Cover Story
Green Supply Chain – “Prospect In Making”

This issue also contains articles related to
Manufacturing Industry – Is it going to get ‘MODI’fied?

Personality of the Month
Armand V. Feigenbaum
From Editors Desk……

Noesis is pleased to release the August edition of LeadTime. We’ have reinvented the newsletter and incorporated views from not just SIMS but also across various B-schools in the country.

An article writing competition was conducted and after observing stiff participation from B-school like NITIE, IIFT, FMS, SIIB etc. We have narrowed down on the winners. The articles ranged from topics on Green Supply Chain Management, e-Commerce to Manufacturing Industry: Is it Going to get MODIfied? At your perusal are the top 3 winning entries. New section have been introduced in this edition which highlights the growth of E-Retail giants, Flipkart and Amazon, in India. Hope you enjoy this edition of LeadTime & gear up for many more competitions in the pipeline. Congratulations to the winners and contributions from participants.
Green Supply Chain Management

Need of the Hour

Increased awareness among the consumers about global warming and other environmental issues has raised questions about characteristics of products they are willing to buy. As a result, balancing tradeoff between economic and environmental performance has become crucial for organisations. Organisations are preparing themselves to face the questions on their carbon footprints, manufacturing processes, supply chain management etc. Various organisations are trying to integrate environmental practices into their strategic plans and daily operations. Most of the governments provide incentives to organisations to become more environmentally friendly. Some of these incentives may be under the mandatory regulations programs, but there is an increase in number of voluntary green programs. Organisations look at environmental programs as an opportunity to earn competitive edge. Many organisations have shown positive relation between environmental programs and financial benefit. Some companies indeed have converted green programs in profits also. For creating environmental image and modifying the purpose of the business, one of the environmental initiatives taken up by organisations is making their supply chain greener. Supply chain management is defined as management looking after movement of goods through a chain of various functions. A typical supply chain consists of production, distribution, warehouse, and retail. It includes movement and storage of raw material, manufacturing, and delivery of finished goods from point of production to point of consumption. The process depends on the natural resources. Study shows that emissions and waste caused by supply chains are the reasons for global warming and acid rains problems. Green supply chain refers to basic the operations of supply chain done by considering the context of environment. Green supply chain consists of purchasing function’s engagement in actions related to 4Rs viz. reduce, recycle, reuse, and replace. It takes care of practice of monitoring and bettering environ-
The intensive decline in quality of environment such as pollution, natural resource depletion, overburden on waste disposal sites etc. is leading to adaptation of green supply chain management (GSCM). It just not deals with only better environmental practices but also with better business sense and more profits. The basic intention behind GSCM is to balances the market performance and environmental issues related to that particular business. To overcome challenges such as pollution minimization, energy conservation etc. organisations have incorporated green supply chain for making network of suppliers to procure environment friendly product, or for creating mutual approach for reducing the waste, for increasing operational efficiencies. In 21st century, GSCM is one of the biggest challenges that industries have, especially logistics management. In the context of Indian manufacturing firm inbound and outbound logistics are the major reasons for heavy pollution. Hence are the issues for concern. Below figure depicts environmental impacts at each stage of supply chain. According to research, it is always good practice to consider cumulative environmental impacts of all stages, so as to avoid shifting of those impacts from one stage of chain to other.

**Greener Approach**

**Green Relationships**

GSCM also have to build chain by establishing long term buyers and suppliers relationships. For creating and maintaining the same, organisations have to incorporate a range of initiatives including sorting out suppliers on the basis of environmental integrity, providing training to supplier for maintaining and improving his environmental management systems, creating proper reverse logistics systems to retrieve products and packing material for reusing and recycling.
Green Design

Environmentally Conscious Design (ECD)

Organisations are focusing on design decisions affecting environmental compatibility of a product. The general practice is by substituting hazardous material or process by less harmful one. Through competent designs and technologies substitution can be achieved. ECD includes the technological and social aspects of the designing, manufacturing, processing and use of products. ECD leads to cleaner factories, worker safety, reduction in end disposal cost, reduction in environmental adverse effects, improvement of product quality, and betterment of social image. ECD practices helps to reduce, reuse and recycle the waste.

