



# “UTILITY OF TECHNOLOGY IN LOGISTICS AND SUPPLY CHAIN MANAGEMENT”

**MISS. SHITAL VIJAY TIBE**

VENKATESHWARA INSTITUTE OF MANAGEMENT, PETH NAKA

MOB NO.-7350032002

Email – [shitaltibe@gmail.com](mailto:shitaltibe@gmail.com)

**DR. U.M. DESHMUKH**

CHATRAPATI SHAHU INSTITUTE OF BUSINESS EDUCATION  
AND RESEARCH, KOLHAPUR

MOB NO.-9890691927

Email – [drudeshmukh@siberindia.edu.in](mailto:drudeshmukh@siberindia.edu.in)

## **ABSTRACT:-**

*The word logistics has its origin from Greek word “logistike” which means the art of calculating. However, the modern interpretation of the term logistics has its origin in the military, where it was used to describe the activities related to the procurement of ammunitions, and essential supplies for troops located at the front. Logistics not only includes activities related to the physical movements of the goods but also manages relationship with suppliers and customers. The main objective of the paper is to determine the various technology used in logistics and supply chain management including information technology, communication technology and automatic identification technology.*

*The creator basically centers on the auxiliary information for gathering information identifying with different innovation utilized in logistics and store network the board. The creator reaches determination that Technology is a vehicle to upgrade store network intensity and execution by improving the general viability and productivity of logistics framework. In addition different advancements in innovation have made the undertaking simpler and quicker other than being less arduous.*

**Keywords:** logistic management, SCM, Technology, Innovation

## 1. INTRODUCTION

The council of logistic management defines logistics as “that part of supply chain process that plans, implements, and controls the efficient, effective, forward and reverse flow and storage of goods, services, and related information between the point of origin and the point of consumption in order to meet customer requirement”. In ordinary language the same can be defined as right product, at the right place, in right time, and in right condition. However supply chain consists of all stages that are required to satisfy the customer request. It starts from supplier passes through manufacturer, distribution, and retailer and finally reaches the customer. The supply chain management is the oversight of materials, information and finances as they move in the process from supplier to manufacturer to wholesaler to retailer to customer. The emerging new technologies are creating strategic opportunities for the organizations to build competitive advantages in various functional areas of management including logistics and supply chain management. However the degree of success depends on the selection of the right technology for the application, availability of proper organizational infrastructure, culture and management policies. In logistics, information, communication and automation technologies has substantially increased speed of identification, data gathering, processing, analysis and transmission, with high level of accuracy and reliability. Technology is a means to enhance business competitiveness and performance. It plays a major role in success of supply chain by enhancing the overall effectiveness and efficiency of the logistics system. In logistics many new technologies are used in developed country while in India adoption process is very slow. However due to liberalization of the Indian economy the competitive pressure is building up and the only option to face the competition in to go in for technology enabled operations.

**The latest technologies being used in logistics and supply chain management are segregated into**

- Automatic Identification Technology
- Communication Technology
- Information Technology

## 2. OBJECTIVES

1. To determine the various technology used in logistics and supply chain management.
2. To discuss the impact of technology on logistics and supply chain management.
3. To assess technology used in logistics and supply chain management

### **AUTOMATIC IDENTIFICATION TECHNOLOGY**

Programmed Identification (Auto ID) is the term used to depict the immediate passage of information or data in the PC framework, programmable rationale controllers or any microchip controlled gadget without working a console. These innovations incorporate Bar Coding, Radio Frequency Identification (RFID) and Voice Recognition. Auto ID can be utilized for following the compartments, bundles, containers or a truck conveying the products on time bound dispatches to the clients. The

advantages of Auto ID incorporate precision, cost sparing, speed and accommodation of information stockpiling and preparing of data.

### **The significant Automatic Identification technologies in use are –**

- **BAR CODING**

Bar coding is a succession of parallel lines of various thicknesses with spaces in the middle. These bars are only the things of data in the arranged structure, which can be perused with the assistance of a scanner. Verifiably standardized identifications was first utilized in quite a while in USA in 1952. The data imprinted in scanner tag incorporate, nation code, maker name, item subtleties, date of production, material substance etc. These subtleties are required at client end for stock administration. The standardized identifications are utilized in assorted enterprises, for example, retail, pharmaceutical, customer merchandise, hardware, cars and so forth.

### **The bar coding offers the following advantages.**

- Ease in identification of inventory items during storage, retrieval, pickup, inspection and dispatch.
- Reduce paper work and processing time leading
- Reduce human error
- Increases logistics system productivity through speed, accuracy and reliability.

### **Impact of Bar code technology on operations of logistics and supply chain management**

- **PROCUREMENT OPERATION**

The parts and segments brought from providers are allocated standardized identifications, which contain data on thing name, clump number, date of production, request no, sequential no and so on. The data in scanner tag helps in recognizing and following the segment. In the stockroom, when the merchandise enter through a transport, they are additionally checked by the hand held scanner or scanner fixed nearby the transport. The data decoded by the scanner is promptly signed in the focal PC which assists genuine with timing update of stock records.

