An overview of Green Supply Chain Management in Bangladesh

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ABSTRACT

Green Supply Chain Management (GSCM) is gaining much importance in many industries due to pressure from the government and environment consciousness among the customers, to gain competitive advantages. With increased awareness to Corporate responsibility and the requirement to meet the terms with environmental policy, green supply chain management (GSCM) is becoming increasingly important for Bangladeshi manufacturers. Companies that have adopted CSM practices with a focus on distribution activities have successfully improved their business and environmental performance on many levels. Today’s also some of remaining companies have not adopted green supply chain management, due to this environmental performance index (EPI) ranking of Bangladesh is not good. Today’s environmental performance index (EPI) of Bangladesh and the major four activities of the green supply chain management; namely green purchasing, green manufacturing, green marketing and reverse logistics are being covered throughout the paper.

Keywords: Green manufacturing, green purchasing, green performance index 2012, reverse logistics.

1 INTRODUCTION

Green supply refers to the way in which innovations in supply chain management and industrial purchasing may be considered in the context of the environment. Environmental supply chain management consists of the purchasing function’s involvement in activities that include reduction, recycling, reuse and the substitution of materials. The practice of monitoring and improving environmental performance in the supply chain. Integrating environmental thinking into a supply chain management, including product design, material resourcing and selection, manufacturing processes, delivery of the final product to the consumer as well as end-of-life management of the product after its useful life. From these four definitions we see that there is a range of author focus and purpose on green supply chains and their management. The lack of consensus in practice and definition of green supply chain is not surprising, since its foundational elements of corporate environmental management and supply chain management are both relatively new areas of study and practice.

Globalization and Greening the Supply Chain: Today’s globalization increases the opportunities for buyers. As buyers increase their focus on environment improvement, which increases the supplier environmental performance. It is true for organizations that regard environmental improvement as a social goal, not just an issue cost, risk and public image.

Manufacturers need to work with their suppliers of raw material and component, in order to produce environment friendly products. By using their purchasing power, the industries can set up environment criteria for their suppliers upstream in supply chain. Ultimately it can result in the greening of the supply chain.

GSCM = Green purchasing + Green manufacturing/materials management + Green Distribution / marketing + Reverse logistics.

2 RESEARCH BACKGROUND

The concept of green supply chain is new concept, appearing in recent literatures. Although this has been very important in business, it is introduced recently and now also literature for environment friendly supply chain is still limited. “Sustainable Development” is the key concept as discussed in 1992 Earth Summit in Rio, in this, governments and other international organizations decided to take useful measures to protect environment for long term economic development. Today’s highlighted agenda is to raise environmentally responsible consumption and production to recover environmental quality, reduce poverty and bring about economic growth, with resultant improvements in health, working conditions, and sustainability.

A researcher studied green supply chain management, it includes pressure practice and performance within the Chinese automobile industry in which they observed that on increasing pressure from a variety of directions have caused the Chinese automobile supply chain manages to initiate carrying out of green supply chain management (GSCM) practices to improve both their economic and environment performance. The GSCM pressures (motivators), initiatives and performance of the automotive supply chain using an empirical analysis of 89 automotive enterprises within China have been earlier done.
After that another researcher studied the green supply chain management in electronic industry. According to that, there are various approaches for implementing green supply chain management practices has been proposed and recognized in previous literatures according to the author, but there is yet no investigation that identified the reliability and validity of such approaches particularly in electronic industry. The fuzzy analytic hierarchy process method was used by authors to prioritize the relative importance of four dimensions and twenty approaches among nine enterprises in electronic industry. The findings indicate that these enterprises would emphasize on supplier management performance in the crucial role of implementing green supply chain management.

Further works on the implementation of green supply chain management practices in electronics industry in which they aimed to survey existing green activities in computer parts manufactures in Thailand to evaluate GSCM. For this the questionnaire related to investigate GSCM practices measure GSCM performance and explore GSCM demands within that electronics industry.

After this, some researchers introducing green transportation chain management in textile enterprises is also done in which the author considered the environmental influence and resource utilization efficiency in the whole supply chain and here also one problem was arise that how to execute the green supply chain management in special industrial operation at present.

