

Introduction to Logistics

The management of the flow of things which lie between producers and the consumers for the purpose of meeting the requirements of the consumers or corporations is known as logistics. The topics elaborated in this chapter will help in gaining a better perspective about the components and elements of logistics.

Logistics refer to the overall process of managing how resources are acquired, stored, and transported to their final destination. Logistics management involves identifying prospective distributors and suppliers and determining their effectiveness and accessibility. Logistics managers are referred to as logisticians.

“Logistics” was initially a military-based term used in reference to how military personnel obtained, stored and moved equipment and supplies. The term is now used widely in the business sector, particularly by companies in the manufacturing sectors, to refer to how resources are handled and moved along the supply chain.

In simple terms, the goal of logistics management is to have the right amount of a resource or input at the right time, getting it to the appropriate location in proper condition and delivering it to the correct internal or external customer.

For example, in the natural gas industry, logistics involves managing the pipelines, trucks, storage facilities and distribution centers that handle oil as it is transformed along the supply chain. An efficient supply chain and effective logistical procedures are essential to reduce costs and to maintain and increase efficiency. Poor logistics leads to untimely deliveries, failure to meet the needs of clientele, and ultimately causes the business to suffer.

The concept of business logistics has been transformed since the 1960s. The increasing intricacy of supplying companies with the materials and resources they need and the global expansion of supply chains has led to a need for specialists known as supply chain logisticians.

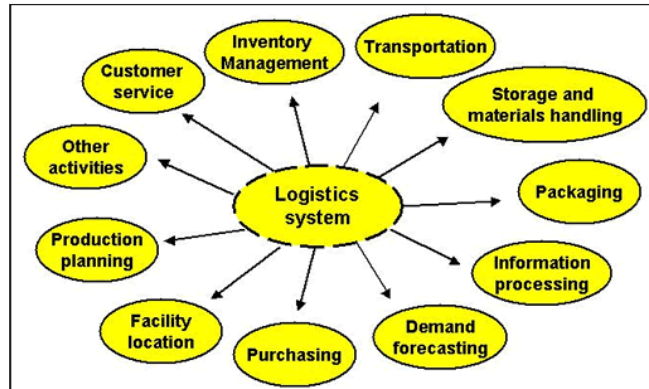
In the modern era, the technology boom and the complexity of logistics processes have spawned logistics management software and specialized logistics-focused firms that expedite the movement of resources along the supply chain. Manufacturing companies may choose to outsource the management of their logistics to specialists or manage logistics internally if it is cost-effective to do so.

The tasks for which a logistician is responsible vary depending on the business. Primary responsibilities include overseeing and managing inventory by arranging for appropriate transportation and adequate storage for the inventory.

A qualified logistician plans out these and other aspects of the logistics process, coordinating the steps as inventory and resources move along the supply chain.

Components and Elements of Logistics

In the picture figure are shown the components of a logistics system.



Logistics Components.

The logistics system consists of the following components: Customer service, Inventory management, Transportation, Storage and materials handling, Packaging, Information processing, Demand forecasting, Production planning, Purchasing, Facility location and other activities.

Other activities for a specific organization could include tasks such as after-sales parts and service support, maintenance functions, return goods handling and recycling operations.

Clearly any one organization is unlikely to require all these specific tasks to be accomplished. For example, a service firm such as an airline might combine elements from the information processing, maintenance, demand forecasting, customer service, and purchasing functions into a logistics system designed to reach its customers. On the other hand, a manufacturer of consumer goods may draw from transportation, inventory management, storage, materials handling and packaging in addition to customer service, purchasing and demand forecasting for their logistics support.

The point is that every organization, be it manufacturer or service provider, for-profit or non-profit, has customers that it wants to reach. By integrating the appropriate functions into a customer-focused logistics system, the enterprise can develop a sustainable advantage that is very difficult to be imitated by a competitor. Some of these activities have traditionally had a well-defined stand-alone role within a company (purchasing, production, information processing), while others have generally been more closely associated with logistics (transportation, warehousing, packaging). What ties all of these functions together is their ability to improve customer satisfaction. This is not to say that production, for example, should be subordinate to logistics. Rather top management should utilize logistics as a way to integrate these corporate activities and keep them focused on the customer rather than on internal processes.

Elements

Logistics and Maintenance Support Planning

Interactive planning, organisation and management activities are necessary to ensure that logistics requirements for any given program are properly coordinated and implemented. Initial planning

and analysis lead to the establishment of requirements for logistics and the overall support of the system throughout its life cycle.

Maintenance planning for those activities related to the reverse flow convinces with the definition of maintenance concept and continues through supportability analysis to the ultimate development of a maintenance plan.

A comprehensive logistics plan needs to be implemented through the establishment and control functions to ensure that the plan is properly carried out.

Logistics Maintenance and Support Personnel

The personal required to perform unique logistics and system maintenance activities are covered in this category.

