

OPERATIONS RESEARCH IN LOGISTICS AND SUPPLY CHAIN MANAGEMENT

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Abstract

The concept of Supply chain Management (SCM) is refers as “the process by which supply chain activities are managed to have an advantage over competitors as well as maximize the value of our customers. The optimal SCM is hottest topics today due to growing demand ever increasing distribution methods and escalating costs. Logistics is said to be the core to the economy, the resourceful, and cost effective tool flow of goods on which other commercial sectors depend. The logistics business in India is evolving rapidly and it is the interplay of infrastructure, technology different service providers helps to reduce their logistics costs and provide effective services. This paper briefs SCM optimization techniques and advantages over Global Supply Chain management. India's supply chain is growing and still it is long way to go. Supply chain costs in India as much as 13% of GDP, in US it costs which account for 8.5 percent. Today there is competition between value chains.

Keywords: supply chain management, challenges, Value chain, Indian scenario

1.1. INTRODUCTION

A competitive advantage today may not be beneficial future too. Market mobility is the key to sustainable competitive advantage. That requires a well- oiled supply chain. There are many applications. One Network offers 100+ modules and applications on their platform that enable companies to automate the entire supply chain from end to end. Here are a few examples like Order Management, Demand Sensing, Demand Smoothing, WMS etc. SCM optimization means producing minimal cost and optimal way distribution which resembles optimal inventory, cutting costs by adjusting production costs, shipping costs, and distribution costs. This process includes modeling with help of computer software. Supply chain optimization is part of engineering, although the latter is mainly focused on mathematical modelling-based approaches, whereas supply chain optimization it can be done by qualitative, management based approaches.

1.2. OPERATIONS RESEARCH [OR]

OR is subject and it is applied in modern time to sort out analytical methods for taking wise decisions. OR term is borrowed from military helps to sort out the capability progress, supervision and promise. To be specific OR used to improve efficiency, investment appraisal decision is making and capacity building and considered as part of applied mathematical modeling.

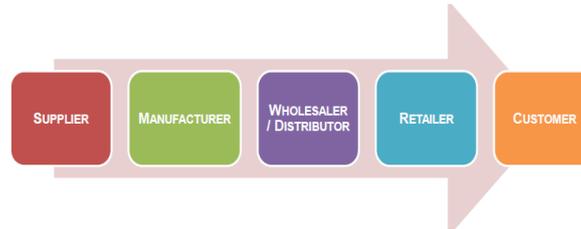
1.3. APPLICATION OF OR IN LOGISTICS MANAGEMENT

Darwin theory can be understood that, “Only the strong survive.”

It is wise to learn that it is not strongest species will survive in this neither world, nor more intelligent but it is how it is most responsive to change. The SCM concept coined during 1982, by Oliver. This application is practiced for longer period. The term logistics is said to be covered by John J. Coyle by simplifying words say 1). Right product 2). Right customer 3). Right Quantity 4) Right condition 5). Right Place 6). Right time and 7). Right cost (The 7R's).

According to SCM can be defined “as the bringing together of manufacture, supply, locality, and shipping among the participants in a supply chain to get the result of maximum efficiency and effectiveness for the marketplace being served”.

FIGURE NO: 01.SUPPLY CHAIN NETWORK



It is important to note that operations research involves the application areas in logistics management a). Strategic design model and Location routing model b). Logistics control model and SCM simulation model. Logisticians use OR technique where SCM operations work with global network. The so called many tools and Algorithms are applied to deduce the live and streamline of data so that one can have effective control. It is learned that many companies use to wipe –out the scm problem in day-to-day manner. It require careful analysis and scheduling method namely a) Network design b). Multi-echelon Inventory Optimization c). Routing and Transportation problems d). Facility layout e). Customer and product segmentation f). Price and promotion optimization g). Supplier selection h). Risk Management i). Production Planning and Scheduling.

Logisticians these days have an edge as compared to folks who were in this profession decades ago. Now a day’s logistics and transportation network are prominently address this issue since it has become more complex phenomena which involves global network, engaging the different tools and algorithms supports to capture and make use of streamline the data have made it easier to get better control on the data generated by your logistics network.

