

# Background note-Logistics

## Confederation of Indian Industry Kolkata

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# Cygnus

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## 1. Introduction

Logistics forms an important element of supply chain management, which integrates functions like marketing, planning, distribution and purchase with manufacturing. Logistics primarily consists of the following activities:

- ❖ Purchase and Supply of goods,
- ❖ Material/goods handling,
- ❖ Transportation
- ❖ Storage ,
- ❖ Distribution ,

Logistics plays a crucial role in business as it is involved in the entire supply chain starting from purchase of materials to supply of finished products. Logistics costs account for 15-25% of the cost of the final product in India, which is much higher than 7-9% in developed countries. Logistics contributes 13-14% of GDP in India, when compared with 10% in US. The relative inefficiencies in logistics in India can be attributed to inadequate logistics infrastructure (both physical infrastructure and technological), laborious paper --based and manual processes and fragmented supply chains.. Currently logistics in India does not have an industry status. The absence of a uniform tax structure and procedures in all the states often leaves the transporters or 3PL providers to face delays at check posts, creating bottlenecks in transportation. These frequent delays also result in enormous increase in transportation costs, which go up to 40 % of the total logistics costs.

### 1.1 Global logistics industry

Logistics is one of the key economic activities throughout the world. Global logistics industry is estimated to be worth \$3.5 trillion in 2005, out of which over 25% is contributed by US alone. The retailing industry accounts for more than 70% in the global logistics industry. Other major industries that contribute to logistics industry are Automotive, Hi-tech, Pharmaceutical and Consumer Electronics

Asia-pacific is the leading regional market in Asia accounting for more than a third of the Asian logistic industry. Global logistic industry is highly fragmented and success in logistics depends on ultimate resource management and customer specific IT applications. There exists a large market and the developing countries should focus on means of achieving efficient logistics so that the overall economic loss can be minimized. Over the next five years the high potential logistics markets will be US, China and India.

### 1.2 Indian logistics industry

Indian economy has been showing robust growth coupled with domestic consumption and international trade (import & export) supporting growth in logistic industries. Moreover, during the period 1991-2005, India's imports have gone up at an average rate of 8.8 %, while exports have registered a growth rate of about 9.27% annually. These have positive impacts on the logistic industry as a whole, by way of inbound and outbound logistics. Contribution of logistics industry to India's GDP has risen in recent years. Estimates from various published sources indicate that logistics in the country at present contributes around 13-14% of the GDP, out of which transportation alone contributes 40%. .

India is the fourth largest economy in Asia and is being considered as the land of opportunities for logistics service providers. The demand for logistics services has been largely driven by the remarkable growth of the Indian economy, which was 7.6% in 2004-05; 8.1% in 2005-06 and is predicted to grow between 7.5-8% in 2006-07. Logistics management in India is very complex considering the fact that around 10 million retail outlets, mostly in the unorganized sector, are catering to the needs of 1.1 billion Indian populations. In the last few years, there has been a spurt in organised retailing not only in metros but also into small towns which indeed will help logistics industry to grow. Besides, a number of companies from US and Europe have been outsourcing manufacturing operations to India and large global retail chains are sourcing their supplies from India. These factors are driving the Indian logistic market to grow at a CAGR of 7% for the next five years. More and more Indian companies are outsourcing their logistic requirements to third party logistic companies. With the increase of 3PLs in logistics industry, the efficiency will increase.

## 2. Existing Infrastructure in India

India lacks in infrastructure commensurate with the size of the economy and the potential it has in the future. So, Central Government initiated an ambitious reform plan for infrastructural development. According to Government officials, India needs to invest about US\$150 billion in infrastructure, in the next few years to sustain the present growth rate. While India's investment rate was 31% of GDP currently, this has to increase in the coming years accompanied by significant foreign investment in the infrastructure sector. Current infrastructural bottlenecks are estimated to impact the economic growth rate adversely, by as much as 2%. Addressing infrastructural gap in roads, ports, power plants and railways may help the economy to grow at 10% from 8% at present. The country plans to increase infrastructure spending on roads, ports and telecom by 24% to \$22 billion in the current financial year. However, this is still inadequately small as compared to China's spending on infrastructure annually which is \$150 billion. It is clear that the large amount required in infrastructure development can not be funded by government alone, the involvement of private parties and FDI is a must to sustain the present growth rate of India.

### 2.1 Port infrastructure

There are a total of 199 ports in the coastline of India, spread across 7,000 km. Out of these ports; only 12 are major ports which handles 75% of total cargo/port throughput in the country. The major ports are managed by Port Trust of India under Central Government jurisdiction and the remaining ports are under the respective state Governments. . Though the bulk of Indian trade is carried by sea routes, the existing port infrastructure is insufficient to handle trade flows effectively. Productivity of ports is calculated in terms of Average Ship Turn around (ASTA) and Average Ship Berth Output (ASBO). ASTA at Indian ports is currently around 165 hours, as against 6-8 hours in Singapore. This increases the detention period and charges at the ports, which in turn makes the Indian ports less competitive in the international market. Similarly, ASBO is now around 4 per day, which is much less than global standards. The reality is that Indian ports need to go a long way to achieve the benchmarks adopted at international ports.