Such activities include the initial provision and procurement of items of support, production related logistics functions, the installation and checkout of the system and its elements at the user's operational sites customer service functions, the sustaining support of the system throughout its planned period of use, and those functions required for the retirement and recycling or disposal of material.

Personnel at all levels of maintenance mobile teams, and operation or maintenance at special test facilities and calibration laboratories are included. It is important to include only those who can be directly attributed to the support of that system in evaluation of a particular system.

Training and Training Support

This category includes all personnel, equipment, facilities data or documentation and associated resources necessary for the training of operational and maintenance personnel to include both initial and replenishment or replacement training.

Training equipment say simulators, mock-ups, special devices, training manuals and computer resources Software are developed and utilized as necessary to support the day-to-day-site training, distance education of a more formal nature.

Supply Support—Spares or Repair Parts and Associated Inventories

This elements covers all spares say, repairable units, assemblies, modules and the like, repair parts say, non-repairable pasts or components, Censurable, liquids, lubricants, gases disposable items special supplies, and related inventories needed to maintain the prime mission related equipment computers and software, test and support equipment, transportation and handling equipment, training equipment, communications equipment and facilities or utilities.

Spares or repair parts are required throughout the system operational share and in support of the retirement and recycling or disposal of system components.

Computer Resources

This category covers all computers, associated software connecting components, networks, and interfaces necessary to support the day-to-day flow of information for all logistics functions, scheduled

and unscheduled maintenance activities and special monitoring and reporting requirements such as those pertaining to CAD/CAM/CAS data the implementation of condition monitoring programs and in support of system diagnostic capabilities.

Technical data, Reports and Documentation

Technical data may include system installation and check out procedures operating and maintenance instructions inspection and calibration procedures, overhaul instruction, facilities data, system modification's engineering data such as specifications, drawings, materials and parts list, CAD/CAM/CAS data, special reports Logistics provisioning and procurement data, Supplier data, system operational and maintenance data, and supporting data bases. Included in this category is the on-going and interactive process of data collection, analysis and reporting covering the system throughout its life- cycle.

Maintenance and Support Facilities and Utilities

This category covers all special facilities that are unique and are required to support logistics activities, to include storage buildings and warehouses and maintenance facilities at all levels.

Physical plant, portable buildings, mobile vans, personnel housing structures, intermediate level maintenance shops, calibration laboratories and special repair shops such as depots, overhaul material suppliers are considered.

Capital equipment and utilities heat, power, energy requirements, environmental controls, communications, safety and security provisions and the like are generally included as the part of facilities.

Packaging, Handling, Storage or Ware Housing and Transportation

This category logistics includes all materials, equipment special provisions, containers both resistible and disposable and supplies necessary to support the packages, safety and preservation, storage, handling and or transportation of the prime mission related elements of the system, personnel spares and repair parts, test and support equipment technical data, computer resources and mobile facilities.

Covered in this group are the initial and sustaining transportation requirements for the distribution of materials and for the maintenance and support activities throughout the system life cycle. The primary modes of transportation—air, highways, pipelines railways and water ways and intermodal, truck, rail, truck, waters, rail, water, truck, air and the like are considered.

Test, Measurement, Handling and Support Equipment

This category includes all tools, condition monitoring equipment, diagnostic and checkout equipment, special test equipment, metrology and calibration equipment, maintenance fixtures and stands and special handling equipment required to support operational and maintenance functions through-out the forward and reverse flows, Test and support equipment requirements at each level of maintenance must be considered as well as the overall traceability of test requirement or measures to a secondary standard, a transfer standard and finally to a primary standard.

Logistic Information

This refers to the resources necessary to ensure that an effective and efficient logistics information flow is provided throughout and to the organizations responsible for all the activities that come within its focus. This flow includes the necessary, communication links among the customer, producer or prime contractor, sub-contractors, suppliers and supporting maintenance organisations.

It is but essential that the proper type and amount of information be provided to the appropriate organisational elements, in proper formats and in a reliable and timely manner with the necessary security provisions included.

Inherent within this category is the utilisation of the latest EC methods, EDI capabilities e-mail and the Internet.

This capability not only tends to facilitate the integration of the organisations participating in a given project but aids in the integration of SC and maintenance activities and the various logistic elements identified for this propose.

Reasons for the Rise of Logistics

Changes in Customer Demand Patterns

Increased affluence has shifted customers towards more services and has also contributed to major geographical changes in population concentrations and to a general proliferation of products and product types offered by marketers to consumers.

These changes encouraged migration of population to metropolitan cities in search of higher paying jobs. This expanded the effective size of metropolitan regions.

The result has been an increase in retail outlets. This resulted in marketing of products through a number of departmental stores, rather than relying on only one. This reflected in complexity of functions and additional costs. The combined effect of competition and consumer affluence is the fundamental reason for proliferation of product lines.

It is observed by experts that as more and more product line variety is needed to satisfy the growing range of customer tasks and requirements, stock levels in both field and factory rise inevitably.

