

A Study On The Perception Of Engineering Goods Exporters On Green Supply Chain Practices With Special Reference To Coimbatore District

Dr. S. Mohanraj Head and Associate professor, Department of International Business, Dr. N.G.P

Arts and Science College, Coimbatore, India, mohanraj@drngpasc.ac.in

Ms. A. Blessita M.Com (IB), Department of International Business, Dr. N.G.P Arts and Science

College, Coimbatore, India, a.blessita@gmail.com

Abstract - This study is undertaken to find out the perception of the engineering goods exporters on the green supply chain practices in the Coimbatore district. The main goals of this research are to find the exporter's perception towards green supply chain procedures, to look at the current supply chain users, to identify the obstacles that exporters face in adopting green supply chain practices, and to create awareness about the benefits of green supply chain practices. This study was carried out using descriptive research as well as analytical designs for research. The selection of the respondents was done using a simple random sampling method where in 50 percent of the total population was taken as a sample for the research. A total of 136 sample participants were chosen by using Simple Percentage analysis, ANOVA, Chi-Square, Ranking method, and Weighted Average Mean method. This research contributes to raising awareness among the engineering goods exporters on the benefits that they could avail from the government for adopting green practices as well as their corporate social responsibility.

Keywords: Environment, Engineering goods exporters, Green Supply Chain, Government, Perception, Process.

I. INTRODUCTION

Supply chain refers to the sequence of processes that are involved from the production of a product to the distribution of the commodity including procurement of raw materials. The coordination and management of a complicated web of operations involved in getting a finished product to the customer is known as supply chain management. All stages of a product's life cycle will influence a supply chain's environment. Adding a "green" component in all the processes involved in the supply chain which is "Green procurement, green manufacturing, green distribution and reverse logistics" is green supply chain management (GSCM) [1]. The main ideology behind this concept is to eliminate or minimize waste and to utilize the resources available effectively and efficiently. The concept of going green is highly appreciated and supported globally. Thus, this study helps to know the perception of the engineering goods exporters in adopting the green supply chain practices in the Coimbatore district.

II. OBJECTIVES

- To observe the existing users of green supply chain practices
- To study the road blocks of engineering goods exporters in adopting green supply chain practices
- To create awareness about the benefits of green supply chain practices

III RESEARCH METHODOLOGY

When gathering, analyzing, and interpreting quantitative or qualitative data to address research questions or test hypotheses, the research technique is a methodical, scientific approach. A research technique helps researchers stay on track by restricting the scope of the study, much like a plan for carrying out research. When choosing an acceptable research approach, there are several factors to take into account, including potential ethical issues and study limits.

- **Research design:** Descriptive Research and Analytical Research designs
- **Area of the study:** Coimbatore district.
- **Sampling technique:** Simple Random sampling method.
- **Data collection:** Primary and secondary data.
- **Sample size:** 136
- **Tools used for analysis:** Simple Percentage analysis, Chi-Square, ANOVA, Ranking method and Weighted Average Mean

IV. REVIEW OF LITERATURE

1. **Kaur (2021)** Literature mentions the institutional theory, which is helpful in the investigation of how the forces of an institution lead an organization to be receptive to the needs of others in society. There are

three distinct ways that institutional pressure might manifest itself: normative, mimetic, or coercive. Following the implementation of the green information system, research was conducted to examine the impact of mimetic and coercive forces on manager's behaviour. Mimetic isomorphism is the word used to describe an organization's response to ambiguity when the course of action is unclear. This typically happens when a technology or policy is adopted by another organization and has a beneficial impact as a result [2].

