

The Effect of Implementing Green Supply Chain Management Practices Followed in Manufacturing Industry

Kurban Mansuri¹ Dr. Jai Balwanshi² Mr. Kamlesh Gurjar³

¹Research Scholar ^{2,3}Professor

^{1,2,3}Department of Mechanical Engineering

^{1,2,3}Sri Aurobindo Institute of Technology Indore, M.P., India

Abstract— Global warming, carbon emanations and the reduction of natural properties have indicated important deviations in the way establishments produce and send products and services. Within this situation the greening of supply chains has grown the consideration of experts in many nations. In some nations, for example, carbon taxation has been presented as a compulsory requirement. However, the execution of green supply chain management observes and the effect of these observes on corporate performance are unmoving in a promising stage. Consequently, the main aim of this research was to explain green supply chain management (GSCM) follows and their relationship to corporate performance (CP). The main research objective was to answer the question: What is the effect of implementing green supply chain management practices followed in manufacturing industry? The study exactly surveys the effect of implementing an established of green supply chain management practices; Like eco design, green purchasing, environmental cooperation and reverse logistics, on dissimilar extents of corporate performance. This contains environmental, operational, economic and social outcomes. The procedure used in this research is mainly empirical in nature, but following a survey employed to collect quantitative data from ISO 14001 certified and none certified manufacturing firms in the India. This study increases to the frame of information by finding barricades to the implementation of a number of green supply chain practices. For example; this study finds barricades to implementation of a number of green supply chain practices while accent the value of a varied methods approach in green supply chain investigation. It subsidizes to business practice by offering a stakeholder considerate of the relationship between the implementation of different green supply chain practices and corporate performance, including the level of implementation that may find the most suitable GSCM practices needed to influence the optimum performance level. With the new Companies Bill giving emphasis on Corporate Social Responsibility (CSR), pressure from public, policies, laws & environment standards, Organizations are pushed to take environmental conscious decisions. A sequence of recommendations is also providing for organizations concerned in refining their footprint and their environmental performance while implementing green supply chain practices.

Keywords: Green Supply Chain Management (GSCM), Corporate Performance (CP), Environmental Management, ISO 14001 Certified Manufacturing Firms, Quantitative Research, Corporate Social Responsibility

I. INTRODUCTION

In this chapter begin by presenting general facts regarding the Green supply chain management (GSCM). then the aim of

this thesis is provided and the way we've restricted our analysis. At the finish of the chapter present the character of the thesis.

This thesis describes a Green supply chain management (GSCM) follows and their relationship to corporate performance (CP). A survey is conducted to collect the measuring data for the research. This study uses principle component analysis (PCA) and Reliability and Validity Test (Cronbach's α & Guttman λ), Multiple Regression Analysis using survey data using statistical software SPSS.

This research also studies the arrangement of GSCM and controlling practices and investigates their effect on environmental, economic and impalpable performance by working strategy as a control variable. The dimensions of working strategy measured are decreased cost management, and quality and time-based strategy. The assessment of impalpable performance contains perception measures of mutually internal (employees) and external (customers and suppliers) shareholders. This thesis, then, makes an important contribution to on-going research that relate green practices to performance conclusions by the presence of a dissimilar set of conclusions within the situation of occupational strategy. Moreover, data was composed from a developed nation with a growing global occupational presence but of which very slight GSCM research has been carried out.

A. Limitation

This study is a Green supply chain management (GSCM) their relation of corporate performance created on employee data survey. This thesis also limits the coverage area only to manufacturing industries.

- The study is mainly based on the information given by the sample respondents, and the factors given by them are subject to their beliefs and attitude.
- Due to time and economic constraints of the research, number of respondents has been limited to 100.
- Since the data collected from the respondents are subjected to their opinion and perception.
- The study mainly covered the Manufacturing Industries, so it may be varied in other Industries.

B. Objective

The main Moto of all Manufacturing industries is to follow Green Supply Chain Management practices.