For the vast majority of production facilities that have not yet installed computer aided manufacturing systems, the cost of assembly line changes and small batch productions escalate in tandem.

It is equally true that replacing one product with three that generate same level sales would increase inventories by 60 per cent. This upward pressure on costs suggests the need for more careful management.

Economic Pressures on Industry

Two economic forces are instrumental in encouraging the movement towards a re-organisation for business logistics.

First logistics costs are recognised take significant proportion of total costs.

Second reduced profit margins encouraged the firms to look for more efficiently organisational patterns.

Fragmentation of logistic activities among various departments of an organisation tended to mask the total cost of logistic activities. Further, fragmentation of activities under different heads led to conflicts on the organisation.

According to Professor Heskett J.L. the physical distribution cost at macro-economic level, accounted for 14.9 percent of the US GNP in 1960. In 1962, Mr. Peter Drucker the Management Guru in his article published in Fortune said that almost 50 cents out of every dollar that the consumer spends on goods goes to the activities that occur after the goods are made.

Technological Changes and the Application of Quantitative Techniques to Business Problems

Technological innovation is not only unique to logistics but it has increased complexity of logistic problems leading to the need for careful and cautious management.

The technological innovation has led to the problems namely:

1. Contraction of product life- cycle,
2. Decrease in the cost of value addition and simultaneous rise costs of materials and distribution,
3. Greater proliferation of logistical choices,
4. Growth of scientific management techniques and computer technology side by side with logistics system components.

Development in Military Logistics

Military is the rich source of experience where business world is to learn a lot. Military logistics problems are mammoth and enormous. By solving these problems military reinforces faith of business community in logistics.

For instance in the early 1991 during gulf war the US and allied forces were faced with the problem of moving half a million people and over a half a million tons of material and supply by air.

That is 12000 kms and 2.3 million tons of equipment by sea in a matter of months. It was logistics that made this mission difficult possible.

Logistics Goals and Strategies

At the highest level, logistics management shares the goal of supply chain: “to meet customer requirements.” There are a number of logistics goals that most experts agree upon:

- Respond rapidly to changes-in the market or customer orders.
- Minimize variances in logistics service.
- Minimize inventory to reduce costs.
- Consolidate product movement by grouping shipments.
- Maintain high quality and engage in continuous improvement.
- Support the entire product life cycle and the reverse logistics supply chain.

An effective logistics management strategy depends upon the following tactics:

- Coordinating functions (transportation management, warehousing, packaging, etc.) to create maximum value for the customer.
- Integrating the supply chain.
- Substituting information for inventory.
- Reducing supply chain partners to an effective minimum number.
- Pooling risks.

Coordinating Functions

Logistics can be viewed as a system made up of interlocking, interdependent parts. From this perspective, improving any part of the system must be done with full awareness of the effects on other parts of the system. Before the advent of modern logistics management, however, the various operations contributing to the movement of goods were usually assigned to separate departments or divisions, such as the traffic department. Each area had its own separate management and pursued its own strategies and tactics.

Decisions made in any one functional area, however, are very likely to affect performance in other areas, and an improvement in one area may very well have negative consequences in another unless decisions are coordinated among all logistics areas. Adopting more efficient movement of goods, for example, may require rethinking the number and placement of warehouses. Different packaging will almost certainly affect shipping and storage. You may improve customer service to a level near perfection but incur so many additional expenses in the process that the company as a whole goes broke.

You need a cross-functional approach in logistics, just as you do in supply chain management as a whole. Teams that cross functions are also very likely to cross company boundaries in a world of international supply chains with different firms focused on different functions.

The overall goal of logistics management is not better shipping or more efficient location of warehouses but more value in the supply network as measured by customer satisfaction, return to

shareholders, etc. There is no point, for instance, in raising the cost of shipping—thus, the price to the customer—to make deliveries faster than the customer demands. Paying more to have a computer delivered today rather than tomorrow may not be a tradeoff customers want to make. Getting a still-warm pizza delivered in less than 20 minutes, however, might be worth a premium price (and a tip). Fast delivery, in other words, is not an end in itself, and the same is true of any aspect of logistics management or supply chain management.

Integrating the Supply Chain

Integrating the supply chain requires taking a series of steps when constructing the logistics network. In a dynamic system, steps may be taken out of order and retaken continuously in pursuit of quality improvements; the following list puts the steps in logical order.

Locate in the Right Countries:

- Identify all geographic locations in the forward and reverse supply chains.
- Analyze the forward and reverse chains to see if selecting different geographic locations could make the logistics function more efficient and effective. (Not all countries are equal in terms of relevant concerns such as infrastructure, labor, regulations, and taxes).