**Constraints/Gaps:** On the basis of three important parameters- capacity, productivity and efficiency, Indian ports fall behind most of the international ports, particularly in South East Asia e.g., Singapore, Hong Kong, Malaysia and Colombo. As compared to these ports, labor and equipment productivity levels in India are very low, due to outmoded equipment, poor training, low equipment usage levels by labor, unprofitable labor practices, idle time at berths, and time loss at shift change, high mining scales and low datum.

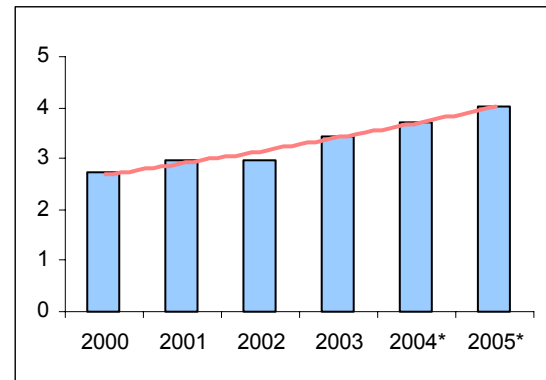
**Growth Movements:** Due to growing maritime trade, India's shipping ministry plans to increase current cargo handling capacity of the ports by more than double from 676m tonnes to 1,500m tonnes during next five years.. The ministry intends to increase capacity by upgrading old ports, setting up new ports, upgrading deepening channels, increasing and strengthening hinterland connectivity, and improving logistical services. In addition to the new ports at Gangavaram (Andhra Pradesh), Vizhinjam (Kerala), Kolachal (Tamil Nadu), a large number of ports have been identified in Gujarat, Orissa, and West Bengal.

## 2.2 Road Infrastructure

With over 1 billion population and 3.319m km of road network, India's road transport system is the second largest in the world after the US. Total vehicle fleet has grown from meager 0.3m in 1951 to be estimated 21.45m in 2005 (Excluding 58.5m motorized two-wheelers). There has been a rapid increase in the number of goods vehicle in India from 82,000 in 1951 to estimated 4.04m in 2005 (chart 1).

The road sector's share of freight traffic in India has gone up from 11% in 1950 to over 70% in 2005. Thus, it plays a significant role in overall economic development of the country. Currently, India's road logistic system handles over 900 billion tonnes-km of freight per annum. However, the supply of roadways and highways, in terms of capacity and quality, has not gone up at the pace demanded by the road transport system.

Chart-1: Total Number of Goods Vehicle in India (In mn)



Source: Ministry of Road Transport  
\*2004 & \*2005- Cygnus Estimates

**Constraints/Gaps:** High congestion and poor road infrastructure result in significant economic losses. Another big problem is the fleet of ageing trucks, as they are poor in fuel efficiency, cause higher pollution and have high maintenance cost. Inadequate road transport made Indian exports less competitive. In view of the increasing fuel prices, this congestion is resulting in higher losses to the economy. There has been a rapid increase in the number of highway accidents in the country. Over 75,000 people die per annum due to highway accidents which causes an annual economic loss of around Rs550 billion (excluding any allowance paid for pain and sufferings). Another serious problem is the poor rural road infrastructure. Rural population in India constitutes 70% of the total population, so all around development activity depends heavily on rural road networks. Ironically, over 40% of India's rural areas don't have access to all-weather roads.

If Indian economic activity is to maintain at a high trajectory, the road transportation system needs to be toned up. Current geographic intensity of roads in India is 0.67 km per square km, which needs to be increased. With the current growth trends, demand for road transportation will grow over 10% per annum. About 25% of country's national and state highways are congested and as a result, average speed of trucks in India is 30 km per hour, which is half the average speed in China and other developed countries.

In India, major economic centres are not linked with expressways and most national highways are only two-lane., Four lane roads stretch to only about 7,000 km in India, against over 34,000 km in China. At the end of 2005, total length of National Highways in India was just over 66,500 km, while in China, it is was about 1.9million km. Number of vehicles has been growing at an average rate of 10.2% per annum over the last five years and to support this growing demand the national highways are not equipped enough. In India, National Highway constitutes only 2% of country's total road lengths, but it carries over 40% of total road traffic.

