

## EMPIRICAL STUDY ON ADOPTION OF GREEN SUPPLY CHAIN PRACTICES IN INDIA INDUSTRIES AND ORGANISATION

**R. K. Singh**

Research Scholar, Tanta University, Sri Ganganagar , Rajasthan

Executive Engineer in Border Roads Organisation,

e-mail – [mundrikaravindra@yahoo.co.in](mailto:mundrikaravindra@yahoo.co.in), [ravindrasedema123@gmail.com](mailto:ravindrasedema123@gmail.com)

### Abstract

Companies worldwide are trying to implement green supply chain management practices at various levels of their supply chains. “The word green is fast catching among companies and success today is being evaluated on this vibrant word green.” The success of any industry depends largely upon its supply chain management (SCM). Hence Industries/Corporate have started focusing on greening all the phases of their supply chain (Vijayvargy and Agarwal, 2014). Min & Galle (2001) found that green supply chains are lean supply chains with minimal or zero waste. In recent times, SCM is focusing in two important aspects; one its impact on natural environment and second on the generation of environment performance changes. This process is triggered by multiple factors such as increasing awareness about environmental deterioration, increasing legislations and pressures from the government to comply with regulatory requirements, etc. GSCM is a good way to balance the environment, profitability and social benefits (Carter and Narasimhan, 2000; Govindan et al., 2013). GSCM, which has already been mature in some European, Japanese, Chinese and American countries, is still a new concept in India. The objective of study is to analyse the current adoption level of green practices by industries in their processes and to assess their impact on organizational performance such as environmental, financial and operational performance in developing countries. The research shows that there is significant positive relationship between Green Supply Chain Management (GSCM) practices and organizational performances which induces the study to develop GSCM practices model for Indian industry. The research is conducted by a conceptual model for GSCM practices which includes internal environmental management, green designing, green purchasing, customer cooperation for environmental and investment recovery.

**Keywords:** Green supply chain management, Green Practices, Sustainability, Environmental performance, Green Procurement, Green Manufacturing and Environmental Strategy.



[Scholarly Research Journal's](http://www.srjis.com) is licensed Based on a work at [www.srjis.com](http://www.srjis.com)

### Introduction

Companies applying green principles to their internal operations prefer to purchase goods and services from suppliers who meet certain minimum environmental standard, as these companies are focused to minimise environmental liability (Sarkis, 2001). Lamming and Hampson (1996) envisaged the prospect of environmental soundness becoming a recognized feature of a supplier's overall performance. A US survey by Gavaghan et al. (1998) Copyright © 2017, Scholarly Research Journal for Interdisciplinary Studies

examined the extent to which companies were using four sets of environmental criteria in assessing suppliers under the headings of regulatory compliance, environmental management system, eco-efficiency and green design. The greening of purchasing activities has since become an important area of research, considering the issues such as the environmental criteria for supplier selection and environmental accreditation (Min and Galle, 2001). Walton et al. (1998), Bowen et al. (2001) and others adopted a broader supply management perspective on the subject, to examine the ways in which vendors could work with their suppliers to improve their joint environmental performance. Min & Galle (2001) found that green supply chains are lean supply chains with minimal or zero waste. Minimizing waste within the supply chain will make the supply chain green. In recent times, SCM is focusing in two important aspects; one its impact on natural environment and second on the generation of environment performance changes. This shift is basically due to the legislative changes, maintaining social pressures and environment requirements. The relevance and purpose of GSCM is now generally accepted. Hence GSCM scope is not just related to greening practices without a definite purpose, however substantial scope lies for improving and applying the potential strategies of GSCM. The study tries to identify an evolving set of distinct supply chain practices in an environment of rapid developments in the field of GSCM. Environment and energy issues have drawn major attention in the last decade, and many researches and studies have been done in this context. GSCM is a good way to balance the environmental, profitability and social benefits (Carter and Narasimhan, 2000; Govindan et al., 2013). GSCM, which has already been mature in some European, Japanese, Chinese and American countries, is still a new concept in India. Thus it is felt essential to undertake this study which targets Indian manufacturing supply chain, keeping in focus environmental and social concerns. The study will tell about adoption level of GSCM practices by Indian industries and organization and its impact on organizational performance. GSCM practices are energy efficiency, water efficiency, environment conservation, waste management, recycling and reuse, hazardous and toxic substance management and optimisation of transportation. As per Emmet & Sood (2010), GSCM practices can be adopted at different stages of the green supply chain :-

- (i) Green concept for Sourcing and Supplier selection.
- (ii) Green Product design.
- (iii) Green Procurement.