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After this, some researchers introducing green transportation cost in supply chain modelling in which they thinks that Escalating environmental concerns with relevant transportation modes that has lead to an increased interest in the adoption of green sustainable practices in the area of supply chain management, in this the amount of carbon emission resulting from transportation element of a supply chain is growing concern for supply chain managers.

3 GREEN PURCHASING

Green Purchasing, also known as Environmentally Preferable Purchasing (EPP) is important, and not just because we’d need the resources of five (5) earths to sustain us if everyone in the world consumed like the developed world did (and the US, Australia, and Canada in particular). It’s important because purchasers, be they government, corporate, or institutional, yield a great influence over the future of the planet with every buying decision they make - and because every purchase has a hidden cost on the environment.

Public sector and private sector institutional buying combined accounts for the vast majority of spending in most developed countries. It's true that we as consumers in developed countries buy a lot, but when you consider that we're (almost) always buying from a private sector company that is in turn spending 60% to 80% of its revenues buying raw materials, products, and services from other businesses, and that, in some countries, public sector buying alone accounts for as much as 25% of GDP, it's easy to see that, combined, purchasers ultimately control 70%++ of GDP in much of the developed world. Thus, if we were to refuse to buy products that were not green, we would effectively force our suppliers to provide us with green products, as the alternatives would be for those suppliers to go out of business.

So what is green purchasing? Simply put it’s one of the three cornerstones of sustainable purchasing, where the other two cornerstones are sound social policy and economic soundness. However, whereas economic soundness insures that the overall decision is sound from a life-cycle cost and corporate sustainability perspective, and whereas social policy addresses your need to be a responsible corporate citizen when it comes to human rights and welfare, green purchasing addresses the environmental impact of your buying decision.

One might think that buying green is the easiest criterion of the spend triumvirate to meet now that we have "organic" and "local" food and "eco-friendly" labeling and "energy-star" standards, but it is, in fact, the most challenging criterion! A food product does not necessarily have a low carbon footprint just because it is "organic" or "local"; just because a product is "eco-friendly" when used, does not mean that it’s production process was "eco-friendly"; and just because a product is "energy-star" compliant does not mean that it will have the best overall energy utilization.

Buying local produce makes sense during the fall harvest season, because you’re eliminating the carbon footprint that accompanies transportation, but it does not make sense in the spring when all the product is coming from greenhouses. Why? The energy footprint associated with a greenhouse often has a much higher carbon footprint than transporting products by land from the opposite hemisphere. Eco-friendly detergent is much better than hazardous bleach, but if it's been produced in a factory that (still) uses a process that generates toxic chemicals as byproducts, it's not very eco-friendly at all. And your average energy-star desktop workstation still consumes 80+ watts of power, which really adds up if you employees never turn them off. If all your employees are doing is word-processing and internet purchasing, they could be using a thin-client that only consumes 4W of power when in use, and a fraction of a watt in standby mode, hosted on a multi-core modern server that supports automatic power-down of processors, drives, and power supplies when utilization drops beyond a certain threshold.

4 GREEN MANUFACTURING

Green manufacturing has become the newest item in the mission statement of several manufacturing companies. The controversy between manufacturing companies and global warming tends to often dominate conversations between manufacturing companies and environmentalists. Several
manufacturing companies have begun going green, in order to reduce waste. In Green manufacturing, manufacturing equipment is made to be fast, reliable, and energy efficient. One of the examples is the energy-efficient light bulb. These bulbs use almost half the energy as a standard light bulb and yet they still produce a good amount of light. Manufacturing companies are using this example and re-designing their machines. Green manufacturing can benefit your manufacturing company in many ways. Not only it will benefit the environment, but it will impact your consumer, the shareholders, and the company perception in the market.

The first benefit of the green manufacturing is the impact it will have on the environment. Insurance companies are actually giving better rates to manufacturing companies that are taking steps to go green. The government is also offering tax breaks for green manufacturers.