The vital objectives are following as -

- Measure the level of follow GSCM practices in manufacturing industry.
- To provide suggestions to more follow GSCM practices in manufacturing industry.
- To develop structural model using interpretive structural modelling techniques.
- Perceptions on the significance of environmental effects.

II. REVIEW OF LITERATURE

Approximately correlated literal materials have been collected. Maximum of the literature material is consisting of research papers from distinct journals, the others are from books. In this chapter many studies papers from one-of-a-kind journals were decided on, table 2.1 suggests the short information of these studies papers. The studies papers from specific sources provide various perspectives to the studies questions. It's Miles Interesting. To discover how researchers, do no longer continually preserve the identical concept even on a same difficulty. Furthermore, some limited books are referred to be able to get a scientific definition.

The Research papers from different sources provide various perspectives to the research questions. It is interesting to find out how researchers do not always hold the same idea even on a same issue. Furthermore, some books are referred in order to get a scientific definition. Practices of Green supply chain management (GSCM) is presented in Table 2.1. It included Green supply chain management (GSCM) definition, Survey Method, Reliability & Validity (Cronbach Alpha, Guttman Lambda), Multiple Regression Analysis etc. Green supply chain management (GSCM) is not using above methodologies in unison but mostly these are used individually. It may be found that, if it utilizes the combination of Green supply chain management (GSCM), Survey Method, methodologies it will get better results. The next step is to identify that what elements influence the performance of the good practice of Green supply chain management (GSCM).

A. Gap in Literature

As we know that Green supply chain management (GSCM) is most important for every category Industries. Green supply chain management (GSCM) is very inspiring and very problematic task of every Industries.

“Green supply chain management (GSCM)” using a survey method conceived green supply chain management honest practices in manufacturing industries. According to this methodology respondent collect of Industries by the help of survey and data collect to the help of respondent by questionnaire through measure the level of GSCM practices. This thesis proposes ideas by combination of methodologies like Survey Method, Reliability and validity test (Cronbach's α & Guttman λ), Multiple Regression Analysis.

As a result, this thesis contributes to industry practice by growing our considerate of which magnitudes of GSCM practices have a positive or direct effect on performance as well as how those positive effects can best be proficient within an organization. The research methods employed also provide guidance for researchers who seek to gain a deeper considerate of the drivers of organizational performance. That is, a mixed methodology can provide a richer, more holistic view of where the investment in GSCM practices can provide a return on investment and how that return on asset strength greatest be understood. From a theoretical stance, the research has also confirmed that the internal and external environment, along with organizational culture and the local context (in this case local regulation and occupational practices in the India), has an effect on how

GSCM practices are executed and how this impacts corporate performance.

III. PROBLEM FORMULATION

As far as Indian manufacturing industries are measured, their anxiety to atmosphere is very short and the information on GSCM is also significantly less. The industries pollute the atmosphere to most extent knowingly and unknowingly, if knowingly they pollute what would be the reason behindhand it and why they are required toward prepare consequently. The industries experiences lean wastes in their manufacturing process, so how could they identify the lean wastes in their process and eliminate it. In this thesis the researcher was 100 respondents selected and prepare 44 questionnaires. The items were isolated on the base of logical reasoning and clubbed to form dimensions for which the reliability tests were done and the Cronbach Alpha & Guttman Lambda values were ranging from 0.7 to 0.8 crosswise five dimensions. The questionnaire used to collect the data consists of 44-item scale to measure the employee importance degree of the practices of GSCM. The scores of each item range from, for “1” “Highly Dissatisfied” and for “5” “Highly Satisfied”. On a five-point Likert scale. The researcher was analyzed using various statistical tools and five-point Likert scale.