- (iv) Green Manufacturing and production processes.
- (v) Green Logistics.
- (vi) Green Delivery of the final product to the customer.
- (vii) End-of-life management of the product by green disposal.

### **Literature Review**

Review of related literature helps to understand the broad area of GSCM and then to focus on the sub-areas such as Green Purchase, Green Design, Green Manufacturing, Green Packaging, Green Distribution, Green Marketing, Waste Management, etc. In one of the initial studies in the area of GSCM, Qinghua Zhu and Joseph Sarkis (2004) empirically examined the relationship between GSCM practice and environmental and economic performance in China. One of the key findings of the study was that firm size has no significant relationship with any of the performance measures. Pressure from regulators, supply chain partners, competitors and customers act as motivators for companies to green their supply chain (Qinghua Zhu, Joseph Sarkis & Yong Geng, 2005). Interactions between customers and supplier staff, partnership agreements and joint research and development lead to improvements in the environmental performance (Zhu Q. et al., 2005). The past decade, there has been many works on GSCM in different countries with different industries. All the researches are based on empirical study or case study. The literature shows various work related to green supply chain, green marketing, green supplier/purchasing, green design (Eco-design), green logistics conducted in different countries. In last 10 years, China has been done many research in GSCM practices and its impact on performance in various sector by Zhu and Sarkis (2004), Zhu et al. (2011) etc. The researchers (Mohanty, et al., 2009; Chien and Shih, 2007; Zhu et al., 2011) have implemented GSCM practices in all the sectors like Automobile, Electrical, Manufacturing, IT, Chemical, etc. in various countries like: Netherlands, Germany, UK, USA, Japan, Malaysia, Australia, Brazil South Korea, Taiwan, and Italy. There is little work in GSCM practices and its effect in India by Vijayvargy and Agarwal (2013, 2014) and Shukla (at el. 2009) on Eco-design, Green Purchasing and relationship of GSCM practices etc. This study based on literature collected from China, Japan, Malaysia, Taiwan, USA, and UK. There are many studies which shown positive and negative relationship between GSCM practices and organizational performance. Shukla et al. (2009) suggested positive relationship between GSCM practices and environmental and financial performance. But the study of Zhu et al. (2008) has shown

negative relationship between GSCM and financial performance. There is not clear picture of relationship of GSCM and organizational performance. Above Literature have projected views on the relationships between environmental performance and practices adoption. Several studies have shown that GSCM practices can improve environmental performance (Florida 1996, Geffen and Rothenberg, 2000).

### **Research Methodology**

In the light of above discussion, the motive behind this work is to investigate the determinants of green supply chain management practices for Indian Industry and provide the empirical evidences to support decision maker to select appropriate GSCM practices for organisation performance. A descriptive study was undertaken in order to learn and be able to describe the characteristics of the variables of interest. Primary data sources were used for the study. The participants in the study consisted of practicing managers/ senior managers in manufacturing and processing companies in India, who have a profound impact on environmental management decisions. These individuals were selected as units of analysis given their corporate authority to purchase and transform materials at different stages of the supply chain. The data was collected directly through an online survey using a structured questionnaire. Based on the findings of this study, a comparative analysis was done with the previous research findings.

#### **a. Sampling Selection**

The sample was selected from online data bases and questionnaires were sent to 500 identified companies with randomize sampling. The postal and online mailing, telephonic interviews, two follow-ups and personal visits fetch 146 usable responses, yielding the response rate of about 29.2% percent. Further the data distributes in various sectors like automobile (31%), electrical/electronics (26%), process industry (22%) and manufacturing industry (21%).

#### **b. Questionnaire Development**

The questionnaire is designed with two sections.

