples of the views shared by the participants are given below.

R.No. 6: *"Regulations already have a challenging side, but there is also a responsible image for the country that our company has been trying to create for years. Glass is already a material that is more integrated with nature, healthier and suitable for reuse and recycling when necessary, compared to products such as plastic. In individual consumption, I am sure you prefer glass over plastic in your daily life. In fact, while our company has been a company with the common sense of protecting the Earth, sustainability and the environment in the last 20 years, the regulations came on top of this process. Our company has also realized that we need to do more."*

Government regulation & repression

Table 12 shows the responses of the respondents when asked about the severity of pressure from government regulations or punitive situations that may arise from regulations. 10 enterprises stated that they were subjected to moderate pressure and 3 enterprises stated that they were subjected to mild pressure.

Table 12

Pressure from Government Regulations

| Pressure from State Regulations | n | (%) |
|---------------------------------|----|-------|
| Middle | 10 | 76,92 |
| Lightweight | 3 | 23,08 |
| Total | 13 | 100 |

The Effect of Organization Size on FTE

Considering the number of workers, production amount and working capital amount that determine the quantitative size of the organizations, when the participant business representatives were asked about the impact of organization size on green supply chain management, the answer "YES" was given as the first answer with 9 references, and the answers "N/A" and "NEUTRAL" were given as the second answer with 2 references.

Table 13

The Effect of Organization Size on FTE

| The Effect of Organization Size on FTE | n | (%) |
|--|---|-------|
| There is | 9 | 69,24 |
| No | 2 | 15,38 |
| Neutral | 2 | 15,38 |

| The Effect of Organization Size on FTE | n | (%) |
|--|----|-----|
| Total | 13 | 100 |

Examples of the views shared by the participants are given below.

R.No.6: *"Unfortunately, it will be more difficult to create ecological awareness and take environmental measures in sectors that pollute nature more. Especially the chemical, leather and mining sectors do not care much about these issues for the sake of making money, unfortunately, it is very difficult, especially if they do not export. I think the sector, size and even the export status of the company are determining factors in the adoption of green culture. If you don't have such a perspective, if you think that you will sell to Turkey, sell to the Middle East, and look at the money you get, you will refrain from doing so. Governments and regulations should be pushing at this point."*

Sustainable leadership promotes organizational learning and includes planned practices to improve effectiveness. When the business representatives were asked about the impact of management on green supply chain management, 12 representatives answered "YES" and 1 representative answered "NEUTRAL".

Table 14

Impact of Management on ROA

| Impact of Management on GSCM | n | (%) |
|------------------------------|----|-------|
| There is | 12 | 92,31 |
| Neutral | 1 | 7,69 |
| Total | 13 | 100 |

Examples of the views shared by the participants are given below.

R.No. 4: *"Senior management needs to remember that they are accountable both to the board of directors to which they report and to the team working in their units. Their main duty is to ensure that decisions are approved and that the approved decisions are implemented correctly. In this process, it has an important position in the realization and follow-up of green practices with more proactive strategies and solutions by involving both stakeholders and their teams in the process."*

Impact of the rewarding approach

The participative management system gains effectiveness by increasing the level of training and knowledge of employees. In addition, all 13 business representatives were positive that delegation of authority and reward systems improved the performance of the organization.

Examples of the views shared by the participants are given below.

R. No. 7: *"I think... Hmm... I mean, the support and leadership of managers definitely affect the commitment of subordinates, but much more tangible results can be achieved when a reward / incentive system is used. At the most basic level, training, motivation, rewards and incentives can be used. Including employees in social responsibility projects and evaluating and rewarding them on an individual basis would be much more effective and you would have many projects with the participation of the whole company. We have rewarding systems that will ensure the participation of blue-collar / white-collar personnel for each KAIZEN project. At the end of the year, awards are presented to the relevant people in the relevant field. Thus, we support the participation of subordinates in projects so that the right step can be taken from the first step."*

R.No. 8: *"We have Zero Waste Projects. For example, the environmental unit suddenly comes and checks your garbage bin. They check if it complies with the paper/glass waste and garbage separation rules. Whenever it is compliant, they distribute Green Star stickers and give a reward when a certain number of*

stickers is reached. People become more motivated as they see things change. We have an award-winning suggestion/idea platform. As suggestions came in and action was taken, people started to generate more ideas."

Self-assessment & Achievement level relationship

Business managers were asked to determine their green and sustainable business performance through self-assessment and were asked with a 5-point rating category. The answers in Table 15 are listed as follows: 2 enterprises answered "HIGH", 3 enterprises answered "MEDIUM-HIGH", 4 enterprises answered "MEDIUM", 2 enterprises answered "MEDIUM-LOW" and 2 enterprises answered "LOW".

Table 15

Level of Achievement with Self-Assessment

| Achievement Level (Self-Assessment)) | n | (%) |
|--------------------------------------|----|-------|
| High | 2 | 15,38 |
| Medium - High | 3 | 23,09 |
| Middle | 4 | 30,77 |
| Medium - Low | 2 | 15,38 |
| Low | 2 | 15,38 |
| Total | 13 | 100 |

When businesses were asked how to achieve a truly green supply chain, the most common answers were listed as follows: "strict government policies, criminal processes and government prioritization of the green concept (8)", "responding to customer demands and expectations (7) (7)", "government green investment incentives (6)", "guiding management vision (6)" and "regulations of the country of trade (6)". The least common answer was "achievable at the point where it can be integrated into the entire supply chain".