This study solves by the help of IBM SPSS Statistical Software version23 and using various Tools & Method for Analysis given following us: -

- Survey Method
- Reliability and Validity Test (Cronbach's α & Guttman λ)
- Multiple Regression Analysis

IV. COLLECTION OF DATA

In the present study, the present study is largely based on the data have been collected from 100 employee in manufacturing industries in the course of interview with the help of employee's questionnaire through survey method well-organized Interview Schedule. The survey questionnaires included three sections. The first section investigated the demographic profile of respondents and the second section included twenty statements/variables about the green supply chain practice. The twenty-four statements represented four green supply chain practice including corporate performance.

V. AREA & PERIOD OF THE STUDY

The Area of study is Suzlon Global Services Ltd. in India. The required primary data have been collected through a survey method on employees from November 2018 to February 2019.

VI. ANALYSIS

A total 100 questionnaires were used in the study and thus providing a very good response rate of 100%. Personal efforts were made in order to collect the data along researcher. As the questionnaire was developed in English and thus to get an accurate response researcher assist the respondents in case of any confusion about the question. Major reason for selecting

the industries are available due to near home of researcher. The demographic of the present study is presented as below Table 5.3.1.

The demographic characteristics of the respondents are shown in table 5.3.1. The gender distribution of the respondent groups was quite uneven, with 76 percent male respondents and 24 percent female respondents. The model age group of the respondents was 20- 30 years (42 percent), followed by 30- 40 years (32 percent), 40 and above (16 percent), and below 20 years (10 per cent).

Sr. No.	Variable	Category	No. of Respondents	Percentage %
1	Gender	Male	76	76%
		Female	24	24%
2	Age	Below 20	10	10%
		20-30	42	42%
		30-40	32	32%
		40 & above	16	16%
		Ph.D.	6	6%
3	Education Level	Master's Degree	10	10%
		Bachelor's Degree	24	24%
		Others	60	60%
		Managers	5	5%
4	Job Position	Production Manager	10	10%
		Engineers	25	25%
		Others	60	60%
		1 to 5 Years	55	55%
5	Experience	6 to 10 Years	25	25%
		11 to 15 Years	15	15%
		16 to 20 Years	5	5%

Table 5.3.1: Demographic Characteristics of The Respondent (N=100)

VII. RESULT

A. Reliability and Validity Test

Statistical Analysis: To measure the reliability of the instrument Cronbach Alpha & Guttman Lambda was calculated as reliability and validity of the instrument which plays a significant role while performing the statistical analysis and consistency in the results and reliability of the data. Stated that a value of Cronbach Alpha & Guttman Lambda greater than 0.70 is acceptable. Five-point Likert scale from highly dissatisfied "1" to highly satisfied "5" was researcher in the present study. Reliability and validity of the data was measured using SPSS Statistics Analysis V23 an effective and most commonly used technique in most of the management.

Sr. No.	Variable	N	Items	Mean	S.D.
	Independent				
1	Eco-Design	100	4	9.9500	3.92190

2	Green Purchasing	100	5	12.6000	4.48116
3	Environmental Cooperation	100	8	22.3900	6.50236
4	Reverse Logistics	100	3	6.8600	3.00175
	Dependent				
5	Environmental Performance	100	6	16.2300	5.25291
6	Economic performance	100	7	16.2300	5.25291
7	Social Performance	100	5	12.3800	4.70929
8	Operational Performance	100	6	14.9100	5.53245

Table 7.1: Total Descriptive Statistics Data

B. Cronbach's Alpha (α) & Guttman Lambda (λ) Test

Cronbach's Alpha (α) & Guttman Lambda (λ)	Internal Consistency
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

Table 7.2: Result Indication [7] [23]

1) Test - 1

Construct	Dimension	Items	Cronbach's α	Internal Consistency
Green Supply Chain Management	Eco-Design	4	0.729	Acceptable
	Green Purchasing	5	0.705	Acceptable
	Environmental Cooperation	8	0.733	Acceptable
	Reverse Logistics	3	0.706	Acceptable
	Environmental Performance	6	0.718	Acceptable
	Economic performance	7	0.787	Acceptable
	Social Performance	5	0.755	Acceptable
	Operational Performance	6	0.792	Acceptable

Table 7.3: Cronbach's Alpha (α) Result

Reliability Statistics	
Cronbach's Alpha	N of Items
0.964	44

Table 7.4: Overall Items Cronbach's Alpha (α) Result Hence this Table result shows the Overall value $\alpha = 0.964$ is Excellent then this Test result shows the is satisfied.