Fig 2. Green Supply Chain Design

Source: Green supply-chain management: A state-of-the-art literature review
Life Cycle Assessment (LCA)

Life cycle of a product comprises of four stages viz. introduction phase, growth phase, maturity phase, decline phase. These stages directly or indirectly have impacts on greening of chain. Product is designed in introductory phase in accordance with environmental issues. In maturity and decline phases reverse logistics and process improvements play major role. While growth phase production capacity and logistics channels are considered according to their environmental friendliness.

Green Operations

Green manufacturing and remanufacturing

Manufacturing is the key area of supply chain. Green manufacturing and remanufacturing can help to minimize energy and resource consumption. It incorporates three processes viz. recycle, repair, and reuse. Recycling aims at market and regulatory factors. It helps to recover the material content from used products. According to study up to 95% of cost incurred in recycling is due to logistics. Automobile, papers, tyres, and electronics are the dominant industries in recycling. Remanufacturing is recycling based manufacturing which helps to minimize wastes and resources depletion. It is set of activities for reclaiming value from used or non-functioning products.

Repairing literally means to restore to well condition after damage, so as in industrial context. Although quality of repaired products is lower quality than new products, repair can help to freshening up products. It is the most critical step in remanufacturing. Repairing helps supply chain by reducing capital and operational costs. It is mainly consist of dismantling, demolition and reprocessing. Reusing is a process of using used products again without any processing. Apart from other processes in supply chain packaging is the process where reusing can be done effectively. It is also known as strategy for ‘Zero solid waste’. Reusable packing includes reusable pallets, containers, and racks etc. that move products across supply chain. Reuse gives fast returns on investment and also allows lower cost per trip than single use packaging.

Reverse logistics (RL)

By designing efficient RL, company inherently tie the knot of supply chain with greener factor. RL is used for collection in the recovery process. It identifies product types and location to be collected. Next it sorts out material of interest at the point of collection or afterwards. Sorted material goes for recovery, ultimately results in waste reduction. Efficient RL helps companies to rip out inefficient return processes, causing unneeded transportation. It helps company to reduce carbon footprint. Perfect example of RL is in 2010, PepsiCo in association with Waste Management, deployed thousand “Dream Machines” that will provide rewards to consumers who participate for collection for bottles.

Waste management

Which comes out of the loop of GSCM is waste, which is no more reusable. Waste can be then incinerated, disposed, or used in composting. Using multi-objective location and allocation model supply chain can do waste management vary effectively. Model produces general policies for identifying areas suitable for waste collection and treatment. GSCM focuses on minimizing disposal. Although initial investment is there, reduction in waste will recover it. Waste management helps to improve public image and to reduce overall cost.

Limitations

Although the trend of making supply chain greener is becoming famous, many organisations have doubt regarding how to start and how to achieve. Traditional supply chain improvements include visibility, rectifying major problems, effectiveness, and minimization of cost. Despite the growth of green supply chain adaptation, traditional goals are intact with supply chains.
According to studies, incorporating green supply chains those are little related to your firm will not aid in achieving your firm’s objectives. For example, if firm decides to use biodegradable packing material which costs more than 15% of previous packing material, firm goes against their objectives of cost minimization. If firm has objective of cost reduction, green supply chain implementation should comply it.

![Fig 3. Advantages of GSCM](source: Global GSC survey 2008 (Technology Consultancy Bearing Point and Supply Chain Standard))

Effective IT systems are crucial for supporting GSCM throughout all the stages of product life cycle. Those help in tracking, tracing, and creating informative reports. Lack of IT systems in various organisations is also major roadblock. Organisations rich in experience and having financial feasibility can accommodate technological advancement more easily with changing time comparatively medium and small scale organisations. This creates barriers in overall supply chain as small and medium scale organisations are one of the elements. Some of time consuming environmental regulations, fees results into discouragement of organisations implementing GSCM. Business is all about profits! The major barrier to GSCM is cost. For incorporating green factor in GSCM, organisations have to bear direct cost and transaction cost. Both the costs are pretty high at initial phase, and this troubles the organisations.