Develop an Effective Import-Export Strategy:

- Determine the volume of freight and number of SKUs (stockkeeping units) that are imports and exports.
- Decide where to place inventory for strategic advantage. This may involve deciding which borders to cross and which to avoid when importing and exporting as well as determining where goods should be stored in relation to customers. (Some shipping companies now add a “war risk surcharge” if they’re required to pass through or near a nation with civil unrest or at war.) Both geographic location and distance from the customer can affect delivery lead times.

Select Warehouse Location:

- Determine the optimal number of warehouses.
- Calculate the optimal distance from markets.
- Establish the most effective placement of warehouses around the world.

Select Transportation Modes and Carriers:

- Determine the mix of transportation modes that will most efficiently connect suppliers, producers, warehouses, distributors, and customers.
- Select specific carriers.

Select the Right Number of Partners:

- Select the minimum number of firms’ freight forwarders and 3PLs or a 4PL to manage forward and reverse logistics. In selecting logistics partners, also consider their knowledge of the local markets and regulations.

Develop State-of-the-Art Information Systems:

- Reduce inventory costs by more accurately and rapidly tracking demand information and the location of goods. Developing state-of-the-art information systems may be difficult in some regions. Such situations make defining the processes and information flows even more critical.

Substituting Information for Inventory

Physical inventory can be replaced by better information in the following ways:

- Improve communications. Talk with suppliers regularly and discuss plans with them.
- Collaborate with suppliers. Use IT to coordinate deliveries from suppliers. Remove obsolete inventory. Use continuous improvement tools and share observations about trends.
- Track inventory precisely. Track the exact location of inventory using bar codes and/or RFID (radio frequency identification) with GPS (global positioning systems).
- Keep inventory in transit. It's possible to reduce system wide inventory costs by keeping inventory in transit. One method of keeping inventory in motion the maximum amount of time is a distribution strategy called cross-docking. Used with particular success by Wal-Mart, cross-docking involves moving incoming shipments directly across the dock to outward-bound carriers. The inventory thus transferred may literally never be at rest in the warehouse.

Another example of cross-docking can be taken from the airline industry. When a passenger travels from Seattle to New York, he or she might be cross-docked in Chicago. The airline has configured their network in this way as opposed to having direct flights from city to city. Passengers are not warehoused per se but simply pass through the airport in an hour or two, getting off of one plane and onto another. At the end of the day, ideally the airport should be empty, as should all cross-docking locations.

A trailer, railcar, or barge can be considered a kind of mobile warehouse. Rolling inventory should be closely tracked by GPS to facilitate rapid adjustments if a shipment is delayed or lost or if a customer changes an order at the last minute.

- Use postponement centers. Avoid filling warehouses with the wrong mix of finished goods by setting up postponement centers to delay product assembly until an actual order has been received.
- Mix shipments to match customer needs. Match deliveries more precisely to customer needs by mixing different SKUs on the same pallet and by mixing pallets from different suppliers.
- Don't wait in line at customs. Reduce the time spent in customs by clearing freight while still on the water or in the air.

Reducing Supply Chain Partners to an Effective Number

Though you have to watch out for tradeoffs in effectiveness when knowing what is logistics and reducing the number of logistics partners, you can generally increase efficiency by doing so. If possible, look for an entire echelon (tier) you can do without such as all the wholesale warehouses or factory warehouses.

The more partners there are in the chain, the more difficult and expensive the chain is to manage. Handoffs among partners cost money and eat up time. Having many partners means carrying more inventories. Reducing the number of partners can reduce operating costs, cycle time, and inventory holding costs. There is, however, some lower limit below which you create more problems than you solve. If you eliminated all partners other than your own firm, you'd be back to the vertical integration strategy pursued in a simpler marketplace during the early 20th century by U.S. auto-maker Henry Ford.

Pooling Risks

In regard to inventory management, pooling risks is a method of reducing stockouts by consolidating stock in centralized warehouses. The risk of stockouts increases as supply chains reduce the safety stock held at each node and move toward Just-in-Time ordering procedures. With every entity attempting to keep inventory costs down in this manner, the risk of stockouts rises if buying exceeds expectations. Statistically speaking, when inventory is placed in a central warehouse instead of in several smaller warehouses, the total inventory necessary to maintain a level of service drops without increasing the risk of stockouts. An unexpectedly large order from any one customer will still be small in relation to the total supply available.

Risk pooling also works with parts inventories. Risk pooling is defined as follows:

- A method often associated with the management of inventory risk. Manufacturers and retailers that experience high variability in demand for their products can pool together common inventory components associated with a broad family of products to buffer the overall burden of having to deploy inventory for each discrete product.
- By using a central warehouse to hold parts common to many products, a supply network can reduce storage costs and the risks of stockouts that would be experienced in smaller, decentralized warehouses.
- There are tradeoffs to consider. Because the central warehouse may be further away from some production facilities than the smaller warehouses would be, lead times and transportation costs are likely to go up. Again, logistics has to be managed from the point of view of improving the value of the overall system, not just one part of the system.