Exploring the application of optimal benefits by adopting mathematical knowledge, tools and statistical approaches, and to arrive near optimal -solutions OR techniques are applied for the purpose to arrest the complex issues and easy decision making. The importance are attached with human –technology interaction placed almost all business, OR techniques are used with other discipline namely a). Psychology b). Industrial Engineering application science and c) . Operations management.

OR takes care of assisting the various industries by considering extreme values (real world objective), and expecting maximum profit, Maximum output, minimum loss, Minimum risk. This application started working even during the second world war period.

1.4. LOGISTICS: MEANING

Logistics involves planning process, implementing, efficient control, effective control of flow and storage raw-material, completed goods, process inventory, and services, including from the point of production to till consumption (that is in-bound, out-bound, internal and external movements) to meet customer needs.

1.5. CHALLENGES OF GLOBAL SUPPLY CHAIN MANAGEMENT

According to supply chain website *EverythingSupplyChain.com* says that, Supply chains management systems are everywhere from largest company in the world to small household.

- Costing factor
- Fast changing market.
- Managing the risk
- Manpower and their skills

- Quality of customer service
- Relationship of supplier

1.5.1. INDIA'S SUPPLY CHAINS CHALLENGE IN 2020:

The statistical result reveals that, India accounts for 60 percent by road transport, railways accounts for 30%, remaining goes 10 percent. If we look at United States of America (USA), cargo (37%) by road transport, 30 percent by railways, and 10 percent by other mode of transport. (Source: Deloitte & ICC joint report).

India today facing the problem of the year of un-certainty. It is necessary to understand the challenges and be prepared to overcome.

- Difficult to balance both technology and labour.
- Economic growth touches 4.5 lowest (2019)
- Less consumer confidence le According to 'Logistics Market in India 2015-2020' by market researcher Novonous, India's logistics industry is worth \$300 billion.
- Need to be optimizing about inventory and asset.
- Now companies moving to e-commerce support
- Supply chain changes on green concept

1.5.2. POSITIVE SIDE SUPPLY CHAIN

"Two basic rules of life are: 1) Change is inevitable. 2) Everybody resists change." ~ **W. Edwards Deming**

- Changes new eco-system and new opportunities
- Good investment on infrastructure
- Government initiative on "Make India" movement plus incentives
- Growing regional integration and investor confidence
- GST/FDI and more government spending pushes supply chain activities
- Favorable "ease of doing business"

The estimate about Logistics business in India 2020 according to market researcher report studies Novonous says that this logistics business crossed 300 billion dollar. The other projection outlines that it will be 12.17 growth by CAGR approach. To gain advantage over this development the companies like Deutsche Post DHL Group are made investment over 150 million euros and providing two-fold increase the warehousing space in the country to 7 million square feet. Indo-Space is investing \$1 billion to set up 30 million square feet of warehousing space in the country. Logistics is rental value which crossed worth of 1 million square feet of warehousing space. Amazon added eight fulfillment centers last year, increasing storage capacity to five million cubic feet across all 21 centers in India. With introduction of GST logistics companies are under the compulsion to create or set up many 1 warehouses in various and across multiple cities. Likewise, it few, big, follow the hub-and-spoke model for goods movement from the storehouse to the different mechanized goods, retail outlets, and various POS. Resulting much growth in this field are witnessed and reaches peak –e-commerce and greatly influenced even FMCG companies. Supply chain and Logistics is growing in India. It is growing in three ways.

