

All courses are prepared using many books and websites. *“knowledge is found to be shared, but with respecting its sources”*

COURSE 2: The Importance of Business Logistics

According to what we have seen in the last course, we can say that a Logistician has many responsibilities including: overseeing and managing inventory, arranging for appropriate transportation, and establishing adequate storage for the inventory. A qualified logistician plans out all of these and other aspects, coordinating the steps as inventory moves along the supply chain. The logistician is also responsible for consultations with potential and existing clients as well as the companies that are transporting and storing resources.

Business logistic plays a fundamental role to reach the goals of companies, as the following:

& Maintaining Competitive Edge

Successful business logistics provide a competitive edge against other organizations. It provides a system or process by which customer needs can be fulfilled in a more efficient manner. A business should strive to provide shipments of merchandise in a more accurate and fast manner than competitors do. The Internet has made it possible for many companies to do this.

& Building Good Consumer Relations

Providing product in an efficient manner, which business logistics helps to do, also helps to build good consumer relations. This is not only important for immediate monetary gain, but also because good customer relations can mean more business. One of the best ways to advertise and grow your business is to provide good, quality service that customers will tell other customers about.

& Creating Finished Product

A business needs to ensure there are enough raw materials available to make finished products. Without quality goods, a business cannot make quality product. Having enough products stocked is also necessary for supply and demand purposes and to maximize customer satisfaction.

& Providing Organization

Each time a product is created, business logistics can help to ensure the process goes efficiently. It is important that inventory be tracked, transported, stored and manufactured in a way that accommodates all of an organization's departments. Controlling this flow so

that each department knows what to do and what is expected will help to ensure that the company's plans and goals stay on track.

2- Configuration and management



Push-back rack for motorcycles, a [LIFO](#) rack system for storage

Similarly to production systems, logistic systems need to be properly configured and managed. Actually a number of methodologies have been directly borrowed from [operations management](#) such as using [Economic Order Quantity](#) models for managing inventory in the nodes of the network. [Distribution resource planning](#) (DRP) is similar to [MRP](#), except that it doesn't concern activities inside the nodes of the network but planning distribution when moving goods through the links of the network.

Traditionally in logistics **configuration** may be at the level of the warehouse ([node](#)) or at level of the distribution system ([network](#)).

Regarding a single warehouse, besides the issue of designing and building the warehouse, configuration means solving a number of interrelated technical-economic problems: dimensioning [rack](#) cells, choosing a [palletizing](#) method (manual or through [robots](#)), rack dimensioning and design, number of racks, number and typology of retrieval systems (e.g. [stacker cranes](#)). Some important constraints have to be satisfied: fork and load beams resistance to [bending](#) and proper placement of [sprinklers](#). Although [picking](#) is more of a tactical planning decision than a configuration problem, it is important to take it into account when deciding the racks layout inside the warehouse and buying tools such as handlers and motorized carts since once those decisions are taken they will work as constraints when managing the warehouse, same reasoning for [sorting](#) when designing the conveyor system or installing automatic [dispensers](#).

Configuration at the level of the distribution system concerns primarily the problem of [location](#) of the nodes in a geographic space and distribution of [capacity](#) among the nodes. The first may be referred to as [facility location](#) (with the special case of [site selection](#)) while the latter to as capacity allocation. The problem of [outsourcing](#) typically arises at this level: the nodes of a [supply chain](#) are very rarely owned by a single

enterprise. Distribution networks can be characterized by numbers of levels, namely the number of intermediary nodes between [supplier](#) and [consumer](#):

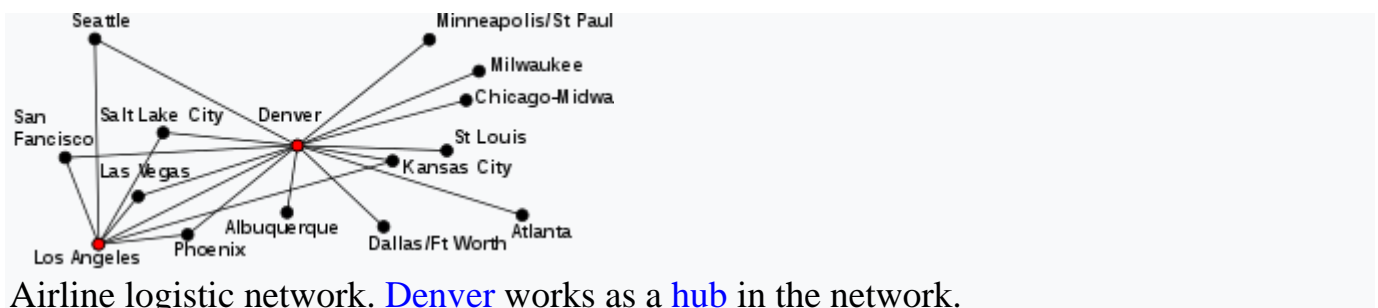
- [Direct store delivery](#), i.e. zero levels
- One level network: central warehouse
- Two level network: central and peripheral warehouses

This distinction is more useful for modeling purposes, but it relates also to a tactical decision regarding [safety stocks](#): considering a two level network, if safety inventory is kept only in peripheral warehouses then it is called a dependent system (from suppliers), if safety inventory is distributed among central and peripheral warehouses it is called an independent system (from suppliers). Transportation from producer to the second level is called primary transportation, from the second level to consumer is called secondary transportation.