The second benefit of the green manufacturing is the money it will save. Manufacturers can look for machinery that is earth friendly. Wind and solar energy can save your company thousands of rupees. The reality is that if you can save money on energy, your product costs can go down and your customers will not need to pay as much. In addition you can always maintain the same costs and turn a great profit on your products, helping out your shareholders.

The third benefit of the green manufacturing is the help it will provide to the community at large. Renewable energy sources are considered to be one of the fastest growing job markets. New manufacturing plants that are opening with renewable energy sources are offering many more jobs to their communities, giving them a larger respect in their market. Studies show that manufacturing companies that have gone green are expected to employ almost 70 percent of the new jobs in the future. Green manufacturing will be a large investment, for this some questions are arise here: i. why researcher’s going for green manufacturing? ii. Green manufacturing has some advantages or not?

It is important to know that there are also safety concerns that come with going green, especially if you are re-designing a facility that is currently in use. You may need to shut down parts of the facility while you install new equipment and transform your power source to renewable energy. Although the costs can be high initially, the benefits will far outweigh them. Both the manufacturing company and the environment will benefit greatly from going green.

It has been shown that employees that work for companies that have gone green highly value the company and they often have a higher performance level than other company’s employees.

Going green can also produces a better air quality for the employees and the community. Better air quality may be one of the biggest benefits of going green. With the public awareness surrounding going green, it is also important to go green to keep your manufacturing company competitive.

Some customers have begun making purchasing decisions based on products that are manufactured at facilities that have gone green and they boycott the other companies that do not have green manufacturing plants. Comparison table is constructed by us based upon the very useful and meaningful factors are shown below. The current damage to the earth has many concerned about global warming and the air quality. Going green is not only important for your employees and your community, but can be better for the bottom line.

5 Equations

The core idea is to maximize customer value while minimizing waste. Simply, lean means creating more value for customers with fewer resources. A lean organization understands customer value and focuses its key processes to continuously increase it. The ultimate goal is to provide perfect value to the customer through a perfect value creation process that has zero waste.

To accomplish this, lean thinking changes the focus of management from optimizing separate technologies, assets, and vertical departments to optimizing the flow of products and services through entire value streams that flow horizontally across technologies, assets, and departments to customers.

Eliminating waste along entire value streams, instead of at isolated points, creates processes that need less human effort, less space, less capital, and less time to make products and services at far less costs and with much fewer defects, compared with traditional business systems. Companies are able to respond to changing customer desires with high variety, high quality, low cost, and with very fast throughput times. Also, information management becomes much simpler and more accurate. Lean manufacturing is a management philosophy derived mostly from the Toyota Production System (TPS) (hence the term Toyotism is also prevalent) and identified as “Lean” only in the 1990s. TPS is renowned for its focus on reduction of the original Toyota seven wastes to improve overall customer value, but there are varying perspectives on how this is best achieved. The steady growth of Toyota, from a small company to the world’s largest automaker, has focused attention on how it has achieved this success.

JIT Manufacturing: Purpose of JIT is reduction of cost and quality improvement.

ISO 9000 AND ISO 14000: Purpose of ISO 9000 and 14000 are to recognize quality standards are followed by the companies and changes the motivation.

Zero Emission Strategy: Purpose of zero emission strategy is to environmentally damaging production products are eliminated.16% of companies are actively following zero emission. 85% of companies are following reduced emission strategies.

Six Sigma: Six Sigma is another management methodology which became very popular. It supports green production by
primarily eliminating defects from manufacturing processes and, hence, cutting waste. Through exercising greater care and management control minor investment defects are caught as early as possible through the process. As a result, significant savings can be made by reducing the number of defects, rework, and spending time on defective pieces.

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It was originally developed to eliminate defects from manufacturing processes and other business processes. Six sigma projects involve the utilization of statistics based on quality management tools, to train a group of people within the organization who become experts in these methods. Six sigma projects have quantifiable financial targets to make more money and, at the same time, satisfy customers and improve efficiency. They focus on customer requirements, cycle time reductions, error elimination and cost reductions. Elimination of defects from products or services being delivered, therefore, it has a direct impact on the bottom line of the business. Six sigma projects aim to cut out the waste of fixing the defects by rework or disposal which wastes a significant amount of an organizations resource.

