

THE IMPACT OF GREEN SUPPLY CHAIN MANAGEMENT PRACTICES ON ECONOMIC PERFORMANCE WITHIN THE SRI LANKAN FOOD & BEVERAGE INDUSTRY

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Abstract

This study investigates the multi-faceted impact of Green Supply Chain Management (GSCM) practices on Economic Performance (EP) of the unique Sri Lankan food and beverage (F&B) industry. The novelty of this research lies in the empirical examination of the high-resource-intensive industry of a developing nation, comparing five various dimensions of GSCM with a critical measure of financial performance, a relationship previously under-researched in Sri Lanka. EP was taken as the dependent variable, measured by five independent variables, including green purchasing, eco-design, internal environmental management, reverse logistics, and investment recovery. A convenience sample of 100 F&B businesses in the Galle district was surveyed. The research established that four of every five GSCM practices, green purchasing, eco-design, reverse logistics, and investment recovery, are positive and statistically significant with economic performance. This establishes that circular economy practices directly mirror organisational profits. However, internal environmental management was established to be statistically insignificant. This is a deviation from most literature in the world, suggesting that, independently, local top-management commitment may not lead to economic benefits in cash terms without extrinsic market pressures. The study offers strategic advice for managers to prioritise investment recovery and circular supply chains. Scholars can extend this study by considering other GSCM practices that exert a stronger influence on economic performance than the variables considered in this research.

Keywords: Economic performance, food and beverage industry, green supply chain management

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Introduction

Economic performance is a critical indicator of a firm's ability to sustain growth, enhance competitiveness, and offer long-term viability for evolving market conditions. Economic performance defines how well a firm uses its resources to generate profits while preserving stakeholder value. Existing literature emphasises that external macroeconomic and environmental conditions strongly impact the profitability and long-term viability of companies. For instance, Yildiz and Kizildag (2024) revealed that macroeconomic uncertainty has a strong influence on profitability in manufacturing and service firms in Türkiye, noting the extent to which organisational performance is determined by external economic factors. Similarly, Rahim and Daud (2025) deduced that environmentally and socially responsible CSR practices positively impact the encouragement of economic development among Malaysian companies, verifying that socially and environmentally responsible practices lead to increased economic performance among firms. In the Sri Lankan context, Perera and Fernando (2023) found that sustainability practices like environmental responsibility and ethical business behaviour significantly increase the economic vitality and competitiveness of apparel firms. These results collectively indicate that economic performance is a multidimensional construct that is not only driven by financial factors but by environmental and social sustainability practices as well.

Previous research on Green Supply Chain Management (GSCM) has widely examined its influence on various dimensions of firm performance. Most of the researchers have explored how the activities of GSCM influence environmental performance (Sundarakani & Vel, 2016), operation efficiency (Feng et al., 2018), and overall sustainability outcomes (Herrmann et al., 2021; Shamsuddin et al., 2020). The previous research was inclined to understand GSCM as a single-dimensional construct, focusing primarily on environmental or financial dimensions. Nevertheless, recent literature offers the need to apply a multi-dimensional strategy that embraces GSCM as a bundle of inter-linked practices with impacts on multiple performance domains simultaneously (Feng et al., 2018; Priyashani & Gunarathne, 2021).

Financial performance centres on profitability, liquidity, and return on investment, whereas economic performance is a more holistic construct encompassing cost effectiveness, competitiveness in the marketplace, utilisation of resources, and creation of long-term value. Çankaya and Sezen (2019) and González-Torre and Adenso-Díaz (2021) emphasised that assessment of GSCM's impact on economic performance can contribute to showing how sustainable supply chain practices enhance the economic resilience and competitive advantage of organisations. Yet, most research has been concentrated in industrialised countries (Smith et al., 2022; Geng, Mansouri & Aktas, 2017), and limited empirical findings have been reported from developing economies such as Sri Lanka.