Section A : - It is designed to gather background and demographic information about the respondents.

Section B :- It is regarding GSCM practices and determinants of performance of the firms.

Most of the variables in this study are measured using the scales from Zhu and Sarkis (2004) where respondents assess the concepts by rating them on a five point Likart scale. The precision of measurement is further improved by using several items to measure the same concept (multi-item scaling). Views regarding the level of practice implementation were rated a five-point Likert scale :-

- 1= no consideration.
- 2 = A Little Consideration.
- 3 = Moderate.
- 4= Practicing.
- 5= Actively Practicing.

Respondent were asked to rate the improvement into organizational performance by GSCM practices on a five-point scale :-

- 1 = Not at all
- 2 = A little bit
- 3 = to some degree
- 4 = relatively significant
- 5 = significant.

### **c . Data Analysis**

The response of GSCM towards the practices and performances issues is gathered through the questions asked. In this research the GSCM practices and its impact on company's performance are analyzed by comparing the opinion of participants regarding the practices and perceptions for sustaining GSCM elements. The research explored the five key factors of GSCM practices namely :-

- (i) Internal Environmental Management (IEM).
- (ii) Green Purchasing (GP).
- (iii) Customer Cooperation with Environmental Consideration (CCWEC).
- (iv) Eco-Design (ED).
- (v) Investment Recovery (IR).

The research also explored the three factors of performance determinant namely :-

- (i) Environmental Performance (EP).
- (ii) Financial Performance (FP).
- (iii) Operational Performances (OP).

**d. Descriptive Analysis for GSCM Practices**

The analysis is summarised in Table 1. It indicates that out of seven drivers considered in Internal Environmental Management Practice (IEM), the driver ‘**Commitment of GSCM from senior managers (IEM1)**’ is found the highest ranked with mean value 3.39 in all sectors. Hence, it is essential to have highest level of commitment from senior managers to implement GSCM practices in their organisation. After it, ‘Environment compliance and auditing program (IEM 5) is important driver to have concentration/consideration for the purpose of GSCM implementation.

**Table 1: Descriptive statistics of GSCM practices in Indian industries/organizations**

| Variables of GSCM Practices                                    | Items      | Overall<br>(n = 146) |            |
|--|------------|----------------------|------------|
|  |            | Mean                 | Standard   |
| <b>1. Internal Environmental Management</b>                    | <b>IEM</b> | <b>3.3</b>           | <b>0.8</b> |
| a. Commitment of senior managers towards to GSCM               | IEM1       | 3.39                 | 0.33       |
| b. Support from mid-level managers for GSCM                    | IEM2       | 3.17                 | 1.03       |
| c. Cross functional corporation for environmental improvements | IEM3       | 3.15                 | 1.08       |
| d. Total quality environmental management                      | IEM4       | 3.19                 | 0.98       |
| e. Environmental compliance and auditing programs              | IEM5       | 3.38                 | 1.03       |
| f. ISO 14001 certification                                     | IEM6       | 3.23                 | 0.88       |

|  |                   |                  |                       |
|--|-------------------|------------------|-----------------------|
|  |                   |                  | 1                     |
| g. Environmental Management System exist                         | IEM7              | 3.2<br>9         | 0.<br>9<br>9          |
| <b>2. Green Purchasing</b>                                       | <b>GP</b>         | <b>2.9<br/>8</b> | <b>0.<br/>6<br/>1</b> |
| a. Providing green design specification to suppliers             | GP1               | 3.1<br>5         | 0.<br>9<br>0          |
| b. Cooperative with suppliers for environmental aims             | GP2               | 3.1<br>5         | 0.<br>8<br>9          |
| c. Environmental audit for supplier                              | GP3               | 3.0<br>9         | 0.<br>8<br>0          |
| d. Suppliers ISO 14001 certification                             | GP4               | 2.9<br>1         | 0.<br>8<br>8          |
| <b>3. Customer Cooperation with Environmental Considerations</b> | <b>CCW<br/>EC</b> | <b>3.0<br/>7</b> | <b>0.<br/>8<br/>1</b> |
| a. Cooperation with customer for eco-design                      | CCW<br>EC1        | 3.0<br>6         | 0.<br>8<br>3          |
| b. Cooperation with customer for cleaner production              | CCW<br>EC2        | 3.0<br>7         | 0.<br>8<br>4          |
| c. Cooperation with customer for green packaging                 | CCW<br>EC3        | 3.1<br>0         | 0.<br>8<br>5          |
| <b>4. Eco-Design</b>   | <b>ED</b>         | <b>3.1<br/>0</b> | <b>0.<br/>8<br/>8</b> |
| a. Design of products for reduced consumption of material/energy | ED1               | 3.1              | 0.                    |