2) Test - 2

Construct	Dimension	Items	Guttman λ	Internal Consistency
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Green Supply Chain Management	Eco-Design	4	0.729	Acceptable
	Green Purchasing	5	0.705	Acceptable
	Environmental Cooperation	8	0.733	Acceptable
	Reverse Logistics	3	0.706	Acceptable
	Environmental Performance	6	0.718	Acceptable
	Economic performance	7	0.787	Acceptable
	Social Performance	5	0.755	Acceptable
	Operational Performance	6	0.792	Acceptable

Table 7.5: Guttman Lambda (λ) Result

Reliability Statistics		
Lambda	1	0.942
	2	0.973
	3	0.964
	4	0.977
	5	0.952
	6	0.945
N of Items		44

Table 7.6: Overall Items Guttman Lambda (λ) Result

Hence this Table result shows the Overall value $\alpha = 0.964$ is Excellent then this Test result shows the is satisfied.

C. Multiple regression analysis result

Regression also gives you an R squared value, which for this graph is 0.702. This number tells you how good your model is. The values range from 0 to 1, with 0 being a terrible model and 1 being a perfect model. As you can probably see, 0.7 is a fairly decent model so you can be fairly confident in your weather prediction and the Durbin Watson value needs to be above 1.0.

Sr. No.	Variable	R Square	Durb in-Watson	Status
1	Eco-Design (EC)	.751	1.818	Supported
2	Green Purchasing (GP)	.182	2.442	Supported
3	Environmental Cooperation (EC)	.994	2.014	Supported
4	Reverse Logistics (RL)	.730	1.873	Supported

Table 7.7: Multiple Regression Analysis R² value Result

The T-statistic value for only one independent variable (EC, GP, EC, RL) is less than 0.05, therefore it is

significant as highlighted, which in turn means that it helps in predicting the dependent variable. The t-statistic value for (EC, GP, EC, RL) is greater than 0.05, therefore these are not significant and in turn can't help in predicting the dependent variable.

Sr. No.	Variable	B	T-statistic value (Sig.)	Status
1	Eco-Design (EC)	.340	.018	Supported
2	Green Purchasing (GP)	.228	.001	Supported
3	Environmental Cooperation (EC)	.088	.000	Supported
4	Reverse Logistics (RL)	.365	.014	Supported

Table 7.8: Multiple Regression Analysis T Value Result

VIII. CONCLUSION

No	Objectives	Conclusions
1	Measure the level of follow GSCM practices in manufacturing industry.	To measure the employee perceptions regarding the follow of GSCM practices in manufacturing industry. The mean responses against all the parameters used to measure the follow of GSCM practices mentioned in test of Reliability and validity test (Cronbach's α & Guttman λ), Multiple Regression Analysis result showing in the tables. which indicates: - 1. Then result Overall Employee follow GSCM practices- value .964 is satisfied.
2	To provide suggestions to more follow GSCM practices in manufacturing industry.	Future studies may improve response rate in this region by offering a summary of the survey results to interested respondents or offering a financial incentive such as any gift won through a draw at the close of the survey. Company offering a financial incentive such as any gift won by every employee to follow GSCM practices.

Table 8.1: Conclusion of this Study

IX. FUTURE SCOPE OF THE RESEARCH

The study is mainly focused on measure the level of the follow GSCM practices in manufacturing industry. The sample population is chosen from Suzlon Industries. There is always a scope of improvement as the different methods can be used and the results could be compared for further improvement. This case study observe is based totally at following GSCM Practices in manufacturing industry.

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