Sri Lankan industries are slowly implementing GSCM practices on a competitive scale relative to the prime exporting nations such as Japan and China, according to Jayarathna (2016). However, there has been limited analysis of how these practices influence economic performance, especially in the main manufacturing industries like food and beverages. This industry represents the highest Index of Industrial Production in 2021 and is one of the key sectors that contribute significantly to SL GDP (Chanchala & Joseph, 2023). Therefore, this study bridges this gap by exploring empirically the influence of multidimensional GSCM practices: green purchasing, eco-design, internal environmental management, reverse logistics, and investment recovery on the economic performance of Sri Lankan food and beverage firms.

Literature review

GSCM practices and economic performance

Green supply chain management can be defined as the "management process in supply chains whose prime objective is to remove all kinds of waste and reduce the environmental impact in various stages of a supply chain" (Burki, 2018). Supply chain companies can transform their supply chains into green supply chains using supply chain management systems and environmental management systems. Economically, the central focus of an organisation is to provide products and services to clients to meet their needs and desires and also efficiently deal with the business's cash flow (Jan et al., 2019). The economic performance of a given organisation reflects its contribution to stakeholders' economic well-being and the economic system as a whole, in terms of local, national, or global levels. Existing literature predominantly focuses on environmental effects, which remains a field with limited knowledge regarding the influence of GSCM practices on economic performance, particularly in industries. González-Torre and Adenso-Díaz (2021) emphasised that additional research on economic performance and GSCM practices and their linkage should be undertaken to bridge this knowledge gap.

Despite the global attention to sustainable SCM practices, research on how the practice of GSCM affects economic performance in Sri Lanka's food and beverage industry is limited. Kumar and Wang (2022) also emphasised the need for greater in-depth analyses of the specific barriers and enablers that influence the effective application of GSCM practices by the food and beverage industry in developing countries.

Green purchasing (GP) and economic performance

Green purchasing practices tend to involve close collaboration with suppliers who are committed to sustainable practices. Such cooperation can influence economic performance (Jones & Chen, 2019). Green buying can be defined as the buying behaviours that are focused on environmental factors like minimising waste, free of hazards and toxics (Vijayvargy et al., 2017). Jones and Chen (2019) conducted quantitative analysis examining the economic performance and green buying programs, and found a positive correlation between sustainable supplier performance and the purchasing organisation's economic performance. Another study by Greenberg and Wang (2020) reported statistically significant improvement in the market share of companies adopting green purchasing practices. However, De et al. (2020) suggested that green purchases serve a moderating role in economic growth.

H1: Higher levels of green purchasing will higher the economic performance

Eco-design (ED) and economic performance

Eco-design can be defined as designing a product that is green and that minimises the environmental footprint throughout its whole life cycle (Habib et al., 2020). Eco-design relies on the philosophy of reducing environmental footprint and is applied throughout the total life cycle of a product, from production, through use, to end-of-life. Organisations embrace the eco-design approach since it addresses environmental problems at all stages of the product lifecycle from raw material purchasing to end-use consumption (Arshad Ali et al., 2020). Previous research studies established that eco-design enhances positive economic performance measures (Ahmad et al., 2022; Gunasekara et al., 2023; Priyashani & Gunarathne, 2021).

H2: Higher levels of eco-design will enhance economic performance

Internal environmental management (IEM) and economic performance

Internal environmental management is a green practice impacting the decision-making process of the top management, and supporting the middle-level management to ensure the successful implementation of strategies and inter-department coordination (Vanalle et al., 2017). Also stressed that efforts from top management play a strong impact on adopting GSCM practices in the firm. The first step is to establish environmental sustainability goals and communicate them to all departments because all departments are responsible for embracing sustainable practices (Díaz & Ping, 2018). Giovanni (2012) rebutted that environmental management has a direct effect on environmental and social performance but an indirect effect on economic performance. There is earlier work that can be seen that IEM has a positive impact on performance metrics like economic performance (Priyashani & Gunarathne, 2021; Annika & Díaz, 2018).