|  |           |                  |                       |
|--|-----------|------------------|-----------------------|
|  |           | 9                | 8                     |
|  |           |                  | 1                     |
| b.. Design of product for reuse, recycle                 | ED2       | 3.0<br>2         | 0.<br>8<br>8          |
| c. Design of products to avoid use of hazardous products | ED3       | 3.0<br>7         | 0.9<br>6              |
| <b>5. Investment Recovery</b>                            | <b>IR</b> | <b>3.1<br/>6</b> | <b>0.<br/>7<br/>9</b> |
| a. Recovery (sale) of excess inventories/ materials      | IR1       | 3.2<br>3         | 0.<br>8<br>8          |
| b. Sale of scrap and used materials                      | IR2       | 3.0<br>1         | 0.<br>8<br>7          |
| c. Sale of excess capital equipment                      | IR3       | 3.1<br>5         | 0.<br>8<br>6          |

The ‘**Cross functional corporation for environmental improvements (IEM3)**’ is found lowest rank with mean value 3.15 and needs to be improved. The training program and awareness campus workshop needs to fill the gap in this area. There is maximum variation in the cross functional corporation for environmental improvements, Support for GSCM from mid-level managers and Environmental compliance and auditing programs.

Green purchasing (GP) related to ‘**Cooperative with suppliers for environmental objectives (GP2)**’ and ‘**Providing design specification to suppliers(GP1)**’ are found with highest mean value 3.15. The area of ‘Suppliers ISO14001 certification (GP4)’ have low mean score of 2.91 that shows below average initiative in term of work on environmental issues with their suppliers.

Mean value of various practices of Customer cooperation with environment consideration (CCWEC) is 3.07. The analysis shows that ‘**Customer Cooperation for Green Packaging (CCWEC3)**’ is major initiative (highest mean 3.10) in Indian industry in CCWEC practices.



Mean value of various practices of Eco – Design (ED) is 3.10. This indicates that the ‘**Design of products for reduced consumption of material/energy (ED1)**’ practices has received more attention in Indian industry and have highest consideration. Investment recovery (IR) is having mean value of 3.16. ‘**Recovery (sale) of excess inventories/materials(IR1)**’ is used as major contributor (mean value 3.23) in GSCM practices in India. The mean score of investment recovery practices in India is less than average mean of other countries. The United States and European organizations have considered investment recovery as a critical aspect for GSCM (Zsidisin and Hendrick, 1998).

**e. Descriptive analysis of GSCM performances :-**

After investigating the green supply chain management practices in detail, three performance factors are explored with perspectives of Indian industries to identify the potential performance variable and summarised as in Table 2 .

**Table 2: Descriptive statistics of various performances in Indian industries/organizations**

| Variables of organizational Performance              | Items     | Overall (n = 146) |             |
|--|-----------|-------------------|-------------|
|  |           | Mean              | S.D.        |
| <b>1. Environmental Performance</b>                  | <b>EP</b> | <b>3.77</b>       | <b>0.84</b> |
| a.Reduction of Air Emission                          | EP<br>1   | 3.91              | 0.91        |
| b.Reduction of Waste Water                           | EP<br>2   | 3.65              | 0.94        |
| c.Reduction of Solid Wastes                          | EP<br>3   | 3.65              | 0.99        |
| d.Decrease the Consumption for Hazardous Materials   | EP<br>4   | 3.71              | 0.97        |
| e.Decrease the Frequency of Environmental Accidents  | EP<br>5   | 3.73              | 0.95        |
| f. Improve an organization's Environmental Situation | EP<br>6   | 3.93              | 0.88        |
| <b>2. Financial performance</b>                      | <b>FP</b> | <b>3.34</b>       | <b>0.79</b> |