Logistics Management

Logistics management is a supply chain management component that is used to meet customer demands through the planning, control and implementation of the effective movement and storage of related information, goods and services from origin to destination. Logistics management helps companies reduce expenses and enhance customer service.

The logistics management process begins with raw material accumulation to the final stage of delivering goods to the destination.

By adhering to customer needs and industry standards, logistics management facilitates process strategy, planning and implementation.

Logistics management involves numerous elements, including:

- Selecting appropriate vendors with the ability to provide transportation facilities,
- Choosing the most effective routes for transportation,
- Discovering the most competent delivery method,
- Using software and IT resources to proficiently handle related processes.

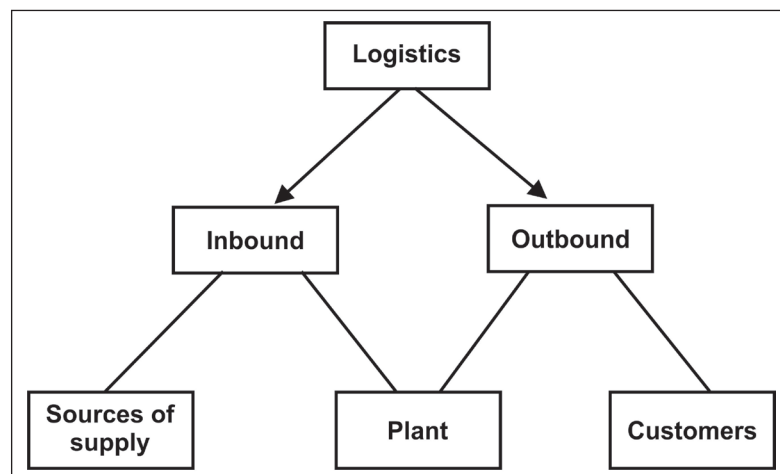
In logistics management, unwise decisions create multiple issues. For example, deliveries that fail or are delayed lead to buyer dissatisfaction. Damage of goods due to careless transportation is another potential issue. Poor logistics planning gradually increases expenses, and issues may arise from the implementation of ineffective logistics software. Most of these problems occur due to improper decisions related to outsourcing, such as selecting the wrong vendor or carrying out delivery tasks without sufficient resources.

To resolve these issues, organizations should implement best logistic management practices. Companies should focus on collaboration rather than competition. Good collaboration among transportation providers, buyers and vendors helps reduce expenses. An efficient and safe transportation provider is also vital to business success.

Classification of Logistical Activities

Logistics (or Logistical Activities) may be Broadly Classified into Two Categories:

1. Inbound logistics; which is concerned with the smooth and cost effective inflow of materials and other inputs (that are needed in the manufacturing process) from suppliers to the plant. For proper management of inbound logistics, the management has to maintain a continuous interface with suppliers (vendors).
2. Outbound logistics (also called physical distribution management or supply chain management); is concerned with the flow of finished goods and other related information from the firm to the customer. For proper management of outbound logistics, the management has to maintain a continuous interface with transport operators and channels of distribution.



Scope of logistical activities.

Significance (or Objectives) of Logistics Management

Logistics management is significant for the following reasons:

- (a) **Cost Reduction and Profit Maximization:** Logistics management results in cost reduction and profit maximization, primarily due to:
 1. Improved material handling,
 2. Safe, speedy and economical transportation,
 3. Optimum number and convenient location of warehouses etc.
- (b) **Efficient Flow of Manufacturing Operations:** Inbound logistics helps in the efficient flow of manufacturing operations, due to on-time delivery of materials, proper utilisation of materials and semi-finished goods in the production process and so on.
- (c) **Competitive Edge:** Logistics provide, maintain and sharpen the competitive edge of an enterprise by:
 1. Increasing sales through providing better customer service,
 2. Arranging for rapid and reliable delivery,
 3. Avoiding errors in order processing; and so on.
- (d) **Effective Communication System:** An efficient information system is a must for sound logistics management. As such, logistics management helps in developing effective communication system for continuous interface with suppliers and rapid response to customer enquiries.
- (e) **Sound Inventory Management:** Sound inventory management is a by-product of logistics management. A major headache of production management, financial management etc. is how to ensure sound inventory management; which headache is cured by logistics management.

Significance of logistics management – at a glance:

1. Cost reduction and profit maximization,
2. Efficient flow of manufacturing operations,
3. Competitive edge,
4. Effective communication system,
5. Sound inventory management.

Activities Involved in Logistics Management

Following is a brief account of key activities involved in logistics management:

Network Design

Network design is one of the prime responsibilities of logistics management. This network is

required to determine the number and location of manufacturing plants, warehouses, material handling equipment's etc. on which logistical efficiency depends.

Order Processing

Customers' orders are very important in logistics management. Order processing includes activities for receiving, handling, filing, recording of orders. Herein, management has to ensure that order processing is accurate, reliable and fast.