6 GREEN MARKETING

Green marketing is a recent phenomenon in the developed world. It is about environment-friendly products marketing and creating awareness among the customers about the environment so that they are inclined to use green products. Green products are also known as environment-friendly, eco-friendly products.

This kind of marketing evolved in three phases – ecological, environmental and sustainable. It incorporates a broad range of activities including product modification, change in production process, packaging, modifying advertisement and labeling green. It also includes different levels and activities involved designing of innovative new products, which take care of pollution and waste issues. The third phase was "sustainable" green marketing. It came into prominence in the late 1990s and early 2000.

Unfortunately, a majority of people believe that ecological (green) marketing refers solely to the promotion or at each level of green marketing – tactical, quasi-strategic and strategic greening. This concept is expanding day by day but at a slow pace.

Although companies operating in Bangladesh are familiar with the concept of green marketing, its practice has not yet started because of many challenges. But, hopefully, this marketing practice will start in Bangladesh in the near future.

Green marketing is marketing of eco-friendly sustainable products that continue to achieve steady sales even during adverse conditions, especially among eco-aware customers. Such eco-friendly customers are generally loyal to their companies and brands, and are willing to pay more for sustainable green products.

Recycling, reusing, making efficient use of available resources, and minimising waste are emphasised in green marketing. As compared to conventional marketing, green marketing is emerging as an alternative that is affordable and eco-friendly. Along with print, direct mail, mobile and television, the internet is one of the most popular medium for conveying messages for green marketing.

The evolution of green marketing went through three phases. The first phase was called "ecological" green marketing. During this period, marketing activities were concerned with providing remedies for environmental problems. The second phase was "environmental" green marketing, when the focus shifted to clean technology that advertising of products with environmental characteristics. Consumers most often associate terms like phosphate free, recyclable, refillable, ozone friendly and environmentally friendly with green marketing. While these terms are used in green marketing, in general green marketing is a much broader concept, one that can be applied to consumer goods,
industrial goods and even services. In developed countries like the USA, UK, Japan, Germany, environment friendly products have good demand and are marked with "energy star" "eco-friendly" labels. In such countries manufacturing and marketing of green products are satisfactory. Some businesses integrated environmental issues into all organisational activities as society became more concerned about the natural environment.

One business area where environmental issues have received a great deal of attention and discussion in the professional and popular press is marketing. Green marketing, environmental marketing, eco-marketing are synonyms and frequently appear in the popular press. In many countries the governments have become so concerned about the activities of green marketing that they have taken steps to regulate them.

Unfortunately, the issue of green marketing in Bangladesh has no influence at all on either the government or the marketers. As a result, pollution and creation of environmental hazards are taking place. A marketer should offer ecological products which not only must not contaminate the environment but should also protect it, and even repair existing environmental damages. A green product should not endanger the health of people or animals; damage the environment; consume a disproportionate amount of energy and other resources during manufacture, use, or disposal; cause unnecessary waste, either as a result of excessive packaging or a short useful life; involve the unnecessary use of or cruelty to animals; or use materials derived from threatened species or environments.

The costs of making green products are higher than those of conventional products. So the prices of such products may be a little higher than those of conventional ones. Distribution logistics is of crucial importance, with the main focus being on ecological packaging. Marketing local and seasonal products, e.g. vegetables from regional farms, is easier than marketing imported "green" products. The market should put stress on environmental aspects. This may be publicised to improve a firm’s image. Furthermore, a company should emphasise environmental protection.

Ecological products will probably require special sales promotions. Perhaps no area of green marketing has received as much attention as promotion. In fact, green advertising claims grew rapidly during the late 1980s. In spite of being a new phenomenon, green marketing is practiced by many firms globally now. It offers some benefits to the organizations, which can expand the business and also be eco-friendly.

There are several reasons for the increased use of green marketing by businesses. Business organisations take environmental marketing to be an opportunity that can be used to achieve their objectives; they believe they have a corporate responsibility to the society; governmental bodies in many countries are forcing firms to become more responsible; ecological activities by competitors put pressure on firms to be eco-friendly; cost factors associated with waste disposal or reductions in material usage forces firms to modify their behaviour; marketers get access to new markets and gain an advantage over competitors that are not advocating "greeness;" marketers can charge a premium on green products that increase the profit; and green marketing builds brand equity and wins brand loyalty among customers.

