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THE RELATION BETWEEN GREEN SUPPLY CHAIN MANAGEMENT AND SUSTAINABLE PERFORMANCE

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Abstract:
Emerging corporate concerns regarding the environmental climate crisis in recent years have encouraged the use of green supply chain management (GSCM) that aims to reduce environmental damage while maintaining efficiency in the supply chain. It is anticipated that companies will contribute to sustainable performance by gaining a competitive advantage in the market and further strengthening cooperation with supply chain management, thanks to green practices. We tested our research hypotheses using variance-based structural equation modeling (SEM) with survey data collected using a web-based pre-tested instrument from 105 respondents from supply chain employed by various industries in Turkey. The findings indicate that green supply chain management has a positive effect on sustainable performance.

Keywords:
Green Supply Chain Management, Sustainable Performance

1. Introduction

With sustainability gaining importance globally and the emergence of environmentally friendly products, there has been a transformation from supply chain management to green supply chain management. The significance of the green supply chain management (GSCM) has increased as it provides companies with a globally competitive environment (Saini et al., 2023). On the other hand, due to increasing environmental concerns, companies have included environmental management in their corporate strategies. GSCM aims to reduce the environmental impacts of the supply chain by adopting sustainable practices at all stages, from the supply of raw materials to the delivery of finished products to customers and focuses on sustainable practices. These practices not only minimize the environmental and social impacts of companies but also increase company efficiency and company reputation (Hebaz et al., 2024). Increasing pressure from governments, non-profit organizations, and stakeholders has made them realize that finding solutions to environmental problems requires a joint and concerted effort from all stakeholders in the supply chain (Fu et al.,2023). Green supply chain is an important approach for companies to balance their social, economic, and environmental matters and ensure organizational sustainability (Wang et al., 2020).

The academic literature has tended to focus on the effect green supply chain practices has on environmental, economic, and operational performances (Maditati et al., 2018; Samad et al., 2021). There is also a gap in developing countries, as studies on the relationship between GSCM and sustainable performance are mostly carried out in developed countries. In the academic literature focuses on green supply chain practices with different dimensions (Antwi et al., 2022). In light of the aforementioned shortcomings, in this paper, we identified four GSCM dimensions (collaboration with suppliers and customers, green purchasing, internal environmental management, and eco-design) and aimed to investigate the effects of these dimensions on economic, environmental, and social performance. To achieve this goal, a survey was conducted on various manufacturing firms operating in Turkey.

2. Literature Review

2.1. Green Supply Chain Management

Although the concepts of supply chain management and environmental management began to attract attention in the late 1980s and early 1990s, they began to gain importance in the 2000s (Fahimnia et al., 2015). Green supply chain involves addressing the interactions and relationships between supply chain management and the environment (Samir, 2007). In the green supply chain, as in the supply chain, boundary dimensions are shaped according to the problem addressed by the researcher and the purpose of the research (Lai et al., 2004). According to the literature, the scope of the green supply chain includes the concepts of green purchasing/procurement and the integrated chain extending from the supplier to the manufacturer and then to the customer, and even reverse logistics (RL) (Samir, 2007) and end-of-life management of the product after its useful life in the supply chain activities (Srivastava, 2007). Furthermore, companies can involve all their business partners, such as raw material suppliers, service providers, customers, or end users, to minimize environmental risks arising from their activities (Tippayawong et al., 2015).

Over the past three decades, companies have realized that continuous evaluation of corporate performance is necessary to maintain and sustain their competitive position. Performance evaluation is the process of evaluating the effectiveness and efficiency of actions and systems in order to achieve agreed goals. Adoption of GSCM is not possible unless the performance evaluation is evaluated objectively from economic, environmental, and operational perspectives. Without an objective performance evaluation from economic, environmental, and operational perspectives, there will be no justification presented to the management for the adoption of GSCM (Choudhary and Sangwan, 2022).

Company managers are a driving force in prioritizing implementing of green practices, standardizing processes, and monitoring environmental impacts (Jum'a, 2023). As a result of the increase in customers' demands for products and services that are without damage to the environment, supply chain managers will make decisions to support the integration of GSCM applications throughout the supply chain process and provide the necessary coordination for this (Green et al., 2012).

2.2. Sustainable Performance

Sustainability performance is best scaled by what is often referred to as the triple bottom line: economic, social, and environmental (Elkington, 1998). It emphasizes that three dimensions of sustainability, namely economic well-being, social well-being, and environmental quality, play roles in improving human well-being. Since these three sustainability dimensions play different and mutually reinforcing roles among each other, it is thought that these three dimensions should be followed simultaneously (Shen et al., 2017)

In this study, the following three dimensions of SP were selected: environment, economic, and social sustainability. Environmental sustainability addresses issues such as eliminating waste and reducing environmental impacts of manufacturing companies, reducing Co2 emissions, increasing material and energy efficiency, improving system quality, and developing environmentally friendly products in a competitive and sustainable market (Tseng et al., 2016). We have to under control industrial deterioration and prevent global warming for environmental sustainability (Shahzad et al., 2020). Economic sustainability (ECO) is defined as development concerned with improving people's living standards by providing permanent and ensure livelihoods by minimizing resource depletion and environmental degradation (Bekele et al., 2024). It is also relates to energy and cost efficiency, revenue generation, and the utilization of waste for revenues (Shahzad et al., 2020). Among the three dimensions of sustainability, social sustainability has received less attention than economic and environmental sustainability in much of the research. However, in recent years social sustainability issues have begun to gain importance in developed countries due to increased sensitivity to concerns such as employee pay inequality (Hug et al., 2016).

