RESEARCH REVIEW JOURNALS
ICIMP-2018
SEP- 2018
Special Issue

ISSN: 2455-3085 (Online)
RESEARCH REVIEW International Journal of Multidisciplinary
www.rrjournals.com [UGC Listed Journal]

Green Supply Chain Management

Snehal D. Bhosale

Assistant Professor, Secab Institute of Business Administration, Vijayapur, Karnataka (India)

ARTICLE DETAILS

Article History
Published Online: 03 Oct 2018

Keywords
Manufacturing, Environment, Transportation and Supply Chain Management.

***Corresponding Author**
Email: snehalb19[at]gmail.com

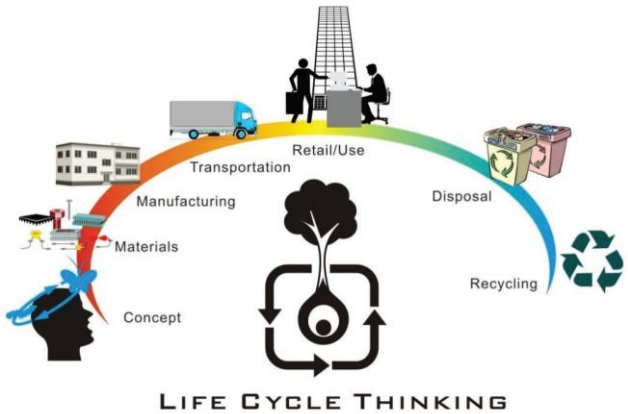
ABSTRACT

"Green Supply Chain Management" (GSCM) has managed to seize the raising interest among practitioners and researchers of operations and supply chain management. It includes all the stages of the production process: design, raw material purchasing, manufacture, delivery and, after its useful life, end-of-life management of the product. GSCM involves the integration of environmental thinking into supply chain management (SCM). It is an approach that targets the overall optimization of information flows and material flows along the value chain. Some companies have found GSCM a very interesting opportunity to keep earning money and taking care of the planet at the same time. The companies are able to call consumers' attention to green products and services. In fact, several organizations have demonstrated the existence of a link between upgraded environmental production and positive gains. The major six activities of the supply chain; namely Green Sourcing & Procurement, Green Manufacturing, Green Warehousing, Green Distribution, Green Packaging, Green Transportation. This paper exposes the introduction of GSCM by taking Wal-Mart as an example.

1. Introduction

Green supply chain (GSCM) has come into existence as one of the recent innovations to preserve the environment. It not only helps in improving the efficiency of the organization but profitability as well. Therefore there exists a vast scope in developing countries such as India to adopt GSCM practices and achieve organisational excellence. GSCM practice should be a part of a company's DNA – right from the blueprint and creativity of a product to its distribution and consumption and lastly to its recycling. Fig.1 shows the life cycle of the GSCM activity from the conceptual stage till the recycling of the product.

Figure 1: Life cycle of the GSCM activity

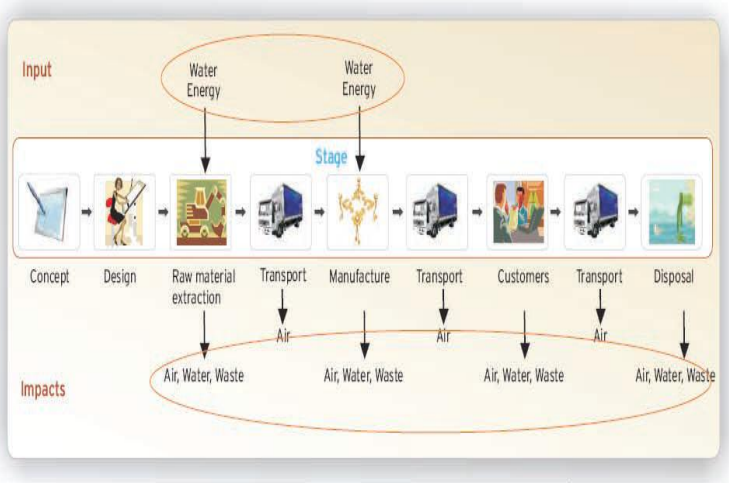


Source: - Dlink Energy

2. Green Supply Chain Management (GSCM)

Organisations worldwide continue to use toxic chemicals, wasteful packaging, and transportation practices that produce clouds of gases that contribute to global warming. However, from materials acquisition and manufacturing to packaging, logistics, and distribution, every stage of the supply chain offers opportunities to reduce waste and pollution. As shown in Fig.2 at every stage of the cycle there is pollution in terms of air, water and waste. Here recycling and effective and efficient use of the resources can drastically help in reducing the pollution. The companies should take note of the fact that GSCM measures can not only improve their performance levels but also help in protecting the environment.