**Growth Movements:** The Central Government has laid down an ambitious plan of making Indian roads on par with international roads. The main projects in the coming years are as follows:

1. The Golden Quadrilateral: a project linking the four metropolitan cities of Delhi, Kolkata, Chennai and Mumbai (called "the Golden Quadrilateral" - GQ) consisting of 5,846 km of roads. Almost 70% of the work of GQ has been completed and it is expected that the remaining 30% will be completed by the end of 2008.
2. The North-South corridor (Srinagar to Kanayakumari) and East-West (Silchar to Porbandar) consisting of 7,300 km of roads;
3. Other works including connectivity to major ports: Haldia, Paradip, Vishakapatnam, Chennai, Tuticorin, Cochin, Mangalore, Mormugoa, Jawahar Lal Nehru Port Trust, and Kandla, about 400 km of 4/6 lane roads.

## 2.3 Railway Infrastructure

The Indian Railways has grown into one of the world's largest Railway network in the world from the introductory period of 1853. Indian Railways has become the principal mode of transport in the country. The Railways has also been modernized in terms of technology, ticketing, computerization and operational management. These efforts have been in tune with the requirement of moving large volumes of passengers and freight traffic.

Indian Railway (IR) network is spread over 81,511 km covering 6,896 stations. Operating on three gauges - broad gauge (1676 mm) meter gauge (1,000 mm) and narrow gauge (762 and 610 mm). Almost all the double/ multiple track sections and electrified routes lie on broad gauge. 14,579 route km constituting over 19.5% of the total network and 30% of broad gauge network of Indian Railways is electrified. This carries approx. 41 % of the passenger traffic and 52% of the freight traffic on Indian Railways.

Indian Railways has nearly 121,699 bridges of which 10,799 are major bridges. The transportation is done through the use of 7429 locomotives, 2,53,186 wagons and 40,775 coaching vehicles. 1,56,846 telephone exchange

lines, 18,445 long haul MT km., 1,730 optical fiber communication route km and over 8,54,613 trunk tele-channels km distinguishes Indian Railways telecom network.

ZONAL DISTRIBUTION OF ROUTE IN KILOMETER	
ZONES	ROUTE KM.
CENTRAL	7,047
EASTERN	4,318
NORTHERN	11,004
NORTH EASTERN	5,107
NORTH EAST FRONTIER	3,816
SOUTHERN	7,049
SOUTH CENTRAL	7,203
SOUTH EASTERN	7,351
WESTERN	10,020
TOTAL	62,915
<i>Source: indiacore.com</i>	

Indian Railways system has developed a capacity to carry 441.58m tonnes of originating revenue earning traffic which in terms of transport output is 284.27 billion NT km (net tonne kilometer). During the year 2005-06, Indian Railways handled 667.39m tonnes of cargo, a growth of 10.7% as compared to the year 2004-05 and created a surplus as against deficit in the earlier years.

During 2005-06, Indian railways have stunned everyone by improving its turnaround performance in wagon loads and freight movements, which has increased its earnings by Rs15,000 crore. Wagon loading alone has Rs7,200 crore,

#### **Constraints/Gaps:**

- **Inflexibility:** It's one of the major constraints for the Railways as it is inflexible in nature. Unlike the road ways which covers almost the entire parts of the country including villages, the Indian Railways reach is comparatively limited.
- **Rail based Mass Rapid Transit System (MRTS) – Project Risks:** Mass Rapid Transit Systems are capital intensive and have long gestation period. It has been observed that in developed countries, the planning for mass transit system starts when city population size exceeds 1 million; the system is in position by the time the city population is 2 to 3 million and once the population exceeds 4 million or so, planned extensions to the Mass Rapid Transit Systems is dynamically taken up. In developing countries including India, because of scarcity of funds for planning and implementation of rail based Mass Rapid Transit Systems has been lagging far behind the requirements. The following are the major issues with regard to Mass Rapid Transit System projects in India.
  - Acquisition of land and private property
  - Relocation of public utility services
  - Statutory approvals and clearances
  - Political risk
  - Slow realisation of revenue stream
  - Competing modes – routing and fare structure - inter modal integration
  - Policies for encouraging/discouraging use of personalized motor vehicles.

#### **Growth Movements:**

##### **Indian Railway Budget Plans for the year 2006-07:**

With the need to bring in certain changes, the Railways budget has proposed plans for further development of Indian Railways. The major plans include:

#### **Major Technical Up-gradations:**

- New high capacity wagons being designed, and manufacture of aluminum and stainless wagons are planned for 2006-07.
- Payload to tare weight ratio to improve to better than 3:1, and thereafter around 4:1.
- Transfer of technology to be encouraged and use of IT to be expanded.
- Public Partnership and Public-Private Partnership to get major thrust.
- Inauguration of double stack container train in March, 2006.
- Development of strong wagon leasing market through suitable policy initiatives.

#### **Measures to Improve Freight Business:**

- Reduction in unit cost of freight traffic due to increase in loading capacity of wagons and some other measures.

