

Where's the best location for your distribution centre?

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Manufacturers and retailers spend many millions on re-structuring their logistics systems to ensure that customer expectations are met whilst inventory and transportation costs are minimised.

This is a fine balance but getting it wrong has obvious implications in terms of efficiency and sales.

Every company's distribution strategy is different but in the process of deciding where to locate distribution hub or hubs, a number of primary supply chain attributes first needs to be assessed. These are:

- Location in supply chain

The relative position of a distribution node in the supply chain has a very important influence on its geographic location. If its function is to carry out primary logistics activities, e.g. feeding vendor managed inventory into a large manufacturing site, the overarching need will be to locate the hub near to its customer. If however the hub is designed for secondary logistics purposes, e.g. to distribute finished goods to a mass consumer market, then its location will be more governed by the need for geographic centrality.

- Customer distribution profile

Leading on from this latter point, the customer distribution profile is obviously of prime importance to the location of a hub. This may mean geographic centrality, although this is not always the case. If the customer distribution profile is global (e.g. a medical technology spare parts operation) then the 'connectedness' of an airport may be the overwhelming requirement, more than its physical location.

- Type of product which is being shipped

This is important both from the perspective of a product's physical attributes as well as intrinsic value. If small packages are being shipped, location next to a parcels hub or airport will be important. For higher volume/lower value goods, location at a road interchange or proximity to a sea port may be more important.

- Customer service levels required

In sectors which have to offer their customers a very high level of service (such as in the after sales market), fulfilling small delivery windows will have a major effect on the structure of a distribution network. This may require a network of close-to-customer Forward/Field Stock Locations (FSLs), replenished from national or regional distribution centres.

Once these 'primary' supply chain attributes have been identified, a system of subsidiary factors can then be prioritised and 'weighted' in importance.

These factors involve:

1. Air links

Where volumes include air cargo, proximity to an airport is obviously important. However not any airport will do, as the level of 'connectedness' is essential. According to research undertaken by Chicago's Northwestern University, Paris, London, Frankfurt and Amsterdam are the four most connected cities in the world, with the highest US city being Chicago followed by New York, Atlanta, Dallas and Houston. In Asia, Tokyo, Beijing, Bangkok and Hong Kong are the best connected. As well as the number of distinct routes, frequency of flights has to be taken into account, as well as other potential environmental factors such as night flying bans.

For high value-density shipments, the need for proximity to an international air express hub has led spare parts operations, etailers, high tech companies etc to cluster around airports such as Memphis ([FedEx](#)), Louisville ([UPS](#)) and Wilmington, Ohio ([DHL](#)) in the USA and in Europe at Paris (FedEx), Cologne (UPS) and Brussels (DHL). In Asia Pacific, DHL has a major hub in Hong Kong; Shanghai is growing in importance through UPS' investment, and FedEx has its main hub in the Philippines at Subic Bay (moving to Guangzhou in 2009).

2. Shipping links

Similar issues of 'connectedness' exist for sea freight. As well as the number of routes available from a sea port, fleet deployment (number of ships), container carrying capacity (number of TEUs) and number of shipping lines are important factors. At a country level China, Hong Kong and Singapore have the highest level of connectivity, according to the UN Conference on Trade and Development (UNCTAD). These countries are followed by the United States, United Kingdom and Netherlands.

At a port level, Shanghai, Hong Kong, Singapore, Los Angeles, [Rotterdam](#), Antwerp and Hamburg offer the most choices for shippers and have consequently attracted substantial investment in distribution centres.

Good port to port links are just part of the equation. Efficiency in loading/off loading and congestion in and around the ports has become major factors in recent years, given the increase in global shipping volumes. This has had a major impact on routing decisions with some shippers by-passing West Coast of the USA ports and opting to distributing from hubs based near to ports such as New York or Charleston.

Competition for space in and around ports has led to the development of 'inland ports'. This has resulted in the growth on the 'Inland Empire' in California and intermodal ports such as Duisport in Germany.

3. Road links

For most manufacturers or retailers, road links are the most important modal factor in the location of a distribution hub, influencing access and time to market.

In Europe this has led to the development of hubs around towns such as Venlo, Eindhoven or Roermond in the Netherlands all of which are on key arterial routes between the manufacturing and consumer centres of Germany, France, Netherlands and

Belgium, the main ports of Rotterdam and Antwerp, and the airports of Amsterdam, Brussels and Cologne, to name but a few.

In western Europe, the quality of road infrastructure is generally very good which makes the decision on location reasonably easy, with plenty of options available. Regions competing for distribution hubs generally have to stress other advantages. Companies could base their logistics hubs as easily across the border in Germany as in Venlo – in this case it is a range of other non-modal factors which are more important such as labour laws and costs. However elsewhere in the world this is not the case. Few companies choose to site their distribution hubs outside of the main metropolitan areas in China for example, as road networks are still relatively undeveloped.

4. Non-modal factors.

Generally where there is little to choose between locations on the basis of transportation, decisions will be made through a combination of the following factors:

a. Cost of rental, land and build costs

The costs of renting, buying and building distribution warehousing varies considerably even over relatively short distances. For instance in Europe rental at Heathrow Airport in London can be up to as much as €232 per sq m per year, according to estate agent Cushman & Wakefield. In Stockholm it is €109; Frankfurt Airport €86; Rotterdam €62; and cheapest in Limburg, Belgium at just €32 per sq m per year. Building costs are highest at Vienna, Austria and cheapest in Marseilles, France. Land costs meanwhile are most expensive in Heathrow and cheapest in Antwerp, Belgium.

b. Labour

Labour is an increasingly important factor in the location of a distribution centre. Legislation in some countries has made the workforce significantly less flexible than in others. As several hundred staff may be employed in any one centre it is essential to ensure the ability to take on and lay off staff during seasonal and cyclical peaks and troughs.

Labour availability is also important. Where there is full employment, the costs required to staff an operation rise considerably – and in some cases it is impossible to recruit good quality staff. Warehousing and hub employment remains unattractive to many people and therefore companies often have to resort to either higher wages or other benefits such as training and qualifications. This is the route which UPS took with the local government authorities in Louisville to overcome staffing shortages at its Worldport hub. Workers are paid to take a degree level course and are rewarded for academic success and loyalty to the company. This has been very successful in ensuring the retention of staff, as well as motivation.

5. Other

There are of course very many other factors involved in the location of distribution centres. These include the flexibility and efficiency of customs regimes (an important competitive advantage for the Netherlands) as well as the availability and quality of a large number and range of logistics service providers.

The issues of warehouse and distribution hub location will be discussed in full at Ti's upcoming conference, [Global Distribution Strategies 2008](#) and within the conference's companion report [Global Distribution and Warehousing 2008](#). For more information and to register as a delegate, follow the link to the website.

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