Further, management has to minimize the time between receipt of orders and date of dispatch of the consignment to ensure speedy processing of the order. Delays in execution of orders can become serious grounds for customer dissatisfaction; which must be avoided at all costs.

Procurement

It is related to obtaining materials from outside suppliers. It includes supply sourcing, negotiation, order placement, inbound transportation, receiving and inspection, storage and handling etc. Its main objective is to support manufacturing, by providing timely supplies of qualitative materials, at the lowest possible cost.

Material Handling

It involves the activities of handling raw-materials, parts, semi-finished and finished goods into and out of plant, warehouses and transportation terminals. Management has to ensure that the raw-materials, parts, semi-finished and finished goods are handled properly to minimize losses due to breakage, spoilage etc. Further, the management has to minimize the handling costs and the time involved in material handling.

Material handling systems, in logistics management are divided into three categories:

1. Mechanized systems
2. Semi-automated systems
3. Automated systems

Inventory Management

The basic objective of inventory management is to minimize the amount of working capital blocked in inventories; and at the same time to provide a continuous flow of materials to match production requirements; and to provide timely supplies of goods to meet customers' demands.

Management has to maintain inventories of:

1. Raw-materials and parts
2. Semi-finished goods
3. Finished goods

Management has to balance the benefits of holding inventories against costs associated with holding inventories like – storage space costs, insurance costs, risk of damage and spoilage in keeping stocks etc.

Packaging and Labeling

Packaging and labeling are an important aspect of logistics management. Packaging implies enclosing or encasing a product into suitable packets or containers, for easy and convenient handling of the product by both, the seller and specially the buyer.

Packaging facilitates the sale of a product. It acts as a silent salesman. For example, a fancy and decorative packaging of sweets, biscuits etc. on the eve of Diwali, makes for a good sale of such items.

Labeling means putting identification marks on the package of the product. A label provides information about – date of packing and expiry, weight or size of product, ingredients used in the manufacture of the product, instructions for sale handling of the product, price payable by the buyer etc.

Labeling is a strong sales promotion tool. The consumer who is persuaded to read the label may, in fact, try to buy the product; even though he/she had no such premeditation (advance idea).

Warehousing

Storage or warehousing is that logistical activity which creates time utility by storing goods from the time of production till the time these are needed by ultimate consumers.

Here, the management has to decide about:

1. The number and type of warehouses needed.
2. The location of warehouses.

The above two decisions depend on the desired level of customer service and the distance between the supply source and final destination i.e. markets.

Transportation

Transportation is that logistical activity which creates place utility.

Transportation is needed for:

1. Movement of raw-materials from suppliers to the manufacturing unit.
2. Movement of work-in-progress within the plant.
3. Movement of finished goods from plant to the final consumers.

Major transportation systems include:

1. Railways
2. Roadways

3. Airways
4. Waterways
5. Pipelines

The choice of a particular mode of transportation is dependent on a balancing of following considerations:

1. Speed of transportation system,
2. Cost involved in transportation,
3. Safety in transportation,
4. Reliability of transportation time schedules,
5. Number of locations served etc.

Strategic Logistics Management

Proper Planning

The first step to accomplishing a task is planning. Now, planning encapsulates various factors. It involves procuring the goods, storage facilities, and delivery of products to the exact location.

Apart from these, the other parameters are – time, transportation, and the costs. A supply chain operative should be able to devise the flow chart for the whole operation. The purpose of planning is to attain maximum work in the least possible time. At the same time, the planning should aim at maximizing the profits.

Proper planning is a wise plan, but an experienced manager will be able to prepare for the unforeseen circumstances as well. These situations can be related to:

- The products,
- Unavailability of the transportation,
- Any internal issue in the organization,
- Research and pick the correct Freight class.

For this, a contingency plan should be there to avoid any logistics failure. Logistics planning process is incomplete without an emergency plan.

Adopt Automation

In the age of automation, technology plays a major role in increasing the efficiency of an organization. Automation has a vital role in the business process optimization. There is valuable software that can be deployed in the logistics process.



For example, business process software can be integrated that provides timely updates regarding the movement of goods. The operator and the client will get details regarding:

- The goods that are dispatched from the supplier,
- Procurement of the goods at the warehouse, and lastly,
- Delivery of the goods at the destination.

This saves a considerable amount of time because manual interference is eliminated. Moreover, accurate tracking help in improving overall process management.

Similarly, the account details and employee details can be managed using specific software developed for these tasks. Therefore, the logistics firm should embrace the technology for increasing productivity.

Value Relations

The team is an essential aspect of an organization that is responsible for the growth. Whether it's the delivery guy or the warehouse manager, everyone should be perfect in their respective field of work.

For this, you need to invest in proper training of the employees. Regular training workshops keep the employees updated with the latest trends in the logistics industry. This helps in increased efficiency and satisfaction of the clients.

Logistics manager with impeccable interpersonal skills is crucial for the organization. There are times when the things don't work according to the plan. In this situation, instead of panicking, you need a reliable person who can sort out the issues with utmost efficiency.