3. Research Methodology

This study investigates the impact of green supply chain management practices with four dimensions on three sustainability performance dimensions, environmental, economic, and social performance, by gathering online survey from supply chain professionals in Turkish manufacturing companies. The items used in the survey were adapted from established scales in the literature. SPSS tools were used for analysis and data was gathered through a questionnaire-based survey method by using 5 point-scale..

In this context, the objectives to be achieved are stated as follows:

- Determining which green supply chain management practices are applicable in Turkish manufacturing firms
- To investigate the effect of green supply chain management practices on the sustainable performance of Turkish manufacturing firms

What distinguishes this research from other studies is its originality, as it specifically examines the impacts of GSCM with four dimensions to sustainable performance. While there are various studies in the literature conducted in different countries, there is a lack of research specifically addressing GSCM and sustainable performance unique to Turkey. The findings of this study can serve as a foundation for conducting detailed analyses in future studies focusing on GSCM and sustainable performance of manufacturing firms in Turkey.

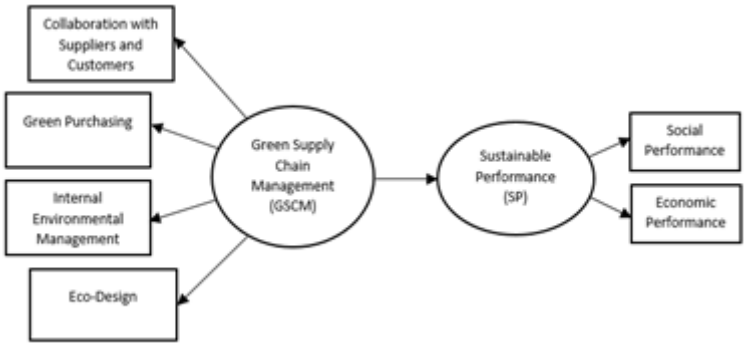

Figure 1. Research Model

4. Results and Discussion

The measurement model was analyzed using confirmatory factor analysis by observing that all the measurement items loaded on their respective latent variables and all the latent variables met the acceptable threshold levels on factor loadings, Cronbach's alpha, composite reliability, average variance extracted (AVE) by using SPSS. For the scale to be acceptable, α value must be above 0.70. In Table 1, results of the reliability analysis were given, and all values are found as above the minimum required level of 0.70.

Table 1. Reliability Analysis of Variables

Variable Name	Reliability (Cronbach α)
Collaboration with Suppliers and Customers	0.892
Green Purchasing	0.902
Internal Environmental Management	0.829
Eco-Design	0.836
Social Performance	0.855
Economic Performance	0.951

In this research, by using Pearson's Correlation Analysis technique, as a result of the scales were complied with normal distribution, the relationships between green supply chain management and sustainable performance were analyzed. The direction and strength of linear relationship can be determined between the variables with the Pearson Correlation analysis.

Table 2. Correlation Analysis

	Collaboration with Suppliers and Customers	Eco-Design	Green Purchasing	Internal Environmental Management	Social Performance	Economic Performance
Collaboration with Suppliers and Customers	1	0,597**	0,646**	0,519**	0,664**	0,652**
Eco-Design		1	0,673**	0,369**	0,567**	0,644**
Green Purchasing			1	0,487**	0,709**	0,787**
Internal Environmental Management				1	0,493**	0,556**
Social Performance					1	0,695**
Economic Performance						1

*p<0,001 significant

If the correlation value between the two variables is between 0.30-0.70, it is medium relationship, if it is between 0.70-1.00, it is high relationship (Gürbüz and Şahin, 2014). According to this analysis, between collaboration with suppliers and customers and social performance has medium-positive relationship. Collaboration with suppliers and customers and economic performance has medium-positive relationship. Eco-design and social performance has medium-positive relationship. Eco-design and economic performance has medium-positive relationship. It is found that there is a high-positive relationship between green purchasing and social performance. Also, green purchasing and economic performance has high-positive relationship. There is a medium-positive relationship between internal environmetal management and social performance. Internal environmetal management and social performance has medium-positive relationsip.

5. Conclusion

The study results throw that that the relation between green supply chain management and sustainable performance is statistically significant. This research seeks to comprehend the impact of green supply chain management on sustainable performance. The results of green supply chain management and sustainable performance relationship support our
expectations the use of green supply chain management has a vital role in improving sustainable performance. There are various studies conducted for different countries; however, there is no study specific research the relation between green supply chain and sustainable performance in Turkey.

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