Marketers do not have standards and benchmarks by which to validate their successes when they employ green marketing. Dangers and disadvantages of such marketing create several challenges that must be faced by the marketers. The challenges are lack of awareness among customers about green products and their benefits; lack of customer willingness to go out of the way to buy a green product; unwillingness to pay a premium for a green product; difficulty in winning customer trust as to the greenness of the organisation; and huge investments in R&D for product innovation.

Strong commitment to environmental sustainability in product design and manufacture can yield significant opportunities for a business to grow, to innovate, and to build brand equity. Green marketing can be effective and useful, but it must be in tune with customers’ needs. If environmental concerns are not important to customers, green marketing will not be effective. However, if customers do place high importance on green products and sustainability issues, green marketing can be a powerful way to positively project the company and its products and services. Adopting a green marketing philosophy brings an organization close to its clients, particularly those clients who have other environmental concerns besides maintaining the environment and rationalizing the use of natural resources. In this context, the study by researcher indicates a number of advantages resulting from green marketing practices, as follows:

**Owners’ satisfaction:** The green marketing approach is likely to open new horizons and good opportunities for organizations that practice green marketing. This, in turn, is likely to provide organizations with the ability to avoid traditional competition and to thereby achieve competitive leadership in the market, especially when they introduce environmentally friendly products and target those who had environmental trends in the market. This competitive situation will lead to more profits in addition to promoting a good reputation and meeting the owners’ needs.

**Organization social acceptance:** Organizations who adopt a green marketing philosophy will gain strong support in the community because of their goal to benefit all society through their commitment to the environment. This support will help the organization to consolidate its relationships with current customers and to gain new ones in the future. Sustainability of activities: Green organizations, which avoid legal problems and have strong support in the community, will obtain general acceptance for their goals and philosophy. This support for their operations and business activities will help them to continue to provide the market with environmentally friendly products.

6 **Reverse Logistics**

Reverse logistics has been defined as "the term most often used to refer to the role of logistics in product returns, source
reduction, recycling, materials substitution, reuse of materials, waste disposal, and refurbishing, repair and remanufacturing.”

Environmental Performance Index (EPI)

It measures the effectiveness of national environmental protection efforts in 132 countries. Reflecting our belief that on-the-ground results are the best way to track policy effectiveness, EPI indicators focus on measurable outcomes such as emissions or deforestation rates rather than policy inputs, such as program budget expenditures. Each indicator can be linked to well-established policy targets. The 2012 EPI ranks 132 countries on 22 performance Indicators that capture the best worldwide environmental data available on a country scale.

Bangladesh Ranks at 115 of 2012 Environmental Performance Index, which is weaker performer.10

4 CONCLUSION

Cost and complexity are perceived as the biggest barriers to implementing Green SCM, which highlights the need for cost effective and easy to implement solutions. Brand building is one of the top incentives for green SCM, highlighting the importance of public perception of how companies operate. Recycling of raw materials and component parts are the top green manufacturing and production focused initiatives Adoption of green practices is highest in those areas of the supply chain where there is a direct relation to cost savings and efficiency, for example in inventory reduction, recycling of raw materials. Almost a third of respondents are not collaborating with their extended supply chain on green practices.

Most of the Bangladesh manufacturing small and medium enterprises like cutting and hand tools and auto parts and spare parts and industrial equipments and machinery manufacturer and various other products manufacturer are seem to be quite advanced in the implementation of green warehousing and distribution initiatives, most likely because these initiatives often also mean added efficiency. While green supply chain management shows direct cost and efficiency benefits, then why more companies have not adopted them up to now?

EPI-2012 rank of Bangladesh is worst, this also shows that awareness of green supply chain management and greening in Bangladesh is poor, so there will be need to spread the knowledge of green supply chain management, with the help of this green supply chain management, Bangladesh manufacturing enterprises get their cost and efficiency benefits.

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