



Impact on performance of GSCM practices in organizations with special reference to small scale industries in India

Mrs. VISHNUPRIYA R

Assistant Professor, Department of Commerce with Business Process Services

Ms. SUBIKSHA N

Mr. BARATH KUMAR G

PSG College of Arts & Science

ABSTRACT:

Environmental concern has become an important factor in manufacturing industries, so they are in need of practicing supply chain concern towards environment or also known as Green Supply Chain Management. The industries are experiencing an increased pressure to reduce cost, improve quality and reduced time of delivery to sustain in the present market, so they are narrowed on focusing to the factors of their sustainability and other influencing factors to the environment are ignored. The lack of awareness and because of high recklessness the environment is affected to great extent by these industries. The aim of this paper is to identify the lean and green wastes accruing in the small scale industries in Coimbatore and recommending the suitable waste reduction methods and techniques for eliminating waste i.e. implementation of Green Supply Chain model.

Key words: Environment, Sustainability, Lean, Green Waste, Supply Chain

Introduction

Supply chain management is the management of the flow of goods and services and includes all processes that transform raw materials into final products. It involves the active streamlining of a business's supply-side activities to maximize customer value and gain a competitive advantage in the marketplace. Today, environmental pollution is the main problem which mankind faces every day, the major emission of toxic gases is from the manufacturing industries. To overcome this problem and to reduce environmental pollution, the manufacturing industries should include concepts of Green in to their supply chain. Environmental concern has become an important factor in manufacturing industries, so they are in need of

practicing supply chain concern towards environment or also known as Green Supply Chain Management. According to Srivastva (2007) Green supply chain management is defined as integrating environmental thinking into supply-chain management, including product design, material sourcing and selection, manufacturing processes, delivery of the final product to the consumers as well as end-of-life management of the product its useful life. The growth of the industries is rapid but the growth cant be stated as vigorous growth because of their awareness and concern towards environmental manufacturing.

Statement of problem

As far as Indian industries are considered, their concern towards environment is not serious and the knowledge on green supply chain management is also considerably less. Industry has developed elite oriented pattern. concentration of economic power in the hands of few, regional imbalances, sickness of industries, loss in public sector industries, unsatisfactory labour relations, lack of capital and industrial raw materials, changing policy of the government, defective licensing policy are some of the problems which are hindering the overall country. industries pollute the environment issue, if knowingly they pollute what would be the reason behind it and why they are forced to do so. The objective of the study is to identify the lean and green wastes accruing in the small scale industries in Coimbatore and recommending the recommending the suitable waste reduction methods and techniques for eliminating the wastes. The study also helps to assist the industries with scarce knowledge of supply chain management in making decisions prioritize to the area.

Objectives of the study

1. To investigate perception towards GSCM and usage of GSCM products.
2. To identify the implementation of green supply chain management and its benefits.
3. To understand the satisfaction level of GSCM practices in organizations.

Scope of the Study

The objective of the thesis is to identify the lean and green wastes accruing in the small scale industries in Coimbatore and recommending the suitable waste reduction methods and techniques for eliminating the wastes. The thesis also helps to create an environmental awareness among the industries and also helps to assist the industries with scarce knowledge of supply chain management in making decisions prioritize to the area. The study also tries to point out the benefits of implementing the concept of GSCM and ways of overcoming the obstacles identified by the companies for implementing the concept.

Review of Literature

Srivastva (2007)¹ Green Supply Chain Management has its roots from Green management and supply chain management. He defined Green supply as chain management as —”integrating environmental thinking into supply-chain management, including product design, material sourcing and selection, manufacturing processes, delivery of the final product to the consumers as well as end-of-life management of the product after its useful life”.

An early review of the literature, Greenberg (1995)² surveys the use of mathematical programming models for controlling environmental quality, focussing on air, water, and land. The paper is limited to general equilibrium models with multiple decision making agents, where an equivalent mathematical program can be formulated to compute a fixed point. The review provides an annotated bibliography with more than 300 papers, and identifies many research avenues for studies using mathematical programming in addressing environmental concerns.