- **PROCESSING**

During the request handling the standardized tag will help in keeping distinguishing proof of things dependent on their date of section into the distribution center or store. This will ease material stockpiling, retrieval and dispatch in FIFO (First in First out) stock administration framework.

- **PRODUCTION OPERATION**

During the generation procedure the distinguishing proof of in-process and completed things become simpler because of bar coding. The different washes at various phases of creation can be effectively followed.

- **DISTRIBUTION OPERATION**

During dispersion, standardized identification helps in distinguishing and following the travel of completed products to the clients.

## BARCODE



- **RADIO FREQUENCY IDENTIFICATION (RFID)**

RFID is an Automatic Identification and Data Capture (AIDC) innovation. RFID first showed up in following and access applications during 1980. RFID-based frameworks takes into consideration non-contact perusing and are successful in assembling and other antagonistic condition where scanner tags couldn't endure. These are utilized as an option to Barcodes to convey the stock information through radio waves. RFID remotely trades data between labeled articles.

**An RFID system is compromised of the following components as mentioned below.**

- One or more tags called Radio Frequency Tags (RFTs), which includes a semiconductor chip and antenna.
- One or more read/write devices also called readers.
- Two or more antennas one on the tag and one on the reader.
- Application software and the host computer system.



## RFTs

The reader is connected to the central computer. Radio Frequency Tags (RFTs) are a piece of silicon chip to store data in the microcircuit. The RFTs are programmable with erasable memory. Data is stored in coded form and communicated to the reader through waves. The basic principle of tag is that antenna emits the radio signals. RFTs are very useful to accompany truck shipments. The tag will contain information on consignor, consignee, inventory items, quantity and value, what time the item travelled

certain zone; even the temperature etc. The reader receives the tag signal with its antenna, decodes it and transfers the data to the host computer system. RFTs can be attached to virtually anything-from a semi-tractor, to a pallet, containers etc. RFTs will avoid paperwork and can be helpful in custom posts. In the warehouse, the barcodes can be applied to the individual inventory items while RFTs can be applied to pallets, containers etc. These will allow the staff to directly communicate to the warehouse computer.

### **RFID has significant impact on logistics and supply chain of many sectors**

- RFID helps Indian exporters to global retailers like WAL-MART get better and more visibility into movement of their goods within the supply chain and thus become more competitive.
- Improve the ability of manufacturers to better manage the inventory levels.
- Improve the complex distribution system for the Defense operation.
- Improve the complex tracking and distribution operations of the Indian Postal services.
- Improve the tracking, logistics and planning operations of Indian Railways, state public transport agencies
- Implement automatic toll collection on vast network of highways.

### **3. COMMUNICATION TECHNOLOGY**

The communication, either oral or composed has an exceptionally vital job in business achievement. Coming up next is the couple of rising interchanges advances, which are empowering agents to better client support driving than intensity through the speed and exactness in communication.

- **ELECTRONIC DATA INTERCHANGE (EDI)**

EDI innovation is utilized for move of business records from one PC to other PC. With EDI the business records, for example, solicitations, checks, and challahs are sent electronically starting with one association then onto the next. Actually EDI is a drive towards paperless archive move or exchanges. The contrast between the email message and EDI message is that, E-mail is formed and translated physically, while EDI message is made utilizing one programming and deciphered by other programming. Email information isn't organized while EDI information or message is structured. EDI message has lawful remaining in the courtroom.

### **The benefits of using EDI technology in logistics and supply chain management involves**

- Faster transactions- real time document transfer in the supply chain.
- Just-in-Time manufacturing technique can be adopted.
- Reduction in transaction cost due to paperless operations

- Reduction in order cycle time and inventory that will help to improve the competitiveness of the customers.
- Improve the corporate trading relationships between parties in the supply chain and creating barriers for competitors.
- **VERY SMALL APERTURE TERMINAL (VSAT)**

The satellite communication stations are assuming a significant job progressively information assortment and its trade, which is crucial for client care. To follow and follow the products bearer, a dish radio wire is fixed on the vehicle. This permits the communication between driver, dispatcher and proctor. The genuine – time collaboration helps in having the exceptional data on the area of truck and the conveyance position.

**Model** – Wal-Mart the retail goliath of USA is utilizing this framework for controlling the stock development.

- **GEOGRAPHICAL POSITIONING SYSTEM (GPS)**

The GPS is progressively exact framework utilized in created nations wherein a vehicle could be followed precisely with the assistance of Geo Stationary Satellites to the exactness of one meter as far as scope and longitude. When the situation of the vehicle is known, it very well may be transmitted to consigner or agent through the transmission organizes for example cell phones or web.

- **GEOGRAPHICAL INFORMATION SYSTEM (GIS)**

GIS are the product instruments for representation of uncommon area of any element on earth which is put away in databases identifying with geology .This could be regarding physical maps of the outside of earth, design of internal surface of earth or a format of lanes or roads. GIS in joining with GPS is utilized in calculated activity for following and following of the relegation area to the degree of street or road specifically city.