Steps to achieve true Green Supply Chain Management

Table 16

How to Achieve True Green Supply Chain Management

| How to Achieve True Green Supply Chain Management | n | (%) |
|--|---|-------|
| 1. By prioritizing strict government policies and controls, including criminal processes | 8 | 21,62 |
| 2. When it is in a position to respond to customer demands and expectations | 7 | 18,92 |
| 3. Government green investment incentives and funds | 6 | 16,22 |
| With management vision | 6 | 16,22 |
| Due to trade country regulations | 6 | 16,22 |

Examples of the views shared by the participants are given below.

R.No. 6: "Everything inevitably depends on money. All the governments of the world have financial powers. First of all, countries need to incentivize companies through regulations, funds or in other ways, but definitely through supervision. The point that companies avoid is nothing but cost. Companies will incur an expense, yes, they will benefit, yes. But I think the issue will come to the point of when, how and with which money they will make this expense. At the point where it is supported by Funds and Rules, this can be overcome."

R.No. 7: "It can be possible with a synchronized movement by ensuring the participation of all suppliers. They all have their own parameters, of course it is important to reach all parameters at the optimum point. It is governments, rules and regulations that will control these parameters. It is vital that governments, rule-makers and unions take ownership, guide and supervise this process."

He argues that the process starts with executive leadership, and that green culture and policies should be determined by including subordinates with trainings to be provided by taking into account the dynamics of the region. At this point, he agrees that the eco performance of each employee and the unit to which the employee is affiliated should be measured regularly through audits and that eco performance should be prioritized in management strategies with reward / punishment practices when necessary.

Conclusion, Discussion and Future Directions

As a result of the interviews with the managers, it was found that the most preferred practice in the dissemination of green practices throughout the supply chain is the use of solar energy in production with government support. This was followed by recycling, reuse, electric/hybrid vehicles and equipment powered by alternative fuels. The strongest external factor in the implementation of these practices was found to be compliance with legal obligations and avoidance of penal sanctions, as well as the motivation not to be deprived of investment incentives. It is understood that external regulations and customer demands play a decisive role especially for enterprises exporting to EU.

For enterprises that have not yet implemented green processes, installation and entry costs are the main reason behind this preference, and therefore green processes cannot be prioritized in their business agenda. In addition, the fact that they do not feel the pressure of existing legal regulations due to the fact that their export activities are not intensive or do not cover EU countries was stated as the main reason. However, the three enterprises that have not yet implemented green processes stated that they would be ready to do so in the future if investment incentives were offered in combination with stringent audits and mandatory policies.

The research findings show that Green Supply Chain Management (GSCM) and sustainable production encourage businesses that aim for long-term success to act in an environmentally, socially and economically responsible manner. The fact that businesses have access to information and have policies to implement this information reveals that they exhibit a positive tendency towards environmental responsibility. These results are in line with the findings in the literature that FDI practices increase environmental performance (Geng et al., 2017; Vanalle et al., 2017; Rao & Holt, 2015). Moreover, Zhu et al. (2013) argue that green practices also improve operational performance.

There is a widespread view that business size is an important factor in the diffusion of green practices. Most of the participants stated that the advantages provided by size such as infrastructure, financial strength, qualified human resources and legal process management have a positive impact on integration into the green supply chain. Similarly, in the literature, the impact of variables such as business size, implementation period and country wealth on eco-performance has been emphasized (Ninlawan et al., 2010; Chaisrianurak et al., 2013). On the other hand, Wooi and Zailani (2010) and Fasan et al. (2021) state that budgetary constraints are an inhibiting factor in the adoption of green technologies that require large-scale investments.

All 13 interviewed enterprises have ISO 14001 certification and undergo at least one external audit per year. Participants explained their reasons for adopting green practices in terms of environmental and social responsibilities, legal obligations, cost reduction and brand prestige. In addition to the desire to gain competitive advantage, some businesses stated that they also have value-based motivations such as "caring for the future" and "sustainability conscience".

As a result, it is seen that there is a need for more studies on economic, social and technological developments in this field in our country and in our region. In future research, more enterprises operating in the priority sectors within the scope of ECC should be included and hypotheses should be tested by making



comparisons between sectors. In addition, the sustainability strategies of businesses operating in different environmental conditions should be analyzed in detail.



| | |
|---------------------------|---|
| Ethics Committee Approval | The research data were collected with the approval of Çağ University Scientific Research and Ethics Committee, dated 06.06.2024 and numbered E-81570533-044-2400004596. |
| Informed Consent | Informed consent was obtained from the participants. |
| Peer Review | Externally peer-reviewed. |
| Author Contributions | Conception/Design of Study- S.A.Ü., E.Y.Ö.; Data Acquisition- S.A.Ü., E.Y.Ö.; Data Analysis/Interpretation- S.A.Ü., E.Y.Ö.; Drafting Manuscript- S.A.Ü., E.Y.Ö.; Critical Revision of Manuscript- S.A.Ü., E.Y.Ö.; Final Approval and Accountability- S.A.Ü., E.Y.Ö. |
| Conflict of Interest | The authors have no conflict of interest to declare. |
| Grant Support | The authors declared that this study has received no financial support. |



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