**Conclusion**

Present system of activities of the organisations is deteriorating the environment. A day is not far when damage to earth will become irrevocable. Collaboration of environmental practices with strategies and operation decisions is a fact that organisations will or have already came across. GSCM will help in reducing adverse impacts on environment. Along with objectives organisation should decide their goals and should recognize how the conversion to green supply chain can help to achieve them. For example if firm wants to reduce cost incur by use of energy, then it can prepare strategy for using more energy efficient and greener products. Incorporating environmentally influential policies with activities of supply chain will give organisations competitive edge over the competitors. Hence it’s a give and take policy!
Table 1. Green Supply Chain Management vs. Traditional Supply Chain Management

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<th>Characteristics</th>
<th>Green Supply Chain Management</th>
<th>Traditional Supply Chain Management</th>
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<td>Objectives</td>
<td>Ecological &amp; Economic</td>
<td>Economic</td>
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<td>ecological Optimization</td>
<td>High Ecological Impacts</td>
<td>Integrated Approach</td>
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<td>Supplier Selection criteria</td>
<td>Eco logical Aspects Long Term relationship</td>
<td>Price Switching suppliers quickly</td>
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<td>Cost Pressure</td>
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<td>Speed</td>
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FLIPKART  
AMAZON

Launch of Flipkart.com
Acquires book recommendation network weRead

Sep 2007  
Oct 2008  
Dec 2010  
April 2011  
Oct 2011  
Feb 2012  
Nov 2012  
Sep 2013  
Mar 2014

Jun 2013  
Jul 2013  
Oct 2013  
Jan 2014  
Mar 2014  
Apr 2014  
Aug 2014

Acquires music streaming portal Mime360
Government raids Flipkart warehouses

Launches Flipkart Android app
Reaches $1B GMV run rate

Accel Partners (India) invests $1M

Launches amazon.in - Starts with stores for physical books, movies and TV shows.

Introduces Amazon App for Android phones
Open its second fulfilment centre at Bangalore

Ties up with BPCL - easy pick up of deliveries for customers

Kirana stores pilot in Bangalore for better service

Flipkart broke the $1 billion financing ceiling last week, Amazon announced over $2 billion in investments to grow its operations in India.
Manufacturing Industry: Is it going to get 'MODI'fied?

SECOND PRIZE
Abhirup Chakraborti
Krishna Kishore
Institute: SIIB
Course: International Business.

"Manufacturing is the Achilles heel of the Indian economy."

This quote by Mr. P Chidambaram during the interim budget exactly captures the state of Indian economy without the suitable contribution of the manufacturing sector. The manufacturing sector declined by 0.2% in 2013-14 compared to 1.1% growth in the preceding year. This decline had a severe effect on the GDP of the country and the economy as a whole. Any country which plans to become self-sufficient needs to invest in its manufacturing sector. India tried to ignore this sector and promoted the service sector. There is nothing wrong in promoting the sector we are good at, but the issue is services sector makes us more dependent on the foreign economies. This is the reason why services were not able to support significantly to India’s GDP during the US recession and Eurozone crisis. The US and Euro clients cut back on their discretionary spending resulting low revenue to the India’s service sector. During such hard times is when manufacturing industry can fill in and keep the economy riding high. The manufacturing industry makes us self-dependent, at least, to fulfill our basic needs. The previous government failed to address the issues faced by the manufacturing sector. The Modi government is seen as pro-business which would help in reviving the country’s economy. In the speeches during the election rallies Modi focused on multiple issues but most importantly he reiterated the potential that manufacturing industry can deliver. With Gujrat government at the hindsight the whole country believes in one man to take us out of this slump-Narendra Modi.