Moreover, the manager should have authoritative contacts in the industry. This can be beneficial in tapping the business opportunities.

Warehouse Management

Effective logistics management is incomplete without proper warehouse management. Warehouse operations are considerably dependent on the type of goods.

For example, perishable goods, such as dairy products, needs refrigeration facilities. Grains should be stored in moisture free environment. Similarly, the specifications vary according to the products. The logistics firm should aim at developing the warehouse inventory so that there is minimum wastage of goods.

Moreover, maximize the storage capacity of the warehouse. Usage of vertical storage columns is recommended. Effective implementation of the software for sequencing the products is necessary because there should be no delay while locating the product when the order is placed. The warehouse staff should be well-trained for the warehouse operations.

Efficient Transportation

Transportation department can be analyzed to decrease the expenses of the logistics firm and at the same time, it can be revamped for faster delivery of the products. Following factors should be considered for efficient transportation:



- Determining the best delivery route. A logistics firm should opt for the shortest yet safest route. This is beneficial for saving money as well as time.
- Cost-effective packaging that ensures low investment and safety of goods as well. Optimize the packaging so that it occupies less volume and it does not increase the weight of the package.

Measure and Improve

Logistics network optimization is incomplete without integrating measurement, analysis, and feedbacks. When you deploy new strategies in the system, you need to measure the output. This is important as it intimates the success or failure of the strategy.

Measurement tools and software should be integrated that easily determines and classifies the information as per the requirement. Your future planning is heavily dependent on the measured information. Analyze the metrics related to different operations. This includes:

- Cycle time metrics
- Cost metrics
- Service metrics

Generous feedbacks help in improvising. The ideas and suggestions of the employees should be recorded periodically. This ensures that you generate a pool of ideas and at the same time, it reveals any flaws in the system.

The Importance of Flexibility for Strategic Logistics Management

Flexibility within logistics management is crucial to maintaining efficiency and accuracy in shipping processes. Flexibility is often misunderstood as more companies move towards software-as-a-service (SaaS) models for transportation management systems (TMS). However, flexibility refers to the scalability and adaptability within a given system to improve the effectiveness of shipping processes. Take a look at the importance of flexibility in a TMS and how it helps to drive improvement for shippers through strategic logistics management.

Catalysts for Increased Flexibility

Scalability and demand from customers and suppliers have given rise to a new demand for flexibility. In a sense, flexibility makes a TMS more flexible to change. As a result, a flexible TMS allows a shipper to view potential influences in a shipment, make adjustments as necessary, and maintain more communication between parties in the shipping process.

Additionally, compliance and visibility concerns are driving the demand for flexibility. Flexibility allows an organization to ensure compliance statutes are met. If a violation occurs, a flexible system can identify how the violation occurred, what actions need to be taken to resolve the issue, and how such issues can be prevented in the future. Furthermore, a flexible system helps to increase control over incoming and outbound shipments, which further drives shipping.

A final reason for increasing flexibility includes the unpredictability in shipping. Within hours, the supply and demand for a given product may change drastically, and shippers need to be able to meet these fluctuations. However, meeting such fluctuations means keeping too much inventory on-site, which results in inefficient use of space. A flexible TMS should consider historic data for time periods and changes in transportation methods and devise a solution to address each problem. Once these solutions have been proposed, a transportation manager can make a decision on which solution will be the best way to approach a given problem. As a result, the overall scope of a shipper's processes will improve to meet the uncertainties of future shipping issues when technology enables flexibility and yields strategic logistics management.

Core Components of Flexibility

Flexible and strategic logistics management includes three key means of improvements: delivery models, functionality, and services.

Delivery models are primarily comprised of SaaS subscriptions, which can be expanded or retracted to meet the company demands. Furthermore, SaaS TMS allows an organization to reduce costs by identifying correlations between KPIs and similar data, which results in more efficient processes and accountability throughout the process.

The functionality of flexibility is achieved by instilling best practices, such as those used when a shipment becomes distressed, to enact change across a shipper's business processes. These tools should have the ability to change to meet the demands of the shipper. For example, the TMS may gather data about a distressed shipment, advise other shippers of the error, and devise a solution to prevent future problems.

Combining these factors into different services makes up the last part of a flexible system. A given TMS should be able to perform benchmarking analyses, assess transportation procurement, and change the overall program to enhance outcomes.

Traditional Flexibility versus Modern Flexibility

Traditional flexibility meant adjusting delivery schedules to meet the expectations of when drivers and shipments would arrive and be ready for processing. Modern flexibility involves the use of data analytics to discern where problems arise and how such problems can be addressed. Basically, this involves the eradication of data that does not benefit the shipper, providing accurate logs of information to all parties in the shipping process, and verifying all shipped materials are included in the shipment.