Figure 2: Stages of the supply chain



Source: - Creating a Green Supply Chain – Cognizant.

With the help of GSCM operational efficiencies can be improved. Following are some of the benefit ts that can be realized out of this initiative which is termed as **CI** benefits:-

- ✓ **(CI) Continuous Innovations**– It helps to alleviate risk and gives momentum to innovations.
- ✓ **(CI) Continuous Improvements**– Analyzing GSCM activities generally leads to innovative processes and regular improvements

- ✓ **(CI) Continuous Interactions** – It involves negotiating policies with all the stakeholders like suppliers and customers, resulting into better alignment of business processes and principles.

It also aims to create a synergy among the supplier community to purchase environmentally superior products and reduce reduction of waste.

3. Indian Market and Worldwide Implementation

2.1 Ford Motor Company, Strengthening Value Chain

"Material recovery starts and ends with great design!"

Ford's connection with its value chain has increased the use of recovered materials in vehicle production. The company also issues recycling guidelines to the world wide suppliers and engineers thus making disassembly of cars and trucks produced by the company. As per the statistics four billion pounds of recycled materials are incorporated into vehicle design. Some design innovation for use of recycle material includes:

- Air cleaner assemblies and engine fan modules
- Splash shields from spent battery casings
- Salvage plastic bumpers becomes new bumper reinforcement
- Used tires become new ones or brakes pedals or floor mats

Currently, In North America, Ford produces 95 per cent of its vehicles using scrap metal recycling facilities. The company proudly claims to recover 86 per cent of the vehicle by weight by means of recycling and remanufacturing.

2.2 FedEx Initiatives

Global courier delivery giant FedEx has put forward many initiatives to reduce its environmental footprint.

- Company has futuristic plans of converting forest waste into bio fuel. The company is collaborating with Red Rock Bio fuels to make this plan up and running by 2017.
- Fed Ex possess 329 hybrid delivery truck in its fleet
- It uses around 70 per cent of the recycled fibers for packaging materials.
- FedEx also is replacing its 727's with 757's, which is expected to cut fuel consumption by 47 per cent.

2.3 Kodak Single Use Camera: Reverse Supply Chain

Kodak introduced the single use camera in 1987 positioned as an inexpensive product. At first, it was known to be environmentally unfriendly due to its disposable nature. However, through active participation in photofinishers and other SUC manufacturer (e.g. Fuji, Konica), Kodak transformed the product into environmental success story.

Once consumer returns the SUC to the photofinisher to develop the picture, the photofinishers send the SUC one of the three collection facilities around the world (63 per cent return rate resulting in 51.9million SUC recycled in 1997, equivalent to 549 tractor trailer loads of SUC). They are reimbursed for the camera and the shipping cost. Next, the cameras are shipped to a subcontractor facility where they will undergo disassembly, inspection and remanufacturing. Then, the SUC are sent to one of the Kodak's three SUC manufacturing plan, where components are reused or recycled materials are used.

Kodak employed Design for Environment to allow reuse, recycling, and disassembly of the camera and the packaging to facilitate the use of the reverse supply chain and extraction of materials. To further enhance the reverse supply chain, it partnered with key organizations to set up recycling programs, pool logistics resources, and share the financial reward.

4. Need for Green SCM- Opportunity for Organisations

India, an elite member of the trillion dollar club, has already evolved to become one of the largest economies in the world. The unprecedented growth in rural as well as in urban sector will continue to touch newer heights. In this scenario the rise in consumption and demand for energy, increase in greenhouse emissions, and constraints on critical natural resources such as land, water and oil have hit the ecology and environment hard. These issues need to be addressed on priority and right away. There is a growing curiosity among the consumers in India regarding the protection of the environment. Consumers in today's age of technology are actively involved and informed on ecological issues and are thus changing their behavior pattern so as to accommodate a socially responsible lifestyle. Companies that are going green will not only generate profit ts in the long term but will also help in conserving the ecology and reduce environmental impact. Moreover the media also creates a valuable publicity for the companies who implement green initiatives. Positive publicity for going green can do a world of good for the company's corporate image. Hence companies that are proactively involved in going green will gain visibility and earn credibility. Implementing a green initiative program also ensures companies to meet current and future environmental regulations or legislation. Green Supply Chain Management (GSCM) is thus gaining significance due to diminishing raw materials, deterioration of environment, swarming waste lands and ever-increasing levels of pollution. In today's competitive world, it is not only about being having better business sense and profits but also about environment friendliness.

Green SCM can help organisations in the following ways

Savings: There are long term savings opportunities through green movement. Companies need to show some long term appetite by holding into the GSCM investment. At least in the short term they could reach a stage of a revenue neutral level. The corporate should not expect huge benefits upon implementing Green SCM immediately but it can definitely proclaim to become a competitive advantage for firms marketing goods with environmental characteristics.