|   |           |             |             |
|---|-----------|-------------|-------------|
| a.Decrease of cost for materials purchasing | FP<br>1   | 3.30        | 0.86        |
| b.Decrease of cost for energy consumption   | FP<br>2   | 3.53        | 0.88        |
| c.Decrease of fee for waste treatment       | FP<br>3   | 3.27        | 0.97        |
| d.Decrease of fee for waste discharge       | FP<br>4   | 3.26        | 0.82        |
| e.Decrease of fine for environmental        | FP<br>5   | 3.35        | 0.92        |
| <b>3. Operational Performance</b>           | <b>OP</b> | <b>3.74</b> | <b>0.80</b> |
| a.Increase amount of goods delivered on     | OP<br>1   | 3.80        | 0.91        |
| b.Decrease inventory's levels               | OP<br>2   | 3.66        | 0.97        |
| c.Decrease scrap rate                       | OP<br>3   | 3.67        | 0.96        |
| d.Promote products quality                  | OP<br>4   | 3.80        | 0.95        |
| e.Increased product line                    | OP<br>5   | 3.66        | 0.90        |
| f.Improved capacity utilization             | OP<br>6   | 3.86        | 0.86        |

The performance factors are Environment performance (EP), Financial performance (FP) and Operational performance (OP). Based on literature, six determinants are identified for measuring Environmental Performance. The results indicates that the '**Organisation's Environmental Situation (EP6)**' is more improved determinant in environmental performance (high mean value in all EP variables). The waste water reduction and solid waste reduction measures are contributing least for the improvement of environmental performance. The data analysis shows that the environmental performance of Indian organisations has improved after implementation of GSCM practices.

This depicted that the driver ‘**Decrease of Cost for energy consumption (FP2)**’ has better performance (Mean 3.53) after implementation of GSCM practices which leads to major contribution in term of improvement in financial performance of organization. The ‘Decrease of fee for waste discharge (FP3)’ (Mean 3.26) is least affect by implementation of GSCM in organisation. The ‘Decrease of fee for waste treatment (FP3)’ determinant has maximum standard deviation in all determinants of financial performance.

Statistics of Operational Performance into various sectors and of different types of organization’s size. It seems that the ‘**Improved Capacity Utilization (OP6)**’ has mostly contributed in operational performance of organization (Mean 3.86) followed by ‘On time delivery and product quality (OP1) (mean 3.80). The ‘Increased product line(OP5) and ‘Decrease inventory levels (OP2)’ has observed least contributor into Operational Performance of Indian industries/ organizations in GSCM. The all determinant of OP are above the 3.5 mean score which is significant improvement in operation performance after implementation of green supply chain management in an organisation.

**f. Correlation between GSCM Practices**

To analyse the relationship among GSCM practices , correlation among all factors of GSCM practices are performed. The Pearson correlation coefficients are calculated and shown in Table 3.

**Table 3 : Correlation between GSCM practices (Note: p< 0.01 level (2-tailed)).**

|              | <b>IEM</b> | <b>GP</b> | <b>CCWCC</b> | <b>ED</b> | <b>IR</b> |
|--------------|------------|-----------|--------------|-----------|-----------|
| <b>IEM</b>   | 1          | 0.77      | 0.63         | 0.69      | 0.70      |
| <b>GP</b>    |            | 1         | 0.61         | 0.59      | 0.66      |
| <b>CCWCC</b> |            |           | 1            | 0.61      | 0.53      |
| <b>ED</b>    |            |           |              | 1         | 0.68      |
| <b>IR</b>    |            |           |              |           | 1         |

Results indicates that most of the factors are having a significant relationship at p<0.01. It is seen that Internal Environmental Management (IEM), Green Purchasing (GP), Customer Cooperation With Environmental Consideration (CCWCC) and Eco-Design (ED) are having strong correlation between each other and their dependency towards each other is strong for GSCM practices.