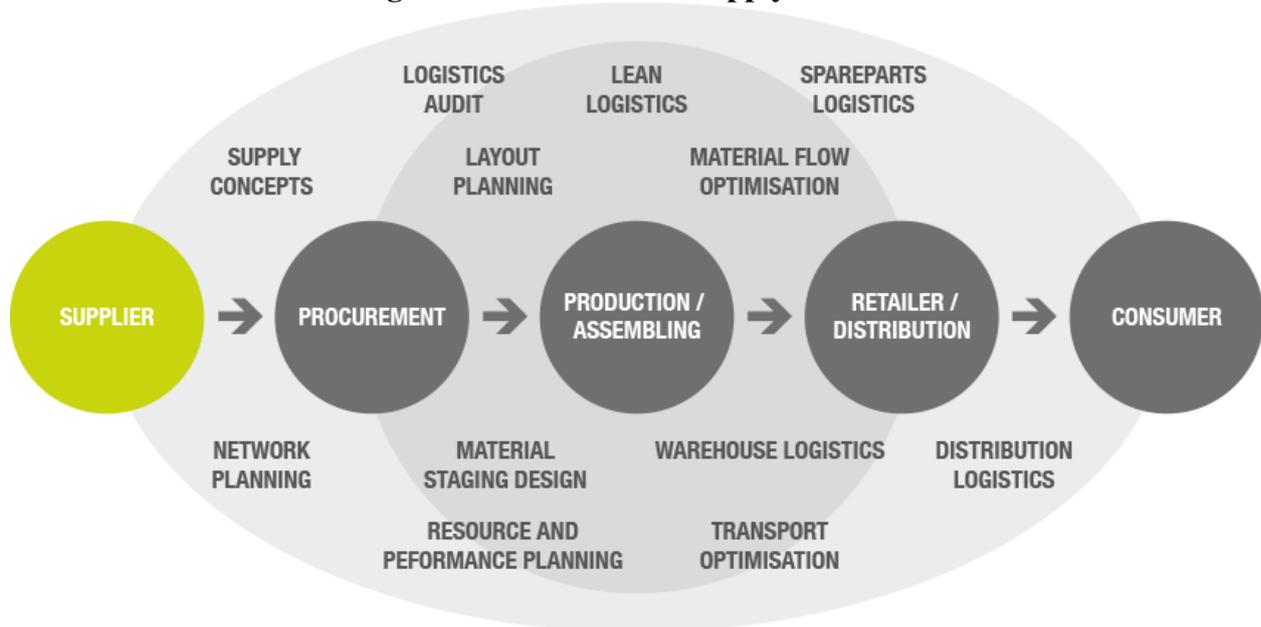
1. E- Commerce Deliveries (Last Mile)
2. Hyper-local Deliveries
3. Mainstream Logistics.

1.6. GST AND AFTERMATH: SUPPLY CHAIN

There are two parameters are prominently covers namely price efficiency and speed efficiency. The former one emphasis on uniform tax code which will further ease business by

less paper work and later speed efficiency outlines the framework such as less counter points and works faster and safer. However, after being introduced, its impact can be easily seen on the entire SCM. Tax restrictions and cross-border sales has been changed. Due to imposition of GST, all the operational costs are minimized and thus its efficiency is also improved. After GST supply chain management system, design of customer base and cost control taken core. It somewhat approaches positively in the way that smaller warehouses can now be merged into one bigger warehouse thus achieving the maximum optimization.

Figure No.02. Future of Supply chain



(Source: <http://www.nwccindia.com>)

Benefits after GST implementation

- Controlling cost and customer service.
- Expansion in companies can be witnessed.
- Greater flexibility system in manufacturing.
- Price- negotiation will prevail.
- Quality system concept will be improved.
- Gains optimization in the space of SCM

1.7. CLOSING THOUGHT:

India has attracted more attention as an emerging economy in the recent past. It is greatly influenced the investment and growth potential in terms of socio-economic, physical diversity. Supply chain network and other infrastructural development activities resulting selling products and services which are different from developed nations. SCM creates new picture among inter-connected worlds.

In order to run smooth transition we need to manage supplier performance and inventory management. These two points recollects two side of same coin. IOT developments worldwide change the entire supply chain process. This internet of things will vastly influence drastically in the future. (SupplyChainToday.com). So focus should at the global level and closer integration are winning point in the days to come. According to www.bsr.org future predicts that scm concept is considered “Driving Forces” which will re-shape from today to in the year 2025.

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