Lower risk: By buying greener products or services, organisations can avoid risks which often translate into financial costs or losses. There are large numbers of cases propping up wherein the suppliers and vendors of a company are using illegal means to supply/ extract raw materials thus

hitting the corporate image. In fact some of the supplier communities have very poor environmental track records. These risks can be sidelined by using and adhering to environmental friendly practices.

Increase in revenue: Companies are competing to improve efficiency of their business processes and reduce energy and material consumption by utilizing instruments like green supply-chain management. Industry has been the prime investor in energy efficiency, renewable energy and green building projects thus satisfying stakeholder demands, enhance brand image, and improve customer loyalty.

Indirect yield: - Being environmental-friendly, organization can reduce considerable waste and protect the natural resources. It can enhance the brand image of the company and will indirectly benefit t the motivational levels of the employees, suppliers and other stakeholders.

5. Challenges

Implementing GSCM is not so easy. Organisations are likely to face certain challenges some of which include:

- ✓ Cost is professed as the biggest predicament in implementing Green SCM.
- ✓ Companies generally implement any new technology or process when it can see the results in quantifiable terms. But as GSCM is a naïve concept it has become relatively diffi cult to exploit any measurable data to check the value chain effectiveness.
- ✓ There is a need to have a proper technology in place to compliment business with the Green Practices.
- ✓ Lack of green architects, consultants, green developers, contractors in the region. Due to lack of green practitioners available, the organisations are apprehensive to go ahead with the investment.
- ✓ An important aspect of GSCM is integration of recycling of the products. It is a major challenge for many companies to integrate the waste (recycling) as raw materials to again be used in manufacturing unit.
- ✓ Another challenge is the fear of failure. The organizations are not confident whether the Green initiative will lead to success or a major failure.
- ✓ Lack of awareness regarding the implementation process, regulations and best practices.
- ✓ A critical factor in implementing a GSCM initiative is the support and commitment from the top level management but unfortunately due to lack of confidence on the concept and high initial investment, the top management becomes apprehensive in implementation of green practices.
- ✓ As supply chain has lot of participating stakeholders, anyone's reluctance to accept and get involved in the design process and technology affect the overall performance of the whole chain
- ✓ Lastly, due to lack of customer awareness towards GSCM and Green products the companies are hesitant to go ahead with the implementation.

6. Case Study on Wal-Mart- Green Supply Chain

6.1 Summary

Supply chain management has been the corner stone to Wal-Marts success and remains their primary competitive advantage in the retail / department store industry. There are number of logistic function which allows Wal-Mart to be the logistic leader, the focus will be first on Wal-Marts companies newly adapted strategy of making logistic processes "Green" and more eco friendly. Wal-Marts CEO Lee Scott gives the company to 3 ambitious goals- to be supplied 100% by renewable energy, to create zero waste and to sale products that maintain Wal-Marts resources and the environment.

6.2 Introduction

Founder and original CEO initially decided to be the best retailer in the world. His initial strategy was to target low income families from rural areas by offering significantly lower cost when David Glass took over in 1988, Sam Waltons mission was truly realized through the use of technology in distribution and supply chain logistic, which allowed Wal-Mart the opportunity to cut cost and lower prize for end customers Lee Scott took over in 2000 to steer Wal-Mart towards sustainability. Lee Scott's business model to strengthen SCM processes by going "Green" was a strategic decision that positively impacted Wal-Marts growth, distribution techniques and corporate identity. His knowledge of distribution systems and push for sustainability has transformed the company into an eco friendly power house that continues to cut cost and remain at the frontier of distribution systems technology.

6.3 Motivation and Background

Sam Walton strategically choose his successor David Glass to lead the company in 1988. From 1988-1999, CEO David Glass transform the company from just a retailer into a retailer distributer, using technology to develop Waltons original goal staying in line with his core values when Glass succeeded Walton, he believed that "technology would ultimately drive this business to be the size that it is" which was the fundamental difference that sets his approach apart from that of Waltons. (Turock,2004) . Lee Scott took control of Wal-Mart in 2000with a newly adopted strategy of making logistic process with reduced cost. "Green" logistics, at its core, means implementing system that can indepently monitor overseas suppliers to make sure they meet social and enironmental standards.