- 25 tonnes axle load trains to run on two routes for the first time in the Indian sub-continent as a pilot project.
- Validity of brake power certificate for CC rakes increased from 6,000 to 7,000 km.
- Preferential Traffic Schedule modified and freight booked for distances beyond 800 km will be given priority within the class.
- Wagon manufacture to increase by 25%
- Production of Electric Locomotives to increase by 17% and diesel locomotives by 5%

#### Reduction of Losses in Passenger Business:

- “Increase Volumes-Reduce Unit Costs” strategy to be adopted in the passenger business also.
- Cut down losses in the coaching services by about Rs. 1,000 crore in the coming year and by 50% in the next three years by increasing number of coaches and occupancy of trains, reducing travel time and reducing losses in the catering and parcel segment.
- All India timetable to be re-worked de-novo, by using computerized simulation techniques.
- Over 200 Mail/Express trains to be made super fast.
- The number of coaches in about 190 popular passenger carrying trains to be increased up to 23-24 coaches enabling Railways to earn Rs. 200 crore additionally every year.

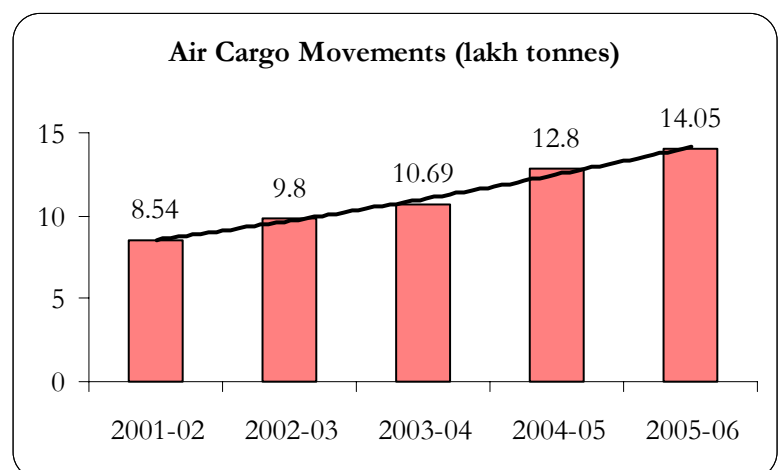
#### Reduction of Losses in Parcel and Catering Business:

- Policy of leasing out pantry cars and catering units at large stations through open bids to continue.
- Capacity utilization of parcel business to be improved.
- Assistant Guard’s cabin could also be leased out to the lease holders of brake van and parcel van, apart from the courier companies.
- 150 kg ceiling for booking luggage in the brake vans removed.

## 2.4 Airports Infrastructure

There are 449 airports/airstrips available in India. Among these Airports Authority of India (AAI) owns and manages 92 airports and 28 civil enclaves at defense airfields and provides air traffic services over the entire India airspace and adjoining ocean areas.

The air cargo handled at 46 major airports has witnessed an impressive growth rate of 13.25% annually during 2001-02 to 2005-06. The air cargo movements in 46 major airports have increased by 9.77% during the year 2005-06 to 14.05 lakh tonnes from the level of 12.8 lakh tonnes during the year 2004-05.



Source: Airport Authority of India

#### Growth Drivers:

- The escalating trade in pharmaceuticals and gems and jewellery sectors is considered to be a major growth driver for the civil aviation sector.
- The increasing exports with regard to garments, components, pharmaceuticals, dyes, chemicals and perishables like fruit, vegetables, flowers, fish and meat due to the reason that these items are being freighted out.

### Challenges

- There is need to declare some additional airports as international airports. These include Hyderabad, Ahmedabad, Guwahati, Bangalore and Amritsar. Consequently, the facilities have to be created and augmented.
- There is congestion in the international airports at Mumbai, Delhi, Chennai and Thiruvananthapuram and also the domestic airports at Delhi, Chennai, Bangalore, Goa, Ahmedabad, Cochin and Mangalore. The reasons are limited terminal and apron capacity, bunching of flights, delay in passenger clearances, etc.
- At many airports, passenger amenities need to be upgraded for which steps are under way or have not yet been initiated due to resource constrains.
- There are also deficiencies in respect of ground handling facilities, night landing systems, cargo handling, etc., at some airports.

## 2.5 Warehousing Infrastructure

During 2005, major ports in India had handled 423.41m tonnes of cargo while, major airports in the country had handled around 1.5m tonnes of cargo. On the other hand, road transportation, in India handles over 77% cargo which counts for over 1176 billion tonnes of cargo in 2005. With, population of over 1.1 billion, India's logistics industry has to go a long way. During 2005, total costs on warehousing and material handling in India was estimated to be over Rs37,500 crore, which was more than 9% of total logistics costs in the country.