I perceive Narendra Modi as a visionary more than as a leader. It takes a visionary to build a state after the gory riots and equally devastating earthquake. Our country is in a similar situation right now and as they say “Commeth the moment, Commeth the man”. Instead of speculating on whether Modi could stimulate the industry we can take a cue from the recently concluded Union budget. This budget seems to be a step forward in reviving this failing industry. As this juncture when India is reeling under stagflation, Arun Jaitley with the tight
resources at his disposal tried to give a starting boost to the industry. Lot of policies was declared which directly or indirectly can act as a life-saving pill to the diseased sector.

The 10% exemption of customs duty for parts used in the manufacturing of some categories of small television and exemption of 4% additional special duty on laptop will reduce the cost of local TV/laptop manufacturers. Companies like Videocon, Weston India, Mirc Electronics (maker of Onida) and Salora International are set to gain the most. Moreover, an education cess of 3% was imposed on imported electronic products. This move will provide a level playing field to the local producers. The customs duty on flat rolled products of stainless steel is set to grow to 7.5% from 5% so as to make the imported steel costlier and thereby spur the growth of local stainless steel manufacturers.

The budget also proposed an allowance of 15% to those companies which invest more than Rs 25 Cr in new plants and machinery in the next three years. This is another move to promote manufacturing in the country. This budget also clarified on some of the contentious issues which were troubling the sector for quite some time. The SC ruling in Fiat case had affected automobile industry, consumer durables, FMCG and chemical sectors in a big way. Because of that ruling the excise department was raising retrospective tax demands on discounts given to customers. This budget clarified that excise duty would be collected only on final sale price. Mr. Jaitley also tried to rectify what he called an Inverted tax structure where the import tax on finished products is lower than that on parts. The local manufacturers were badly affected by the inverted tax structure.

Above were some of the policies which would directly affect the manufacturing industry. There were many announcements which would impact the industry indirectly in a positive manner. For manufacturing industry to flourish, the infrastructure is very much required to be in place. The government announced a slew of measures to build up this another ailing industry. The government proposed to build 8500 km of highways which is three times more than the best achieved so far. The government also plans to pump in some more investment in the cash strapped sector. Creation of Infrastructure Investment Trust and Real Estate Investment trust are some of the ways through which it wants to resurrect the infrastructure sector without costing much to the exchequer. The power sector is another ancillary sector which is required to be in good shape for manufacturing to grow. The government plans to invest Rs 500 Cr on ultra-mega solar plants. 10-years tax holiday would be given to the companies if they start generating, distributing and transmitting power by March 2017. The Golden Quadrilateral is the legacy of the previous NDA government. This new NDA government would certainly like to build few more.

Entrepreneurship also got a boost in this budget. It proposed to setup Rs 10000 cr corpus to fund early stage companies. This would be the second largest venture fund in the country and would place India right after Silicon Valley and ahead of China in terms of early stage capital. There are other policies which would enable each and every individual to succeed. This shows that the new government is not just planning to revive the old local industries but also looking way ahead to make India self-sufficient and more export driven rather than import driven.