6.4 Implementing Green

In 1989 in response to letters from customers about the environmental concerns, the company launched a campaign to convenience its suppliers to provide eco friendly safe products in recyclable or biodegradable packaging. But in the past Wal-Mart dealt with the environmental issue defensively rather than cooperatively. When vendors claim they had made environmental improvements to products, Wal-Mart began promoting the product with green colored shelf tags. By the early 1990s, the green tag programs disappear all together and environmental issues slipped off of the Wal-Mart's list of strategic priorities. In the words of Lee Scott, "We recognized early on that we had to look at the entire value chain. If we had just focused on our own operations, we would have limited ourselves to 10% of our effect on the environment and

eliminated 90% of opportunities that's out there" (Palm back, 2007)

In late 2005 Wal-Mart president and CEO Lee Scott gave his first presentation broadcast to over 1.5 million employees in over 6000 stores and each of its suppliers. In his speech, Lee Scott laid out 3 very ambitious goals in which he vowed Wal-Mart would:

1. Be supplied 100% by renewable energy in the very near future.
2. Create zero waste.
3. Sell products that sustain Wal-Mart resources and the environment.

Clearly, Wal-Mart is trying to differentiate itself in an area where it was once considered a laggard. He also discussed following goals:

1. Increase fuel efficiency in Wal-Marts truck fleet by 25% over 3 years and doubling it within 10 years.
2. Reduce greenhouse gases by 20% in 7 years.
3. Reduce energy use at stores by 30% 7 years.
4. Cut solid waste from US stores and Sams clubs by 25% in 3 years.

Buying diesel electric and refrigerating truck with a power unit that could keep cargo cold without the engine running, saving nearly $ 75 million in costs and eliminating estimated 400000 tons of CO2 pollution in one year alone.

1. 1.Making a 5 year verbal commitment to buy only organically grown cotton from farmers and to buy alternate crops those farmers need to grow between cotton harvest.
2. Promising by 2011 to only carry sea food certified wild by the marine stewardship council, a group dedicated to preventing the depletion of ocean life from over fishing.
3. Buying and selling 12 weeks' worth of restriction on hazardous substances (ROHS)-complaint computers from Toshiba.
4. Although this may seems like a very large list for a company to accomplish, each of this are attainable and place Wal-Mart in great competitive position for the future.
5. 5.While Wal-Mart is building valuable network of government agencies, non profits, employees and suppliers to "Green" its supply chains, the company is using a network approach to lower overall carbon and environmental food print in order to increase profitability while increasing margin.
6. While some stake holders and management become increasingly confident about the new sustainability initiatives, history dictates that there is reason to worry. Mani critics argue that Wal-Mart green initiative is simply unsustainable. As with many companies attainting to make there business strategies more green, a front costs become unavoidable and are simply not worth the investment. Wal-Mart need to spend in upwards of $ 500 million per year in order to achieve the goals mentioned earlier in study. However, it is important to note that Lee Scott stated in 2007, tangible profit generated by Wal-Mart sustainability strategy in the first year of implementation where nearly equal to profits from several Wal-Mart supercenters.

As the Wal-Mart attempts to scale up network and improve upon "Green" initiatives, the company faces 3 possible obstacles:

1. Increased cost.
2. A sub optimal product assortment.
3. Criticism of factory labor conditions

7. Conclusion

The concept of supply chain has emerged in all production process starting from raw material procurement to the delivery of finished product. Changes in state of environment, subsequent public pressure and environmental logistics have come to enforce the shift in manufacturing and business practices. Now it has become important to analyze the entire life cycle effect of all process and products. Therefore further product recovery mechanism should be included. Therefore concept SCM needs to be remolded in Green context. By adding green component in the SCM practices, GSCM practices encompasses a set of green activities in procurement, manufacturing, distribution and reverse logistics. By implementing GSCM companies can be benefited cost saving (conserving material, reduced energy & water used), better public image and decreased environmental liability. Therefore GSCM practice is the best practice to leverage sustainability performance in terms of economic, environmental and social.

References

1. Creating a Green Supply Chain - Information Technology as an Enabler for a Green Supply Chain, 2008, Cognizant white paper.
2. Dashore, K., & Sohani, N. (2013). Green supply chain management - Barriers & drivers: a review. *International Journal of Engineering Research & Technology, 2*, 2021-2030.
3. Handfi eld, R., Walton, S., *&* Sroufe, R. (2002). Applying environmental criteria to supplier assessment: A study of the application of the analytical hierarchy process. *European Journal of Operational Research, 141,* 70–87.
4. Joshi, S., Arora, S., Pamlin, D., & Sinha, S. (2008). Indian companies with solutions that the world needs sustainability as a driver for innovation and profit. WWF & CII, 1-105.
5. Singh, S., & Bhardwaj, A.(2013).Current Status of Green Supply Chain Practices and Initiatives in the Indian SMEs: An Exploratory Study, International Journal of Engineering, Business and Enterprise Applications, Vol. 3, pp. 57-61.

6. Sudha**,** R. **(**2012). Green marketing in India. *Namex International Journal of Management Research, 2*, 103-110.
7. Much of the material for the case study is drawn from Stanford University Graduate School of Business. Case study titled "Walmart Sustainability Strategy," (GSB NO.017-71) And Associate teaching notes by, Erica Plambeck and Lyn Denend