Although configuring a distribution network from zero is possible, logisticians usually have to deal with restructuring existing networks due to presence of an array of factors: changing demand, product or process innovation, opportunities for outsourcing, change of government policy toward [trade barriers](#), innovation in transportation means (both [vehicles](#) or [thoroughfares](#)), introduction of [regulations](#) (notably those regarding [pollution](#)) and availability of ICT supporting systems (e.g. [ERP](#) or [e-commerce](#)).

Once a logistic system is configured, **management**, meaning tactical decisions, takes place, once again, at the level of the warehouse and of the distribution network. Decisions have to be made under a set of [constraints](#): internal, such as using the available infrastructure, or external, such as complying with given product [shelf lives](#) and [expiration dates](#).

At the warehouse level, the logistician must decide how to distribute merchandise over the racks. Three basic situations are traditionally considered: shared storage, dedicated storage (rack space reserved for specific merchandise) and class based storage (class meaning merchandise organized in different areas according to their access index).



Picking efficiency varies greatly depending on the situation. For man to goods situation, a distinction is carried out between high level picking (vertical component significant) and low level picking (vertical component insignificant). A number of tactical decisions regarding picking must be made:

- **Routing path:** standard alternatives include transversal routing, return routing, midpoint routing and largest gap return routing
- **Replenishment method:** standard alternatives include equal space supply for each product class and equal time supply for each product class.
- **Picking logic:** order picking vs batch picking

At the level of the distribution network, tactical decisions involve mainly [inventory control](#) and [delivery](#) path optimization. Note that the logistician may be required to manage the [reverse flow](#) along with the forward flow.

2- Warehouse management and control

Although there is some overlap in functionality, [warehouse management systems](#) (WMS) can differ significantly from [warehouse control systems](#) (WCS). Simply put, a WMS plans a weekly activity forecast based on such factors as [statistics](#) and [trends](#), whereas a WCS acts like a floor supervisor, working in real time to get the job done by the most effective means. For instance, a WMS can tell the system that it is going to need five of [stock-keeping unit](#) (SKU) A and five of SKU B hours in advance, but by the time it acts, other considerations may have come into play or there could be a logjam on a conveyor. A WCS can prevent that problem by working in real time and adapting to the situation by making a last-minute decision based on current activity and operational status. Working [synergistically](#), WMS and WCS can resolve these issues and maximize [efficiency](#) for companies that rely on the effective operation of their warehouse or distribution center.

3- Logistics outsourcing

Logistics outsourcing involves a relationship between a company and an LSP (logistic service provider), which, compared with basic logistics services, has more customized offerings, encompasses a broad number of service activities, is characterized by a long-term orientation, and thus has a strategic nature.

Outsourcing does not have to be complete externalization to a LSP, but can also be partial:

- A single [contract](#) for supplying a specific service on occasion
- Creation of a [spin-off](#)
- Creation of a [joint venture](#)

[Third-party logistics](#) (3PL) involves using external organizations to execute logistics activities that have traditionally been performed within an organization itself. According to this definition, third-party logistics includes any form of outsourcing of logistics activities previously performed in house. For example, if a company with its own warehousing facilities decides to employ external transportation, this would be an example of third-party logistics. Logistics is an emerging business area in many countries.

The concept of a **fourth-party logistics** (4PL) provider was first defined by Andersen Consulting (now [Accenture](#)) as an integrator that assembles the resources, planning capabilities, and technology of its own organization and other organizations to design, build, and run comprehensive supply chain solutions. Whereas a third-party logistics (3PL) service provider targets a single function, a 4PL targets management of the entire process. Some have described a 4PL as a general contractor that manages other 3PLs, truckers, forwarders, custom house agents, and others, essentially taking responsibility of a complete process for the customer.

4- Horizontal alliances between logistics service providers

Horizontal [business alliances](#) often occur between logistics service providers, i.e., the cooperation between two or more logistics companies that are potentially competing. In a horizontal alliance, these partners can benefit twofold. On one hand, they can "access tangible resources which are directly exploitable." In this example extending common transportation networks, their warehouse infrastructure and the ability to provide more complex service packages can be achieved by combining resources. On the other hand, partners can "access intangible resources, which are not directly exploitable." This typically includes know-how and information and, in turn, innovation.