All the above mentioned policies should be looked at as an impetus to setup a basic environment, which would be conducive for the manufacturing sector, in the country. The sector faces lot of problems due to many reasons. This budget partially tried to mitigate some of those reasons and gave an indication that there are a lot in the offing once the economy becomes stable. The market is upbeat after Modi became the PM. The investments which at one point became viscous have started to flow again. The economy is slowly starting to shed the flab that has set in. The sluggishness is gradually making way for agility. The dreams are again transforming into aspirations. This is the right time to cash in the enthusiasm of the public and the new government seems to be doing just that. If such tandem in maintained between the market and the government then I am sure “Achhe Din aane wale hain”. 
The manufacturing sector in India needs a lot of attention. The people of the country have given the helm to Narendra Modi. Now, it is upto him to deliver what all he promised before the elections. India is a developing country. So is China. But, why is China today an $8.1 trillion economy, where as India is just $1.8 trillion. This is despite the fact that in 1991, India was a $325 billion economy, while China was just $355 billion. So, what happened? The answer is in manufacturing. India has lagged behind other developing countries because of the lack of investment in the manufacturing sector. Consider the comparison with China. China’s domestic savings rate is 45%, while that of India is 28%. This is the key difference which has restricted India from expanding its wings and flying, i.e. improving in terms of education, health, poverty, and various other important segments. Domestic savings rate can, in simple terms, be seen as the investment done so that some sustainable return can be obtained. Now, India’s domestic saving rate is low because not much has been invested in the manufacturing sector. The challenge for the new Prime Minister of India, Narendra Modi, is primarily to boost the manufacturing sector. Before discussing about what Mr Modi is doing, let us first see the importance of the manufacturing sector. Manufacturing sector deals with the building of industries, plants, etc. These industries when operated, provide employment to people. As a result, the condition of the people, who were earlier unemployed and now, provided work by these industries, improves. The net income of the society increases. With this money, people can buy necessary items needed for survival.
Today, 1/3rd of the population of India doesn’t even get 2 square meals a day. So, the industries can basically provide the needy people with the basic essentials. Once, the need of food is satisfied, a person can buy medicines, clothes, or send children to school. Hence, an employment can actually make India move forward in terms of not only one aspect, but many interrelated aspects as mentioned above.

It is clear that the manufacturing sector is the key for India to come back to a high growth trajectory. But, wait. How India came down from a high growth trajectory? This is the question that needs some thought. India was growing near 10% few years back. Then how the growth nearly halved in just 4 years period. The answer to this lies in how the government utilises the most important resource, i.e. money. And, it has not been properly utilised by the UPA government. For that, let us talk about the budget. A budget has two components – Receipt and Expenditure. Receipt is the total amount obtained by the government through its sources, like tax collection, borrowing, etc. Expenditure is the spending of the government. Expenditure itself can be of two types. One can be planned and the other non-planned.

The planning commission allocates capital to various sectors like education, healthcare, etc. It allocates these from the amount allocated to it by the government. The other is non-planned expenditure and that is the amount directly spent by the government. It has been seen that the Planning commission allocates the amount allocated to it more wisely than that done by the government directly. Capital expenditure is the key to growth, since it is the investment which will yield good results. This is basically like investing in those industries about which we talked about. In the budgets given by the UPA, it has been seen that the capital expenditure is around 1/8th of the total expenditure. This is where the problem lies. The major chunk of money has gone in revenue expenditure, which is basically non-productive. Wait, let us see what Narendra Modi has done in the July 10 budget. The total expenditure has been increased to Rs 1794891 crores from Rs 1590434 crores. Capital and revenue expenditures, both have increased. UPA had allocated Rs 229128 crores last year to the total capital expenditure, though it actually happened to be Rs 190894 crores only, when the revised estimated came. But this time, the target is not even equal to the previous target. The capital expenditure proposed by the Modi government is just Rs 226780 crores. This is less than the previous set target. However, more important than setting a target is to actually achieve it. So, it is yet to be seen whether Modi will be able to achieve this target or he will be like the UPA government.

It is high time that the government be accountable to whatever it says or does. In the last budget presented by UPA, it was around 40,000 crore rupees (80,000 crore rupees according to moody) were deferred to the PSUs. This helped show the fiscal deficit of the government to be Rs 529,000 crores. The government should be strictly accountable to any decision it takes. The deferred amount to the PSUs will hamper any growth possibilities of these PSUs. Anyways, it is high time to improve the status of these PSUs. One possible solution is by disinvesting these PSUs and making them private. It is evident from the fact that the domestic savings rate of private sector is 9%, while that of public sector is -4%. Yes, you saw it right, it is negative. That means, public sector is harming the country the way investment is being done in the public sector. A big challenge in front of the Modi government is to disinvest these PSUs. That can help in increase in the manufacturing activities, resulting in higher growth of India.