Furthermore, modern shipping includes the "break-apart" aspects of traditional flexibility models. For example, shipping several smaller items via smaller trucks may be more effective than shipping a single load across a given mode of transport. This move away from tactical logistics management to strategic logistics management ultimately achieves the goal of reducing waste, that is, reducing unnecessary cost.

Importance of Logistics Management

Effective logistics management is important to companies for a number of reasons, both positive and negative.

Good logistics management ensures that products are shipped in the most economical, safe, efficient and timely manner. This results in cost savings for the company and more satisfied customers.

In contrast, poor logistics management can result in damaged or delayed shipments, which can then lead to dissatisfied customers, returns and scrapped products. The consequences of these problems include higher costs and customer relation problems. In order to avoid these results, effective logistics management includes careful planning, proper software system selection, proper vetting and selection of outsourced vendors, and adequate resources to handle the processes.

Logistics is Important to your Company

As the business world grew, the definition of logistics called for management, leading to the development of experts called supply chain logisticians. This type of leadership encompasses the planning and management of all activities involved in sourcing, procurement, conversion, and logistics management activities. Importantly, it also includes coordination and collaboration with channel partners which can be suppliers, intermediaries, third-party service providers, and customers.



Even small businesses deal with finding suppliers, if not with transporting merchandise to a store. Small business owners also conduct distribution logistics with inventory and warehousing. And, every small business owner can tell you about how they handle reverse logistics, with returned merchandise or refusal of services. Larger businesses may deal in all four logistic fields.

In the business environment, logistics either have an internal or external focuses (inbound or outbound). Depending upon the business involved, this part of the chain can be simple or complicated. For more complicated procedures, third parties often are hired to conduct any one of the four fields within business logistics.

Third-party logistics (3PL) involves using external individuals or organizations to execute logistics activities that have traditionally been performed within an organization itself. If, for example, a company decides to export its product, it may hire a person or organization to help with distribution logistics. Today, there is a movement toward building fourth-party logistics (4PL), which integrates 3PL competencies and other organizations to design, build, and run comprehensive supply chain solutions. A 4PL general contractor would manage other 3PLs, truckers, forwarders, custom house agents, and others, essentially taking responsibility of a complete process for the customer.

Another specialty includes logistics consulting services. Firms in this industry specialize in the production and distribution of goods, from the first stages of securing suppliers to the delivery of finished goods to consumers. Such firms give advice on improvements in the manufacturing

process and productivity, product quality control, inventory management, packaging, order processing, the transportation of goods, and materials management and handling. In the process, these consulting firms might suggest improvements to the manufacturing process in order to use inputs better, increase productivity, or decrease the amount of excess inventory. Consulting firms in this segment of the industry also advise on the latest technology that links suppliers, producers, and customers together to streamline the manufacturing process.

Even project management requires logistics, as one vein of this science coordinates a sequence of resources to carry out projects. Typical constraints in project management include scope, time, and budget, or the same constraints involved in business logistics. The time constraint refers to the amount of time available to complete a project. The cost constraint refers to the budgeted amount available for the project. The scope constraint refers to what must be done to produce the project's end result.

Increased Customer Satisfaction

Consumers demand better service, and this mandate creates a need for shippers to provide fast, accurate and quality service. Good management strategy is aimed to constantly optimize transportation processes and eliminate disruptions. Therefore, it has a direct impact on your customers' satisfaction. Improved customer service can bring a good reputation to a company's brand and help generate more business. The smoother the freight moving processes are within and beyond your company means that you will provide more value to your clients. Ultimately, well-handled logistics contributes to the overall positive customer's experience.

Visibility and Insight Cost Savings

It is important to create visibility into a company's supply chain. Advanced transportation management systems (TMS) analyze historical data and track the real-time movement of goods in and out of a business. Logistics managers can use this information for process optimization and avoiding potential disruptions. TMS data analysis keeps a company's supply chain moving more efficiently, all while gaining operational insight.

Cost Savings

Managing logistics on a proper level will give a company control over inbound freight, keep inventory at optimal levels, organize the reverse flow of goods, and utilize freight moves on the proper transportation modes – all of which can cut costs significantly.

Demand Side Analysis

Demand side analysis is used to find out how much demand exists for a particular product or service. A demand analysis takes into account data related to customer's income level, price of product, price of supplementary product or any buying constraints or stimulus. It helps companies in taking decision whether to go ahead with a particular product or service. The result of demand side analysis is referred as final demand expectation.

There can be various methods for demand side analysis but the basic components remain same that are as follows:

- Market identification
- Business cycle
- Product differentiation
- Growth potential and
- Competition

As demand analysis is highly important for companies, it has to be carried out in systematic way. The key steps involved in demand side analysis are as follows:

- Situation analysis and defining objectives
- Secondary study and data collection
- Conduct market survey
- Market characterization
- Forecasting of demand
- Market planning

Several statistical tools are also used to extract relevant information out of the data. Based on demand analysis, companies also find out expected profit and breakeven point.

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