Fleischmann et al. (1997)³ focus on quantitative models of reverse logistics, and subdivide the literature in three areas: distribution planning, inventory control, and production planning. For each of these areas, the authors discuss the implications of the product reuse efforts being explored at the time, review the mathematical models proposed in the literature, and point out the areas in need of further research.

Carter and Ell ram (1998)⁴ also focus on reverse logistics, but present a more holistic view that includes the reduction of materials in the forward system in such a way that fewer materials flow back, reuse of materials is made possible, and recycling is facilitated. The paper develops a broadened view of the role of logistics personnel in reverse logistics, and identifies gaps where future research is needed. In particular, the authors identify important players and influencing factors (internal, external and environmental) involved in reverse logistics and provide a framework to study these issues.

Tim Cook (1998)⁵ Green manufacturing processes can remarkably reduce toxins in products. Apple is applying its own standards to stop using toxins which are potentially dangerous for the environment. Apple’s power cords are being produced with no PVC or phthalate. Their touch screens are being manufactured with no arsenic and their cases and enclosures are BFR-free. In Apple, toxins are controlled not only in the products, but also in the production process. The Regulated Substances Specification in Apple obliges its suppliers to demonstrate compliance by subjecting them to third-party performance assessments.

Level of significance towards environmental performance of GSCM

Table 1 describes the results of average score analysis in terms of average score on the level of significance on environmental performance of GSCM.

Table No: 1: Level of significance towards environmental performance of GSCM

| Factors | Score | S | RS | N | LB | NA | Total | Mean score |
|--|-------|----|----|----|----|----|-------|------------|
| | | 5 | 4 | 3 | 2 | 1 | | |
| Reduction of air emissions | No. | 5 | 2 | 4 | - | - | 11 | 4.09 |
| | Score | 25 | 8 | 12 | - | - | 45 | |
| Reduction of effluent waste | No. | 6 | 3 | 2 | - | - | 11 | 4.36 |
| | Score | 30 | 12 | 6 | - | - | 48 | |
| Reduction of solid waste | No. | 3 | 1 | 4 | 3 | - | 11 | 3.36 |
| | Score | 15 | 4 | 12 | 6 | - | 37 | |
| Decrease in consumption for hazardous / harmful/ toxic materials | No. | 3 | 4 | 2 | 3 | - | 11 | 3.90 |
| | Score | 15 | 16 | 6 | 6 | - | 43 | |
| Decrease in frequency for environmental accidents | No. | 5 | 4 | 1 | 1 | - | 11 | 4.18 |
| | Score | 25 | 16 | 3 | 2 | - | 46 | |
| Increase in an enterprises environmental situation. | No. | 4 | 1 | 6 | - | - | 11 | 3.81 |
| | Score | 20 | 4 | 18 | - | - | 42 | |

(S- significant, RS- relatively significant, N- neutral, LB- a little bit, NA-not at all)

It is evident from the above table that the respondents irrespective of the classification have level of significance towards “Reduction of Solid Waste” followed by “Increase in an enterprises environmental situation” when compared to the other factors which have significance towards the environmental performance of GSCM

Initial Investment and Satisfaction level towards overall operational performance based on GSCM.

Hypothesis: There is no significant difference between Initial Investment and Satisfaction level towards overall operational performance based on GSCM.

The table 8 describes the result of Anova in terms of personal factors of the respondents, source of variation, sum of squares, degrees of freedom, mean sum of square, F values, P-values and their Satisfaction level towards overall operational performance based on GSCM.

Table No :2 Initial Investment and Satisfaction level towards overall operational performance based on GSCM.

| PARTICULARS | | Sum of Squares | df | Mean Square | F | Sig. | S/NS |
|--|----------------|----------------|----|-------------|-------|------|------|
| Increase the amount of goods delivered on time | Between Groups | 3.390 | 3 | 1.130 | 1.556 | .201 | NS |
| | Within Groups | 178.674 | 9 | .726 | | | |
| | Total | 182.064 | 11 | | | | |
| Decrease in inventory level | Between Groups | 2.916 | 3 | .972 | 1.739 | .160 | NS |
| | Within Groups | 137.484 | 9 | .559 | | | |
| | Total | 140.400 | 11 | | | | |
| Decrease in scrap rate | Between Groups | 2.454 | 3 | .818 | .894 | .445 | NS |
| | Within Groups | 225.050 | 9 | .915 | | | |
| | Total | 227.504 | 11 | | | | |
| Increase in product quality | Between Groups | 6.677 | 3 | 2.226 | 2.637 | .050 | NS |
| | Within Groups | 207.647 | 9 | .844 | | | |
| | Total | 214.324 | 11 | | | | |
| Increase capacity utilization | Between Groups | 15.436 | 3 | 5.145 | 7.122 | .000 | S |
| | Within Groups | 177.720 | 9 | .722 | | | |
| | Total | 193.156 | 11 | | | | |