In India, public as well as private sector organizations are involved in developing warehousing and storage facilities. In the public sector, there are three agencies which are responsible in building and maintaining large scale warehousing/storage capacities in the country. The agencies are as follows:

1. Central Warehousing Corporation (CWC)
2. Food Corporation of India (FCI) And
3. 17 State Warehousing Corporations (SWCs).

### State-wise warehousing and storage capacity with different storage agencies in India (As on 01-06-2006, in lakh tonnes)

STATE	FCI	CWC	SWC	Others	Total
Andhra Pradesh	34.30	14.60	22.58	12.85	84.33
Bihar	5.22	1.10	2.51	5.49	14.32

STATE	FCI	CWC	SWC	Others	Total
Gujarat	5.66	6.27	2.70	2.25	16.88
Haryana	21.87	5.20	14.09	15.90	57.06
Karnataka	6.06	4.50	9.45	4.31	24.32
Kerala	5.33	1.23	1.93	0.79	9.28
Madhya Pradesh	5.34	6.02	11.88	5.25	28.49
Maharashtra	15.55	15.49	12.16	13.69	56.89
Orissa	6.47	1.90	4.07	4.52	16.96
Punjab	69.83	7.09	57.31	60.67	194.90
Rajasthan	9.05	7.47	13.94	0.03	30.49
Tamilnadu	8.54	6.70	6.27	24.33	45.84
Uttar Pradesh	25.26	11.17	29.13	14.95	80.51
West Bengal	10.08	7.64	2.17	1.31	21.20
Jammu & Kashmir	1.12	0.00	0.00	1.49	2.61
Himachal Pradesh	0.26	0.07	0.00	0.40	0.73
Goa	0.15	0.42	0.00	0.14	0.71
Assam	2.57	0.65	2.49	1.10	6.81
Arunachal Pradesh	0.18	0.00	0.00	0.05	0.23
Manipur	0.18	0.00	0.00	0.23	0.41
Meghalaya	0.30	0.00	0.11	0.01	0.42
Nagaland	0.29	0.13	0.00	0.11	0.53
Sikkim	0.11	0.00	0.00	0.07	0.18
Tripura	0.34	0.24	0.00	0.31	0.89
Mizoram	0.18	0.00	0.00	0.00	0.18
Jharkhand	1.23	0.35	0.00	0.35	1.93
Uttaranchal	1.68	0.76	0.00	0.00	2.44
Chhattisgarh	10.40	2.09	6.70	0.00	19.19
Union territories	5.41	1.73	0.00	0.00	7.14
Total	252.96	102.82	199.49	170.60	725.87

Source: Department of Food and Public Distribution, GOI

### Constraints/Gaps:

Rising competition has posed many challenges and opportunities to the industry which require efficient management of forward and backward flow of material and information. Trade, without efficient warehouse facilities would be very difficult to ship goods produced. The warehouse is the important place where the supply chain holds or stores goods. The basic rationale for warehousing is as follows:

1. Encompassment of transportation
2. Consolidation
3. Desired product mixing
4. Servicing
5. Contingency purpose
6. Protection climate changes

7. And to smoothen the supply chain.

Warehouse, therefore, plays a crucial role for smooth functioning of logistics operation which ultimately supports the whole supply chain. In view of modern technological development, warehousing operation has become more complex, but with the efficient implantation of those technological innovations, India's warehousing operations can be functioned more efficiently, which in turn improves efficiency in supply chain management and customer satisfaction. By the development of adequate warehousing and storage facilities in the country, not only agriculture, but also there are other sectors which will be enormously benefited from it. These are auto components, iron and ore, cement, steel and light engineering.

**Growth Movements:**

In view of shortages of adequate warehousing/storage facilities in India, the Government of India has proposed to enhance warehousing facilities in the country in the 10th five year plan (2002-07). During 2006-07, FCI and CWC have proposed to add storage capacity of 6.11 lakh tonnes.

## 2.6 Special Economic Zones (SEZ)

A Special Economic Zone (SEZ) is a geographical region that has economic laws different from a country's typical economic laws and tax laws. Usually the goal is to increase foreign investments and generate employment. Special Economic Zones have been established in several countries, including the People's Republic of China, India, Jordan, Poland, Kazakhstan, the Philippines and Russia. China's exports growth typically depends upon its SEZs. The Indian Government is also taking necessary steps to create more SEZs.

Despite being prone to frequent changes in policy, SEZs have attracted hundreds of corporates, acting as an investment booster. While a total of 150 SEZs have been approved so far by the government, there are as many as 200 fresh proposals waiting for approval. According to government official estimates, total investments in SEZs are expected to be over Rs 40,000 crore in the next five years.

Although the interest shown by foreign players has been relatively low, a number of big players like Nokia, Apache and Foxcon have already received the green signal from the government. Nokia started production just four months after getting approval and is producing 2.5m sets every month generating a turnover of Rs 650 crore in the first four months.