- **WEB BASED TRACKING**

Logistics specialist organizations working in India are expanding the administrations of online following of relegations to their customers. AFL, Fed-Ex, Blue Dart and others are giving the status report of the relegation to their customers. The customers can download this report by associating through the Internet. This data helps in arranging the dispatch plan and furthermore making catch up with customers for installment assortments.

- **AUTOMATED GUIDED VEHICLE SYSTEM (AGVS)**

The framework utilizes attractive or optical direction framework. The attractive framework utilizes stimulated wire laid on the distribution center floor for directing the material taking care of gear. In AGVS administrator is disposed of. The new age AVGS are guided with video and don't pursue the fixed way. AGVS can play out all the material taking care of activity with no human contribution. Robot combined with AGVS is utilized to get precise material prerequisite for a client request.

- **INFORMATION DIRECTED SYSTEM (IDS)**

In this an incorporated PC controls the material taking care of gear. The communication between the gear and the PC is through radio recurrence. The necessary development are sustained into PC and it appoints the occupations to the individual types of gear thinking about its most extreme stacking limit and taking care of speed. IDS can perform assortment of complex material taking care of employments, for example, different request picking or numerous vehicle stacking by a similar material taking care of hardware prompting upgrade in stockroom profitability and adaptability in dealing with assortment of occupations.



- **INFORMATION TECHNOLOGY (IT)**

IT comprises of equipment and programming that catches investigations and gives data any place it is required. Since the supply chain management the executives is characterized as system of associations, these associations can't shape a system except if they are associated through IT coming about into straightforwardness in the production network and adjusting the store network exercises towards client. Model – The accomplishment of store network of DELL was because of IT, where web was utilized to gather request from client straightforwardly and imparted the data to the providers with the goal that they can gauge better, and supply to the prerequisite. The IT devices utilized in coordination's and supply chain management the board are-

- **ENTERPRISE RESOURCE PLANNING (ERP)**

ERP is coordinated programming, enveloping all the business tasks and realize critical change in the manner individual's work. ERP is a business arrangement that delivers to certain recognized business issues. ERP is pricey and complex exercise which requires adequate measure of arranging. In India major ERP being used is SAP, Oracle which has been created by outside organizations to suit the business condition winning in those nations. Be that as it may, some Indian organizations like Ramco Systems created ERP to suit Indian business condition.

**Example** - The companies like Hindustan Lever, Colgate and Nestle have implemented ERP in their supply chain system resulting in minimum inventory of raw material and finished goods and benefit in terms of cost reduction

- **DISTRIBUTION REQUIREMENT PLANNING(DRP)**

It is another IT apparatus and furthermore a complex arranging approach that thinks about different dispersion stages and the attributes of the dissemination framework. The completed merchandise stock necessity is controlled by DRP considering the client request at various appropriation focuses situated in various markets. DRP helps in solidifying the shipments to different areas spread over the huge geological territory, and in this manner help in decreasing cargo cost. DRP improves stock deceivability in the production network coming about into decrease in stock level and distribution center space prerequisite.

- **AUTOMATED INVENTORY TRACKING SYSTEM (AITS)**

The AITS is an IT apparatus that gives ongoing status of the stock degrees of the considerable number of things at retail locations, feeder and mother distribution centers. For renewal of things sold, data is passed on legitimately to the provider after the thing stock level is checked at feeder and mother distribution centers. The provider starts the activity to recharge the stock thing relying upon the thing take-off rate at retail locations, its security stock, stock in travel and so forth consequently advancing the stock in the store network.

#### **4. CONCLUSION**

"Technology" is vehicle to upgrade production network aggressiveness and execution by improving the general adequacy and proficiency of coordination's framework. Subsequently picking the correct innovation for different coordination's exercises or sub-forms is pivotal to any business to increase upper hand in the present focused market. Model – A cycle producer must perceive how it can incorporate the littlest part supplier specifically, a brake shoe provider and furthermore the seller at the country focus, so as to improve generation run and hold the client as opposed to losing to the contender. Today combination in the supply chain management is conceivable because of accessible innovation prompting effectiveness in the store network just if the production network accomplices embrace the correct technique.

#### **5. REFERENCES**

- David Simchi Levi, Philip Kamisky And Edith Simchi Levi, Designing And Managing The Supply Chain, Irwin Mc Graw Hill, New York, 2000.
- Mohanty R.P And Deshmukh S.G, Advanced Operation Management, Pearson Education 2003.

- Michel Quayle & Bryan Jones, Logistics- An Integrated Approach, Tudor Disiness Publishing, UK, 1999.
- Chirstopher Martin, Logistics and Supply Chain Management, Pitman Publishing Co London, 2001.
- Coye J.J, Bardi E.J,Langgley C.J,“The Management of Business Logistics”, Thomson Asia 2003.
- Raghuram G & N Nahgaraj- Logistics And Supply Chain Management,Mc Millan India Ltd- 2001.
- R.Sarin(Brigadier), Automating And Spare Parts Inventory Management, Indian Management,February 2000.
- Vittal N. & B.S. Sahay, Supply Chain Management for Global Competitiveness, Macmillan- 1999.