**g. Regression Analysis between GSCM Practices and Various Performances**

It is interesting to investigate the inter-relationships between the GSCM practices and Organizational Performance. Correlation analysis done at para f above has indicated a

positive correlation between GSCM practices. To analyse the impact of GSCM practices on Organizational Performances, considering performance variables as dependent variables and five GSCM practices as independent variables as shown in Table 4. Three regression models have been developed as depicted below :-

**Table 4: Summary of Regression analysis between organizational performance and GSCM practices (Note : p < 0.01).**

| Independent Variables    | Dependent variables |          |             |          |             |          |
|--------------------------|---------------------|----------|-------------|----------|-------------|----------|
|                          | EP                  |          | FP          |          | OP          |          |
|                          | Coff. value         | t- value | Coff. value | t- value | Coff. Value | t- value |
| IEM                      | 0.22                | 1.98     | 0.19        | 1.95     | 0.17        | 1.50     |
| GP                       | 0.13                | 1.18     | 0.21        | 1.98     | 0.05        | 0.33     |
| CCWEC                    | 0.21                | 3.37     | 0.19        | 2.72     | 0.17        | 2.36     |
| ED                       | 0.17                | 2.21     | 0.18        | 1.95     | 0.30        | 3.77     |
| IR                       | 0.37                | 4.20     | 0.16        | 1.61     | 0.12        | 1.41     |
| <b>R<sup>2</sup></b>     | 0.61                |          | 0.51        |          | 0.53        |          |
| <b>Adjusted R Square</b> | 0.60                |          | 0.53        |          | 0.51        |          |
| <b>F-VALUE</b>           | 50.79               |          | 35.33       |          | 32.37       |          |

All regression lines are significant at p-value <0.01. Almost all the coefficient of GSCM practices are positive and significant at p-value<0.01 for organizational performance. The regression analysis has proved that there is significant positive relationship between GSCM practices and organizational performance. The variance explained in each of the regression models are :

60% of the variance in Environmental Performance (EP)

53% of the variance in financial performance and

51% of the variance in operational performance.

Regression analysis shows that improvement in Environmental performance will more dependent on IEM, CCWEC and IR practices of GSCM. The improvement in EP is least dependent on GP and IEM practices.

**Conclusion and future research direction**

To provide the fine-grained analysis of GSCM, this research explored the key determinants of GSCM practices and performance measures. The study concludes with top 10 GSCM practices out of 20, which are shown in Table 5. The commitment of Top management towards to GSCM has come top ranked in all GSCM practices.

**Table 5 : List of top 10 GSCM practices**

| GSCM Practices  | Rank |
|---|------|
| Commitment of senior managers towards to GSCM                 | 1    |
| Environmental compliance and auditing programs                | 2    |
| Environmental Management System exist                         | 3    |
| ISO 14001 certification                                       | 4    |
| Recovery (sale) of excess inventories/ materials              | 5    |
| Total quality environmental management                        | 6    |
| Design of products for reduced consumption of material/energy | 7    |
| Support from mid-level managers For GSCM                      | 8    |
| Sale of excess capital equipment                              | 9    |
| Providing green design specification to suppliers             | 10   |

The Regression analysis indicates that the GSCM practices have positive relationship with performance determinants. Their relationships are very promising with environmental and operational performance expectations. There seems to be significant opportunities that exist for Indian manufacturing industries/ organisations that seek to implement GSCM practices. The GSCM practices seems to be doing what is expected of them in terms of positive environmental performance and overall organisational performance. The competitive advantage has generated by environmental cooperation. The industry adopting cooperative activities with their suppliers and customers can develop organizational capability to achieve significant results in environmental performance. Also, it is resulted better results in organisational performance dimensions such as cost cutting, quality improvements and reduced bottleneck on operational performance of an industries/ organisation.

The results of the study reveal that the Indian organisations are actively implementing all the items in the Internal Environmental Management and Investment Recovery practices but they are not that active with Green Purchasing, Eco Design and Customer Cooperation. The results further indicate that suppliers are to be paid attention as regards environmental management. Indian companies need to focus on financial performance, as companies are not able to garner the gains in financial benefits from GSCM. They need to work on reduction in cost of raw materials and energy consumption and expenses on waste treatment and waste discharge. The performance of Indian companies is observed to be relatively significant in terms of environment and operations. Further, the organisational size and various sector analysis has influenced implementation of GSCM practices. GSCM practices in India has been adopted quite late as compared to USA and Japan, and now Indian

organisations have realised the benefits of GSCM and have started taking proactive approach towards environmental responsiveness.