H3: Higher levels of internal environmental management will higher the economic performance

Reverse logistics (RL) and economic performance

Rivers' logistics are organisational activities that involve collecting waste products and materials from the consumers with reuse and recycling intentions (Shamsuddin et al., 2020). Defective item repair, material reuse and recycling, and packaging materials are the most important factors in reverse logistics (Priyashani & Gunarathne, 2021). Reverse logistics have been used as the most common GSCM practice in earlier studies (Muma et al. 2014; Mitra & Datta, 2014). Reverse logistics were also used by Younis et al. (2016) to examine the link between GSCM practices and firm performance. Reverse logistics is one of the broadly used dimensions in the case of GSCM research. Most researchers nested reverse logistics as a variable in their theoretical models to find its impact on performance measures. As such, previous researchers found that reverse logistics positively impacts performance like economic performance (Priyashani & Gunarathne, 2021; Appiah & Odartey, 2021; Onyango et al., 2014).

H4: Higher levels of reverse logistics will higher the economic performance.

Investment recovery (IR) and economic performance

Investment recovery (IR) is the efficient, effective and profitable recycling, recovery, reselling and disposal of waste, excess inventory, scrap, defective, and obsolete products to economic benefit for the company and reduce environmental impact (Habiba & Bao, 2019).

Investment recovery is the most studied and most practised dimension in the GSCM research (Ahmed et al., 2018). The organisations' managers are forced to minimise wastage, selling excess inventories, and scraps for economic benefits. This is the phase of optimising organisations' idle assets through reuse or selling out. Investment recovery has strong and positive effects on organisational performance (Zhu et al., 2008). In addition, investment recovery significantly contributes to the economic performance of the firm (Asif, 2023). However, this contradicts Syakila's (2017) study, where a negative correlation was demonstrated between investment and firm performance. Moreover, Yildiz and Sezen (2019) also indicated that investment recovery significantly contributes to environmental and economic performance.

H5: Higher levels of Investment recovery will higher the economic performance

Methodology

This study used the deductive reasoning approach as the study followed the positivist philosophy. This quantitative study focuses on testing hypotheses and employs various statistical tools to analyse numerical data. A survey as a quantitative method utilised since this study involves numerical data. A structured questionnaire as a primary data collection method was distributed among relevant respondents. The questionnaire can be identified as the most effective method to collect data (Sekaran, 2003). The questionnaire for this study consisted of two sections: Section A and Section B; Demographics, and Scale questions, respectively. All scale questions were adapted from previous studies, and those were measured on a five-point Likert Scale where 1 indicated Strongly Disagree and 5 indicated Strongly Agree.

The target population of this research consisted of all registered food and beverage manufacturing firms operating in Sri Lanka. The sample comprised 100 food and beverage firms located in the Galle District, selected through a convenience sampling method. The Galle District was chosen as it represents a strategically significant industrial area in the Southern Province, hosting a diverse range of small, medium, and large-scale food and beverage producers that engage in both domestic and export-oriented operations. This regional diversity provided an appropriate representation of the industry's overall structure and operational practices across Sri Lanka. A convenience sampling method was used, which is used extensively in exploratory and correlational studies where the sampling frame of the entire population is difficult to access (Etikan et al., 2016). Such a sampling technique allowed the researcher to capture firms which were operationally active and willing to be incorporated in the study period. Although convenience sampling limits results' generalizability, it is suitable where hypothesis testing is necessary in pilot studies when one's aim is to record significant relationships and not predictions on the whole populations (Acharya et al., 2013). Data analysis was conducted using the "Statistical Package for Social Sciences" (SPSS) software. Validity and reliability of the data were tested, and satisfied the internal consistency and the validity of the data. Correlation analysis and regression analysis were also applied to establish the correlation and relationship between the independent variable and the dependent variable.