- Herrmann et al., (2021) Environmental issues and sustainability have garnered significant attention in recent decades. Green Supply Chain management guarantees that corporate and government initiatives

V DATA ANALYSIS AND INTERPRETATION

(Simple Percentage Analysis)

Table No.: 1 Business Profile of the respondents

Table showing the type of business concern of the respondents			
1.	Partnership Firm	77	56.80%
2.	Private Limited Company	27	19.85%
3.	Public Limited Company	7	5.15%
4.	Sole Trader	25	18.38%
Table showing years of experience in exporting of the respondents			
1.	1 - 5 Years	54	39.70%
2.	11 - 15 Years	26	19.11%
3.	6 - 10 Years	48	35.29%
4.	More than 15 Years	8	5.88%
Table showing the annual turnover of the company of the respondents			
1.	Below 1 Crore	16	11.76%
2.	1 - 2 Crore	49	36.02%
3.	2 - 3 Crore	50	36.76%
4.	Above 3 Crore	21	15.44%
Table showing the frequency of consignment of the respondents			
1.	Weekly	23	16.91%
2.	Monthly Once	41	30.14%
3.	Once in two months	51	37.50%
4.	Once in six months	21	15.44%
TOTAL		136	100

INTERPRETATION:

From the above table, it is inferred that the majority of the respondents 56.80% are part of partnership firms, 39.70% of the respondents have 1 – 5 years of experience in the exporting field, 36.76% of the respondents earn an annual turnover of 2 – 3 Crores and 37.50% of the respondents consigns goods once in two months.

(Chi-Square)

Table No.: 2 ASSOCIATION BETWEEN YEARS OF EXPERIENCE IN EXPORTING AND THE FREQUENCY OF CONSIGNMENT

HYPOTHESIS

H0: There is no significant association between years of experience in exporting and the frequency of consignment.

will be effective in making operations greener, gaining market share, enhancing brand recognition, and boosting earnings. The article's goal is to provide a conceptual framework for green supply chain management that takes into account its various aspects, classifications, and activities. The study puts out a thorough conceptual framework that fills the vacuum on the requirement for useful models for GSCM. The dimensions, categories, and green practices found in the literature are taken into account in the conceptual framework [3].

H1: There is a significant association between years of experience in exporting and the frequency of consignment.

Cross Tabulation

Number of years' experience in exporting * Frequency of consignment: Crosstabulation							
		Count	Frequency of Consignment:				Total
			Weekly	Monthly Once	Once in two months	Once in six months	
Number of years' experience in exporting	1 – 5 Years	Count	9	13	15	16	53
		%	17.0%	24.5%	28.3%	30.2%	100%
		Type of Business Concern					
6 – 10 Years		Count	10	13	22	2	47
		%	21.3%	27.7%	46.8%	4.3%	100%
		Type of Business Concern					
11 – 15 Years		Count	2	12	10	2	26
		%	7.7%	46.2%	38.5%	7.7%	100%
		Type of Business Concern					
More than 15 Years		Count	2	2	3	1	8
		%	25.0%	25.0%	37.5%	12.5%	100%
		Type of Business Concern					
Total		Count	23	40	50	21	136

	% with Type of Business Concern	17.2 %	29.9%	37.3 %	15.7 %	100 %
--	---------------------------------	--------	-------	--------	--------	-------

INTERPERTATION (Crosstab):

The above table depicts that the majority of the experienced companies consigns once in two months. And companies that have less experience in exporting consign goods once in six months.

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	19.508 ^a	9	.021
Likelihood Ratio	19.842	9	.019
Linear-by-Linear Association	2.044	1	.153
N of Valid Cases	136		

Note: P Value < 0.05

INTERPRETATION:

The above table shows that P Value (0.021) is less than the Alpha Value (0.05), so the null hypothesis is rejected.

It is interpreted that there is a significant association between the years of experience in exporting and the frequency of consignment.

ANOVA

TABLE SHOWING THE ANALYSIS OF VARIANCE

Table No.: 3 Difference between years of experience in exporting and the benefits gained by the company by implementing green logistics practices

HYPOTHESIS

H0: There is no significant difference between years of experience in exporting and the benefits gained by the companies by implementing green logistics practices.

H1: There is no significant difference between years of experience in exporting and the benefits gained by the companies by implementing green logistics practices.