## REFERENCE

- F.E., Bowen, P.D. Cousins, R.C. Lamming, & A.C. Faruk, "The role of supply management capabilities in green supply" *Journal of Production and Operations Management*, 2001, Vol. 10(2), pp.174-189.
- C.R. Carter, & J.R. Carter, "Inter-organizational determinants of environmental purchasing: initial evidence from the consumer products industries", *Decision Sciences*, 1998, Vol. 29(3), pp. 659-684.
- M.K. Chien, & L.H. Shih, "An empirical study of the implementation of green supply chain practices in the electrical/electronic industry and their relation to organizational performances", *International Journal Environmental Science Technology*, 2007, Vol. 4(3), pp. 383- 394.
- R. Florida, "Lean and green: The move to environmentally conscious manufacturing", *California Management Review*, 1996, Vol. 39(1), pp. 80-105.
- K. Gavaghan, R. Calahan-Klein, J.P. Olson, & T.E. Pritchett, "The greening of the supply chain", *Supply Chain Management Review*, 1999, Vol. 2(2), pp. 76-84.
- C. Geffen, & S. Rothenberg, "Suppliers and environmental innovation: the automotive paint process", *International Journal of Operations & Production Management*, 2000, Vol. 20(2), pp. 166-186.
- R. Lamming, & J. Hampson, "The environment as a supply chain issue" *British Journal of Management*, 1996, Vol. 7, pp. 45-62.
- H. Min, & W.P. Galle, "Green purchasing practices of US firms", *International Journal of Production and Operations Management*, 2001, Vol. 21(9), pp. 1222-1238.
- R.P. Mohanty, P. Yadav, & R. Jain, "Implementation of lean manufacturing principles in auto industry", *Vilakshan, XIMB Journal of Management*, 2009, Vol. 11, pp. 1-31.
- A. Shukla, S.G., Deshmukh, & A. Kanda, "Environmentally responsive supply chains: Learning from the Indian auto sector", *Journal of Advances in Management Research*, 2009, Vol. 6(2), pp. 154-171.
- L. Vijayvargy & G. Agarwal, "A Comparative study of green supply chain management practices in Indian, Japanese and Chinese companies", *The IUP Journal of Supply Chain Management*, 2013, Vol. 10(3), pp. 7-18.
- L. Vijayvargy & G. Agarwal, "Empirical investigation of green supply chain management practices and their impact on organizational performance", *The IUP Journal of Supply Chain Management*, 2014, Vol. 11(4), pp. 26-43.

- S.K. Srivastava, & R.K. Srivastava, "Managing product returns for reverse logistics", *International Journal of Physical Distribution and Logistics Management*, 2006, Vol. 36, pp. 524-546.
- J. Sarkis, "A strategic decision framework for green supply chain management", *Journal of Cleaner Production*, 2003, Vol. 11(4), pp. 397-409
- S.V. Walton, R.B. Handfield, & S.A. Melnyk, "The green supply chain: Suppliers into environment management processes" *International Journal Purchasing & Materials Management*, 1998, Vol. 34(1), pp. 2-11.
- Q. Zhu, & J. Sarkis, "Relationships between operational practices and performance among early adopters of green supply chain management practices in Chinese manufacturing enterprises", *Journal of Operations Management*, 2004, Vol. 22(3), pp. 265-289.
- Q. Zhu, and J. Sarkis, "An inter-sectoral comparison of green supply chain management in China: Drivers and practices", *Journal of Cleaner Production*, 2006, Vol. 14, pp. 472-486.
- Q. Zhu, Y. Geng, J. Sarkis, & K.H. Lai, "Evaluating green supply chain management among Chinese manufacturers from the ecological modernization perspective", *Transportation Research Part E*, 2011, Vol. 47, 808-821.