It is concluded that the calculated value is greater than 0.05 (significant value) hence the hypothesis is accepted in four cases and rejected in one case.

It is concluded that there is significant difference between Initial Investment of the organisation and the Satisfaction level towards overall operational performance based on GSCM with respect to increase in capacity utilization (0.00).

Reasons for implementing Green Supply Chain Management in an organisation.

The table 3 describes the results of Garrett's ranking analysis in terms of total score, mean score and rank for the various aspects related to the Reasons for implementing Green Supply Chain Management in an organisation.

Table no-3

Reasons for implementing Green Supply Chain Management in an organisation.

| Particulars | | 1 | 2 | 3 | 4 | 5 | 6 | Total Score | Mean Score | Rank |
|--|-----------|------|------|------|------|------|------|-------------|------------|------|
| | Score (x) | 80 | 68 | 60 | 54 | 47 | 41 | | | |
| Cost Reduction | (f) | 36 | 21 | 58 | 20 | 66 | 31 | 13718 | 54.87 | 6 |
| | f(x) | 2880 | 1428 | 3480 | 1080 | 3102 | 1271 | | | |
| Improvement in financial Performance | (f) | 12 | 30 | 30 | 47 | 40 | 57 | 12583 | 50.33 | 4 |
| | f(x) | 960 | 2040 | 1800 | 2548 | 1880 | 2337 | | | |
| Adapting regulations and reduce risk for anti- environment | (f) | 26 | 25 | 27 | 18 | 17 | 48 | 11424 | 46 | 2 |
| | f(x) | 2080 | 1700 | 1620 | 918 | 799 | 1968 | | | |
| Increase in efficiency | (f) | 50 | 32 | 48 | 15 | 1 | 23 | 12736 | 51 | 5 |
| | f(x) | 4000 | 2176 | 2880 | 810 | 47 | 943 | | | |
| Improved quality and product | (f) | 2 | 8 | 24 | 62 | 81 | 38 | 11713 | 46.85 | 3 |
| | f(x) | 160 | 544 | 1440 | 3348 | 3807 | 1558 | | | |
| Maintained Good reputation | (f) | 7 | 37 | 22 | 46 | 27 | 11 | 10250 | 41 | 1 |
| | f(x) | 560 | 2516 | 1320 | 1458 | 1269 | 451 | | | |

It is found from the table 10 it could be interpreted that the respondents have given rank 1 for the Maintaining Good Reputation, followed by rank 2 for Adopting regulations and reduce risk for anti-environment and rank 3 for Improved quality and product. The respondents have given rank 4 for improvement in financial performance, rank 5 for increase in efficiency. The least rank (rank 6) is given for Cost Reduction. These are the rankings given by the respondents for the reasons for implementing the Green Supply Chain Management in an organisation.

It is concluded that Maintaining Good Reputation is ranked top as the main reason for implementing the Green Supply Chain Management in an organisation.

Reference:

- Beamon, B.M., 1999. Designing the green supply chain. *Logistics Information Management*, 12, 332–342.
- Chopra, S., 2007. *Supply Chain Management*. 3rd Eds. Pearson Education. Edinburgh, UK.
- Frazier, R.R., 1996. Overcoming middle management resistance to strategic change: design for environment (DEF) at Xerox. Master
- Hervani, A.A., Helms, M.M., Sarkis, J., 2005. Performance measurement for green supply chain management.
- Kam, B.H., Christopherson, G., Smyrnios, K.X., Walker, R.H., 2006. *Strategic Business Operations, Freight Transport and Eco-efficiency: A Conceptual Model*, Greenleaf, Sheffield.