Descriptives								
Implementation								
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1 - 5 Years	53	43.0943	6.38587	.87717	41.3342	44.8545	28.00	55.00

6 - 10 Years	47	42.6809	5.25897	.76710	41.1368	44.2249	29.00	56.00
11 - 15 Years	26	40.2692	7.53954	1.47862	37.2239	43.3145	27.00	50.00
More than 15 Years	8	42.2500	6.56288	2.32033	36.7633	47.7367	35.00	52.00
Total	136	42.3507	6.29029	.54340	41.2759	43.4256	27.00	56.00

ANOVA					
Implementation					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	147.158	6	49.053	1.247	.296
Within Groups	5115.356	130	39.349		
Total	5262.515	136			

INTERPERTATION:

The above table depicts that the table value is greater than 0.05. Hence, we accept null hypothesis.

It is interpreted that there is no significant difference between the years of experience in exporting and the benefits gained by the companies by implementing green logistics practices.

Ranking Method

Table No.: 4 RANKING THE GREEN LOGISTICS BARRIERS FACED BY THE COMPANIES

FRIEDMAN TEST

Descriptive Statistics				
	N	Percentiles		
		25th	50th (Median)	75th
Poor road or Infrastructure	134	1.00	2.00	6.25
Lack of Incentives	134	2.00	3.00	5.00
High Cost	134	2.00	3.00	4.00
Lack of Necessary Resources	134	3.00	4.00	6.00
Storage Issues	134	4.00	5.00	7.00
Customers Unwilling	134	5.00	6.00	8.00
Lack of Knowledge	134	4.00	6.00	7.00
Higher Certification Cost	134	3.00	7.00	8.00
Lack of Political Will	134	7.00	8.00	9.00
Technological Challenges	134	4.00	8.00	9.00

Ranks		
	Mean Rank	Rank
Poor road or Infrastructure	3.62	X

Lack of Incentives	3.78	VIII
High Cost	3.68	IX
Lack of Necessary Resources	4.80	VII
Storage Issues	5.87	VI
Customers Unwilling	6.29	IV
Lack of Knowledge	5.89	V
Higher Certification Cost	6.45	III
Lack of Political Will	7.81	I
Technological Challenges	6.80	II

INTERPERTATION:

The above table exhibits the rank scoring of the barriers the companies face in terms of green logistics. Lack of political will ranked first and is the mostly agreed barrier which is being faced by most of the engineering goods exporters and poor road or infrastructure facility ranked tenth.

It is interpreted that lack of political will (7.81) imposes the first rank, which implies that it is the major challenge faced by many companies and the poor road and infrastructure being the least effective green logistical barrier (3.62).

Weighted Average Mean

Table No.: 5 TABLE SHOWING THE BENEFITS FROM THE IMPLEMENTATION OF GREEN LOGISTICS

BENEFITS	SA	A	N	D	SD	TOTAL	MEAN
	5	4	3	2	1		
Increases International Trade	91	27	16	1	1	136	4.51
	45	10	48	2	1	614	
Improves Profit	18	89	28	1	0	136	3.91
	90	35	84	2	0	532	
Reduces Waste	17	46	66	9	1	136	3.57
	85	18	19	18	1	486	
Reduces Emission	12	82	20	18	4	136	3.58
	60	32	60	36	4	488	
Higher Production	43	38	26	19	10	136	3.62
	21	15	78	38	10	493	
Increases Goodwill	16	45	32	25	18	136	3.12
	80	18	96	50	18	424	
Increases Customers	18	38	47	21	12	136	3.21
	90	15	14	42	12	437	
Time Saving	23	53	21	23	16	136	3.32
	11	21	63	46	16	452	
Safety of Products	28	44	43	11	10	136	3.50
	14	17	12	22	10	477	
Government Support	35	51	20	24	6	136	3.63
	17	20	60	48	6	493	
Employee Satisfaction	21	44	42	18	11	136	3.34
	10	17	12	36	11	454	
	20	39	36	26	15	136	3.17

Environment	10	15	10	52	15	431	
al Safety	0	6	8				

INTERPRETATION:

The above table exhibits the weighted average mean scoring for the agreeability level on the benefits received by the company from implementing green logistics practices. Increase in international trade is the strongly agreed factor of companies with a mean score of 4.51 and increasing goodwill is the strongly disagreed factor with a mean score of 3.12.