South Korean steel company Posco's proposal of setting up a 12 million-tonne steel project in Orissa is estimated that its project cost will be US\$9 billion. This mega SEZ project is waiting for the nod from the Central Government of its approval, while the State Government of Orissa has already approved this Greenfield project. Big investments are also flowing in from Indian companies in SEZs. Reliance Industries has received approval for its 15,000-acre SEZ in Haryana, which it is building at an estimated cost of \$3.33-4.89 billion. Its Jamnagar petroleum and petrochemicals SEZ has already been notified.

Mahindra and Mahindra is operating two SEZs in Bangalore (IT and apparel & fashion) and has invested \$2 billion in it. Many companies like Wipro, Flextronics, Tata Consultancy, Serum Institute and ONGC have also pumped in huge investments in their respective SEZs.

There are currently a total of 18 operational SEZs in the country which includes eight export processing zones converted into SEZs. Only ten new SEZs have been notified so far. These include Divi's Lab's SEZ in Visakhapatnam, Wipro's IT SEZs in Hyderabad and Bangalore, Reliance's petroleum SEZ in Jamnagar, Adani's multi-product SEZ in Mundra, Serum Institute's Pharma & bio-tech SEZ in Pune, Chandigarh administration's electronics & IT SEZ, Flextronics' SEZ in Chennai and Tata Consultancy's IT SEZ in Chennai.

### 3. Supply Chain Management-Best Practices

#### 3.1 Innovative Best Practices of Supply Chain Management

Supply chain management not only helps organisations to improve their product delivery, customer satisfaction levels but also it can change the way business is done by way of innovative best practices. Following are a few examples of how innovative best practices are implemented by organisations world wide.

- Radio Frequency Identification (RFID) has improved Pantaloon, in saving time and improved the accuracy of merchandise movement. Pantaloon is one of the largest chains of retailer in India. Pantaloon India has been immensely benefited from an RFID project at one of its warehouse in Tarpaore by using 1000 RFID tags. At the factory outlet, RFID tags were attached to the merchandise and the data written to them. With the successful implementation of RFID, recording of data became smooth at the inward and outward terminals, which helped the company in saving time and gain accuracy. After the successful RFID implementation, the company has saved 80% time in inward warehouse processing and 12% in outward warehousing processing.
- Marico Industries, India's leading FMCG Company was facing acute distribution problem, as distribution is the heart of an FMCG company. Marico took several supply chain innovative initiatives to reduce growing supply chain problems. The company has redesigned the process and implemented fully integrated system. The system includes vendor management inventory system with the help of ERP, SCM planning tools and an information warehouse. With the successful implementation of this integrated system, the company has improved its services by reducing stock-outs at depot from 21% to 9% and at the distribution level from 30% to 15%. The system has also reduced supply chain exception costs by 64% and average total inventory by a fourth from 29 days to 22 days.
- Asian Paints, one of the first Indian companies to go hi-tech. The company has implemented new technology and supply chain management system in its sales offices and various plants. The company was facing problems in accounting and reporting applications (customer accounting, vendor payments, and financial statement creation) were centralized which require operating with substantial time lag that resulted in delayed reporting. Asian Paints looked at ERP solutions with global ambitions and it custom designed and embedded the processes. With the successful implementation of ERP and SCM solutions, the company was able to maintain its client server operation from all 88 locations.
- Italian company Benetton which earlier followed the practice of dyeing, the yarn before knitting the sweaters and later decided to knit first & do the dyeing after receiving orders so that the company will have a better idea of the ongoing fashion trends. By this way, the company is able to reduce the cost of obsolete inventory. Benetton's example illustrates that SCM can be innovative even in the seemingly different products.
- The American company, Planters, is a good example of how simple process improvements based on good understanding of the customers' requirements can help the company to customize its products without loss of efficiency. Planters realised that the basic products required by different retail chain is not different but the only difference is

the packaging requirement by customers vary significantly. By implementing tailor-made packaging line, Planters achieved innovative way of retaining the customers.

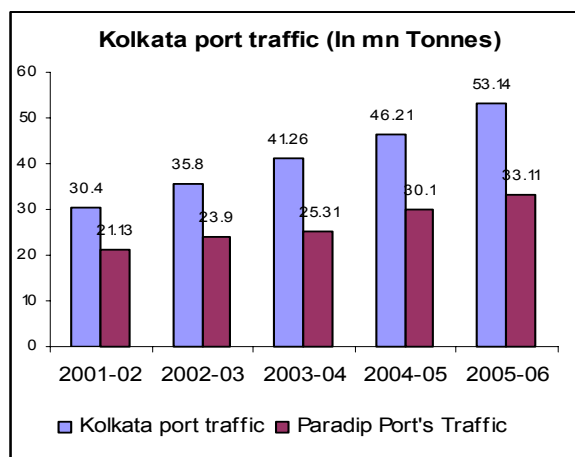
- BMW satisfies its customers using an innovative idea of its chief procurement officer. The concept was to add optic-fiber-enabled light rings to the headlights as distinguishing feature. Drivers on the German Autobahn and elsewhere can see distinctive lights of BMW and let it pass. BMW and the supplier jointly developed this idea and BMW gained the access to new technology.