Empirical Results

Correlation analysis

As illustrated in Table 1, all independent variables show a positive and significant correlation with the dependent variable (economic performance), with the correlation values of 0.672, 0.624, 0.622, 0.820, and 0.855, respectively, as they are significant at 0.05 ($P < 0.05$). Green purchasing does not correlate with all other independent variables; however, eco-design shows a considerable correlation with other variables, but moderately.

Table 1
Correlation analysis

Variable	GP	ED	IEM	RL	IR
ED	.196				
IEM	.135	.126			
RL	.099	.625**	.140**		
IR	.045	.677**	.663**	.324**	
EP	.672	.624**	.622**	.820**	.855**

** Significant at 1% level

* Significant at 5% level

(Source: Survey-2025)

Multiple regression analysis

In order to test hypotheses, multiple regression analysis was run along with the Multiple Regression Anova, model summary and correlation coefficients. F value in this model indicates 67.363 which has a significant value of 0.000, which is less than 0.05. It indicates that the model is fit, and the regression model is significant.

The R value is 0.884 which indicates that there is a strong relationship with a value of 0.884. It means the predicted model is strongly related to the actual predictor. The adjusted R square value of this model 0.770 and it indicates that 77% of the variation of the EP can be explained by all five independent variables in this model.

According to Table 4, standardized coefficient value of green purchasing is 0.312 and its t value represents 2.262, while p value is 0.036 which is less than 0.05, which is significant. Accordingly, it can be said that green purchasing has a positive significant impact on economic performance. β value and t value of eco-design indicate as 0.010 and 2.108 respectively, while its p value is 0.14 which is also less than 0.05, which is significant. Eco-design has a significant positive impact on economic performance. Internal environmental management does not show any significant impact on economic performance as $\beta= 0.034$, $t= 0.386$ and $P= 0.700$ which is greater than 0.05, which is insignificant ($P>0.05$). Reverse logistics show a positive significant impact on economic performance as $\beta= 0.321$, $t= 3.578$ and $P= 0.001$ which is less than 0.05, which is significant at ($P<0.05$). Finally, β value and t value of investment recovery 0.566 and 5.962 respectively and it has a p value 0.000 which is less than 0.05, which means that investment recovery has a positive significant impact on economic performance.

Table 2
Coefficient table
Model

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
GP	.301	.045	.312	2.262	.036
ED	.010	.092	.010	2.108	.014
RL	.325	.091	.321	3.578	.001
IR	.566	.095	.566	5.962	.000

(Source: Survey-2025)

The green purchasing positively impacts economic performance, which is consistent with the results of Greenberg & Wang (2020). Eco-design has a positive impact on economic performance, which is supported by Priyashani and Gunarathne (2021) and Annika and Díaz (2018). Internal environmental management has no significant impact on economic performance, which is in line with Giovanni (2012). Reverse logistics shows a positive impact on economic performance, which is supported by Ivanova, Rogaczewski and Lutsenko (2022). Investment recovery also shows a positive impact on economic performance, which is supported by Khan and Qianli (2017).

Conclusion

The research focused on the influence of GSCM practices on the EP of Sri Lankan food and beverage companies. Empirical findings indicate that green purchasing, eco-design, reverse logistics, and investment recovery have positive and significant effects on economic performance, whereas internal environmental management did not have any influence. The results reveal that environmentally sustainable supply chain operations can enhance cost effectiveness, operational efficiency, and market competitiveness. Practitioners are encouraged to pursue sustainable supply chain collaboration, adopt eco-design philosophies, utilise efficient reverse logistics, and incorporate investment recovery programs for effective maximisation of resource optimisation and profitability. Even though internal environment management had no direct impact, it is essential for long-term sustainability through training, leadership commitment, and performance monitoring. Green certifications, incentives, and regulations must be promoted by policymakers to encourage the implementation of GSCM. Potential areas for future research include exploring additional dimensions of GSCM, employing probability sampling, conducting longitudinal or comparative studies, and exploring multi-industry or cross-country contexts to improve generalizability.

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