Another important factor restricting the country is the SLR. This is the percentage of the amount of the banks that has to be put in the government bonds. Now, these bonds give low return. As a result, to make profit, banks have to charge higher interest from its customers. This results in lower growth of the businesses. Also, the money put in the bonds is with the government. This large amount with the government results in improper spending by the government. The large revenue expenditure, including subsidies, which barely reach the ones it is intended to give to, is a result of extra money with the government. If the SLR is reduced from 22.5% to somewhere around 10%, then government will get less amount of money, and will spend it wisely.
Banks will provide loans at lower interest rates and hence, businesses will get a tremendous boost in India.

Modi government has taken some new steps recently. The FDI limit has been increased in insurance from 26% to 49%. This will help in the inflow of capital as foreign players know of the tremendous opportunity in insurance in India. 6 out of every 7 people in India are uninsured. But, insurance companies play an important role in nation building. The profit of the insurance companies (most of the revenue is profit) is invested in long-term projects. This helps in the development of the country. So, giving such a sector to foreigners is not wise. But, more important than that is the retention ratio, i.e. how much capital is invested in India from the total. If it is made sure that investment is in India, then even foreign ownership of insurance does not matter.

Challenges are many, but Modi has proved it before that he has the capability to deliver when it comes to manufacturing sector. He is considered as business friendly person. He has built a number of dams in Gujarat and that has helped the farmers a lot. The average agriculture growth rate of India is close to 3%, whereas that of Gujarat is 11%. This is despite of the fact that Gujarat is one of the states in India which receives the lowest rainfall. This shows that if the right things are done, then even the impossible-looking things can be made possible. But, for that a visionary is needed Modi seems to be that man. But, there is long time for him to set thing right. Considering the grave situation the country is in, a long time is in fact required to get the country back on track. But, once India gets back on track, then there is no stopping. With a median age of population as 26.5 years, India is full youngsters. With so much youth, surely comes optimism, hope, and the courage to face challenges. India will no doubt be a superpower after 15 years. But, for that, manufacturing sector needs to be improved. And, to do so, the person at helm should think selflessly of the future, and not think of the present and jeopardise the future of the country.

References:
Born on April 6, 1922. An American quality control expert and businessman.

Devised the concept of Total Quality Control, later known as Total Quality Management (TQM)

Received a bachelor's degree from Union College, his master's degree from the MIT Sloan School of Management, and his Ph.D. in Economics from MIT.

Director of Manufacturing Operations at General Electric (1958–1968), presently he is the President and CEO of General Systems Company of Pittsfield, Massachusetts, an engineering firm that designs and installs operational systems.

Wrote several books and served as President of the American Society for Quality (1961–1963).
Hidden plant Concept

Visible Costs of Quality

Hidden Costs Of Quality

- Scrap
- Re-Work
- Returns
- Refurbishment
- Unhappy Customers
- Distracted Staff
- Complaint Investigation Cost
- Extra Inspection and Testing
- Extra Operations such as touch ups and trimming
- Poor Product Performance
- Missed Shipments
Contributions to the quality body

- **Definition of TQM**
  "Total quality control is an effective system for integrating the quality development, quality maintenance, and quality improvement efforts of the various groups in an organization so as to enable production and service at the most economical levels which allow full customer satisfaction."
- **The concept of a "hidden" plant.**
  The idea that so much extra work is performed in correcting mistakes that there is effectively a hidden plant within any factory.
- **Accountability for quality.**
  Because quality is everybody's job, it may become nobody's job—the idea that quality must be actively managed and have visibility at the highest levels of management.

AWARDS AND RECOGNITION

- First recipient of ASQ's *Lancaster Award*
- ASQ 1965 *Edwards Medal* in recognition of "his origination and implementation of basic foundations for modern quality control"
- **National Security Industrial Association Award of Merit**
- Member of the Advisory Group of the U.S. Army
- Chairman of a system-wide evaluation of quality assurance activities of the Army Materiel Command
- Consultant with the Industrial College of the Armed Forces
- Union College Founders Medal
- Fellow of the American Association for the Advancement of Science
- Life member of the Institute of Electrical and Electronics Engineers, American Society of Mechanical Engineers and Plymouth Society of Marine Biology