## 4. Logistics Industry- Eastern Region of India

Eastern India has great scope to explore India's automotive industry boom as this region has a unique advantage as it is situated in the 'heart of India's steel geography'. The region has the cost-competitive advantage and is blessed with seaports, airports etc. In view of growing trade in South Asian countries, Eastern region plays a significant role in transshipment of goods. The region has huge untapped natural resources in states like Orissa, Jharkhand, West Bengal, Assam, Arunachal Pradesh and Bihar etc.

### Kolkata and Paradip Ports traffic surges by 13% in 2005-06

Burgeoning trade has attributed high growth rate at Kolkata port and Paradip port in 2005-06, particularly bulk cargo. During 2005-06, both the port together has handled total 86.25m tonnes of cargo, which is over 20% of total cargo handled by major ports in India. During 2005-06, import cargo at Kolkata Port has accounted for over 69% of total cargo handled by the port and the remaining 31% was of export cargo, while import cargo at Paradip Port has contributed 34.49% and the balance 65.5% of export cargo.



Source: Calcutta Port Trust & Paradip Port Trust

### Trade with South Asian countries will drive logistics activities in the region

India is trying to link up with the Greater Mekong Sub region of which China is a partner along with Myanmar, Thailand, Laos, Cambodia and Vietnam, and has renewed its trade ties with Myanmar. Recently, India has signed a Free Trade Agreement with Thailand, which will definitely improve region's contribution to country's total logistics industry. In addition, in view of India's keenness to expand its free trade measures to countries outside the SAARC region will improve country's trade with these countries. It is evident that in the near future India is willing to pursue closer trade and economic ties with its eastern neighbours, and there are possibilities for the entire north eastern region to seize its place as India's eastern entry pass.

India's Trade With Asia and North East Neighbours (In percentage share of India's total trade)		
Regions	2003-04	2004-05
Share of Developing countries	26.1	30.8
Share of Asia	19.9	24.2
Share of SAARC	2.4	3.3
Share of North East Neighbours*	4.4	8.0
*NE Neighbours include Bhutan, Nepal, Bangladesh, China and Thailand		
Source: Cygnus Research		

There has been a dramatic improvement in trade between India and its NE neighbouring countries, and it is expected to grow further. With this development, Eastern region will be highly significant to cater these trade requirements. Noteworthy, in view of lack of adequate infrastructure and the poor state of road, rail and air links with the neighbouring countries in

the North East, and other parts of Eastern region, the bulk of the trade is likely to move through the sea ports of the region.

**Challenges ahead-**

As India's trade with these abovementioned countries, is further improving, logistics activities will be highly intensified, which require more number of ports as well as airports to explore the potential. Port handling capacity at Kolkata & Haldia has to be increased, as well as Paradip. A serious attempt to integrate all innumerable possibilities of transportation in Eastern states is inevitable.

## 5. Technology Gap in Supply Chain Movements and Upgradation

Supply Chain Management (SCM) is more important in manufacturing and retailing businesses than any other business. One of the technological gaps faced by these companies is the difficulties in relating to planning and their scheduled delivery. Maximum small and medium sized companies maintain data in manual way and lack of automation in most of the processes. ERP is the new buzz word in this technological world to enhance the efficiency in SCM.

It is widely seen in recent years that technology has enabled SCM managers to increase the efficiency by way of reducing inventory by providing faster, more accurate information, how much to produce seeing the demand, how much capacity to be used, monitoring inventory within or outside the enterprise. The new age internet driven supply chain management link customers, suppliers, factories, warehouses, distributors, carriers and trading partners into one virtual company that offers greater interaction and responsiveness.

### 4.1. Technologies in Logistics

Identification and mobility technique of transport vehicles has come a long way. There are many technologies used in locating, tracking of truck positions and status of delivery starting from bar code, card technology to advanced techniques like (Radio Frequency Identification) RFID and (Real Time Locating System) RTLS. RFID is an automatic identification method, relying on storing and remotely retrieving data using devices called RFID tags or transponders. An RFID tag is an object that can be attached to or integrated into a product, animal, or person for the purpose of identification using radio waves. Chip-based RFID tags contain silicon chips and antennas. There are two types of tags. Passive tags require no internal power source, whereas active tags require a power source. The main advantage in RFID technique is the issues concerning personal privacy and system security.