An increase in international trade is the major benefit received by the companies by implementing green logistics practices.

VI FINDINGS

Findings of Simple percentage analysis:

- It is found that the majority of the respondents 56.80% are part of partnership firms, 39.70% of the respondents have 1 – 5 years of experience in the exporting field, 36.76% of the respondents earn an annual turnover of 2 – 3 Crores and 37.50% of the respondents consigns goods once in two months.

Findings of Chi-Square:

- It is found that there is a significant association between the years of experience in exporting and the frequency of consignment.

Findings of ANOVA:

- It is found that there is no significant difference between the years of experience in exporting and the benefits gained by the companies by implementing the green logistics practices.

Findings of Ranking Method:

- It is interpreted that lack of political will imposes the first rank, which implies that is the major challenge faced by many companies and the poor road and infrastructure being the least effective green logistics barrier.

Findings of Weighted Average Mean:

- Increase in International trade is the major benefit received by the companies by implementing green logistics practices.

VII SUGGESTIONS

- Reducing the amount of waste materials your organization uses in the manufacturing process is one of the most important green supply chain management strategies during the production, packaging, and transportation process. The

foremost goal of the engineering goods exporters should be the disposal of as much waste as possible by making better purchasing decisions, designing more accurate packaging, developing logistics systems, and improving the efficiency of the industrial operation.

- Make a recycling part of your company's green supply chain management and use the 3R technique which is Reduce, Reuse, and Recycle. It is to minimize, reuse, and recycle the waste that is produced by your manufacturing units. These will lead to sustainability and environmental conservation and are an integral part of any green strategies that are to be adopted further.
- If your product needs in terms of packing have to be addressed, find the best alternative method such as wrapping products with paper or cartons or other bio-degradable products, instead of plastic bags, or find the best way to pack them with minimal plastic material.
- Another way to employ green supply chain management practices in your business is to support environmental initiatives in your community and take part in corporate social responsibility activities like planting trees, wastewater treatment and so on...

VIII CONCLUSION

The above study primarily explains the perception of engineering goods exporters on green supply chain practices. The author of this work wanted to find the perception of the engineering goods exporters in adopting green supply chain practices and the roadblocks they have in implementing green practices. In addition to this, the author also attempted to identify the benefits the engineering goods exporters get and incorporates creating awareness to the exporters in this regard.

The management of green supply chains is an intricate process that necessitates careful consideration of numerous factors, chief among them being ecological issues. While it is difficult to apply a fully green strategy, there are steps you can take to make your supply chain more sustainable which are given in the suggestion part of the study.

The study shows that engineering goods exporters should give more importance to following green supply chain practices to attain sustainability. Psychological traits are therefore a highly relevant concept for adopting green practices in the organization.

IX REFERENCE

Journals:

1. Nguyen, H., Mai, T. L., Pham, T. T. T., & Binh, D. (2023). Supply chain coordination in sustainable agribusiness development: an investigation from coffee exporters. *Journal of Agribusiness in Developing and Emerging Economies*.

2. Kaur, K.(2021). The effect of green product design and institutional pressure on manufacturing firms' performance in Malaysia: Implementation of reverse logistics products. *Int. J. Supply Chain Mgmt.* 6, 12-30. *Doi: 10.47604/ijscm. 1292.*
3. Herrmann, F. F., Barbosa-Povoa, A. P., Butturi, M. A., Marinelli, S., & Sellitto, M. A. (2021). Green supply chain management: conceptual framework and models for analysis. *Sustainability*, 13(15), 8127.
4. Fang, C., & Zhang, J. (2018). Performance of green supply chain management: A systematic review and meta analysis. *Journal of Cleaner Production*, 183, 1064-1081.

Books:

5. Green Supply Chain Management: A Concise Introduction – Mohammed Majeed, Kirti Agarwal, Ahmed Tijani
6. Green Supply Chain Management – 1st Edition – Charisios Achillas – Dio

Websites:

7. <https://scholar.google.com>
8. <https://onlinelibrary.wiley.com>
9. <https://questjournals.org>
10. <https://businessjargons.com>