Logistics is a service industry, so customer services and customer satisfaction directly affect the top line as well as bottom line of the company. Another challenge in supply chain management is the distorted information flow from one end of supply chain to other. Information Technology can be used to prevent this by sharing demand information on a timely basis so that products can be delivered at right time at right place. Take an example Federal Express Corporation (FedEx), for instance, it spends \$2 billion annually on technology and TNT so far has spent \$500m, resulting in a saving of \$100m. FedEx has around 5,000 people dedicated to technology development in centres across the globe. Blue Dart Express, India also has a dedicated technology development team in Mumbai and spends around three percent of its revenue on information technology. The use of internet has enhanced the effectiveness of the supply chain management. At a more advanced level, IT can be used as a strategic tool to add value rather than just providing timely information.

Wal-mart is one among the first companies to garner benefit from the technological integrated internal and external process. Wal-mart efficiently manages various mechanism of the supply chain management procurement, distribution and, logistics and inventory management. Carrefour also used advanced technologies like cross docking, electronic data interchange and RFID (Radio Frequency Identification). Back in India, one of the first

companies to implement supply chain management system (SCMS) is Asian paints. It enabled Asian Paints to attain greater control on supply related issues.

In the changed business environment, customers want reliable and just-in-time product delivery. No surprise in this competitive world the companies are facing challenges of giving products at low cost without compromising the quality. Supply chain management has helped the companies to efficiently use the scarce resources and to deliver the products at right place at right time and to achieve customer satisfaction.

## 6. Policy: Where is it Moving ?

### 5.1 Policy/Plans for Roads

Logistics depends upon highways, railways, ports and airports. Central government's policies for Highways are as follows:

- 100% FDI under the automatic route is permitted for all road development projects
- 100% income tax exemption for a period of 10 years
- NHAI agreeable to provide grants/viability gap funding for marginal projects
- Model Concession Agreement formulated

As a result, more private sector participation has been observed in construction of roads on BOOT/BOT model.

### 5.2 Policy/Plans for Railways

Government is planning to build dedicated freight corridors in the Western side Delhi-Mumbai and Eastern side Delhi-Kolkata high-density routes. The investment is expected to be about Rs22,000 crore (US\$5 billion). Requisite surveys and project reports are in progress and work is expected to commence within a year.

In a path breaking development of container movements in India, the Indian Railways has decided to allow public private participation in railway container business which was till now monopoly business of Indian Railway.

Indian Railway has a holistic plan for augmenting the dedicated freight corridor by way of public-private-partnership (PPP). The Railway is seeking as much as Rs5000 crore investments from the private party to augment capacity of railway freight corridor. The Railway is also interested for competitive international bidding. At present, the Ministry is working on a plan for manufacturing coaches and locomotives through a joint venture (JV) with an interested private party. The private party may be General Electric or General Motors, as Indian Railway wants to abandon its obsolete technology and go in for the latest state-of-the-art one. The two new manufacturing centres at Rae Bareilly and Chhapra, announced in this year's Railway Budget, would soon be handed over to the JV, it is learnt. Indian Railway Ministry is also keen on private participation on building coaching terminals and also to improve other logistics facilities of railways with an estimated expenditure of an additional Rs4000 crore and the investment would be by joint ventures.

### 5.3 Policy/Plans for Ports

- 100% FDI under the automatic route is permitted for port development projects
- 100% income tax exemption is available for a period of 10 years
- Tariff Authority for Major Ports (TAMP) regulates the ceiling for tariffs charged by Major ports/port operators (not applicable to minor ports)
- A comprehensive National Maritime Policy is being formulated to lay down the vision
- Strategy for development of the sector till 2025.

## 5.4. Policy/Plans for Airports

- 100% FDI is permissible for existing airports; FIPB approval required for FDI beyond 74%
- 100% FDI under automatic route is permissible for greenfield airports
- 49% FDI is permissible in domestic airlines under the automatic route, but not by foreign airline companies and 100% equity ownership by Non Resident Indians (NRIs) is permitted
- AAI Act amended to provide legal framework for airport privatisation
- 100% tax exemption for airport projects for a period of 10 years
- Open Sky' Policy of the Government and rapid air traffic growth have resulted in the entry of several new privately owned airlines and increased frequency/flights for international airlines.

## 7. Conclusion

Logistics is an integral part of the Supply Chain Management and is a highly-specialised area that requires expertise. Third Party Logistics is evolving as an industry in India with the entry of a number of domestic and global 3PL players. 3PL involves outsourcing activities related to Logistics and Distribution and includes Logistics Solution Providers (LSPs) and the shippers who support business processes of the clients. The Indian 3PL market which is estimated at about \$890.3m in 2005 is expected to grow up at a CAGR of 21.9% to reach \$3,556.7m in 2012.

Future outlook of the logistics industry is bright as it depends on the economy which is expected to continue growing. With increasing trend in the freight traffic in last couple of years, logistics industry will keep pace with the growth of the external as well as domestic trade. Major factors which will determine the growth of the logistic sector will be public-private participation, technology deployment, investments in infrastructure and integration of logistic services.