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Economic Development: The Science of Site Selection

By [Lisa Harrington](#)

Follow the formula for choosing the right site for your supply chain facilities and you'll increase your ability to adapt quickly to market change, improve customer service, and reduce transportation costs.

"Hewlett-Packard Company has the ninth-largest non-military supply chain in the world. We ship everything from inkjet cartridges to super computers," says Robert Gifford, vice president, worldwide logistics for the company. "We occupy a dominant position from a logistics standpoint in almost every marketplace we play, and our volumes are so astronomical that it makes logistics very important. For example, about eight percent of all outbound air freight out of Shanghai is HP."

Managing the supply chain of this \$70-plus-billion company requires, among other things, a finely tuned network of distribution facilities. HP's supply chain requirements drive the type and location of these distribution centers. These centers, in fact, are sited with great deliberation to meet the needs of HP's five distinct supply chains.

Having the right network of supply chain facilities dramatically increases HP's ability to adapt quickly to market change. The network, and its efficient operation, makes a difference to the high-tech company's bottom line. "Our logistics costs as a percent of revenues beat our competition," Gifford says.

Choosing the proper site for a distribution center has developed into a science. "The subject of site selection immediately causes many people to conjure up images of being escorted from site to site by a commercial real estate broker who has been commissioned to present one or more properties for sale to a prospective buyer," says Frank Renshaw, president of Keogh Consulting, a Cleveland-based engineering and management consulting firm. "Actually, choosing a specific property is likely to be the last stage of the site selection process."

Getting this process right produces measurable positive results, as HP illustrates. Making the wrong selection can be a costly mistake, the effects of which can ripple throughout a company's entire supply chain.

Start With the Customer

For HP, as with other best-practice companies, the site selection process begins with the customer. "Our first criteria in designing a product's supply chain is the customer," Gifford says. "We have to know our marketplace to get customer expectations right, and we want to meet or exceed their expectations.

"For example, the key criteria in serving a Best Buy or Wal-Mart is to make sure product is there, on the store shelf, in pristine condition and offering a competitive sales advantage to that store. A small to medium-sized business, however, wants to order one desktop computer configured to its specifications, and wants it delivered in five days. These two supply chains are quite different from each other."

HP has broken its business down into five distinct types of supply chains, each with its own set of attributes. Gifford explains these five supply chains as follows:

1. No-touch direct ship for portable products -- notebooks and handhelds.
2. Low-touch for products such as PCs and DeskJet printers, where HP does final product configuration in this country.
3. Full build-to-order, where supply is positioned at the factory, product is built to customer order, then shipped direct to the customer.
4. A value-added operation to handle enterprise servers and storage devices whereby HP installs software and otherwise configures high-end machines for corporate customers.
5. A service parts supply chain that supports HP products in the field.

Based on product type and customer demographics and requirements, HP decides which of the five supply chains is the best fit. In North America, for instance, enterprise servers go through HP's Houston facility. A customer order for 10 PCs would flow through HP's distribution facilities in either Indianapolis, Omaha or Ontario.

"We need the infrastructure available to support the business we are serving," Gifford says. "There is a lot more pressure for quick delivery in our notebooks business, for example, because they depreciate so quickly. For printers, where cost is extremely important to the consumer, our supply chain issue is not about speed so much as reliable and cost-effective transportation."

Given these requirements, "We consider a few key issues when looking for a new distribution site," Gifford notes. "First, where do we want the source site to be? More and more the answer is China, Malaysia, Mexico or Eastern Europe. So the source site starts the challenge.

"Then we ask: what is the most cost-effective way to move goods throughout our supply chain? And where are the goods moving? Are we direct-shipping to the customer or supporting an HP manufacturing site?

"Next," Gifford continues, "we look at what customer segments we plan to support from the DC -- small to medium-sized businesses? Consumers? The public sector? Each has a different set of needs that require us to look

at different issues.

"For example, a small to medium-sized business may want product to arrive as quickly as possible. An enterprise customer, on the other hand, may want all deliveries made on a specific schedule -- say Tuesday at 3 p.m."

These service profiles determine how close to the customer HP will locate a distribution center.

As companies become increasingly global in their reach, they have changed how they structure their facilities networks.

"During the 1990s, companies built their supply chain networks in the context of a regional and national business model," says Robert Hess, managing director, global supply chain solutions for Cushman & Wakefield, a global real estate services firm. "Today, however, they are taking a global view of their networks. They want to rationalize and streamline their operations in order to reduce costs, improve profitability, and increase margins and shareholder value.

"Companies are revisiting their supply chains, looking at their facilities in terms of throughput and product to make sure that their physical locations align with their business strategy. They now look at profitability right down to the SKU level," he says.

Supply chain network design is all about flexibility today. "No one wants to invest capital unless it really makes sense to fit into network strategy, design rationalization, customer service improvements, and cost reduction," says Pamela Zoellner, senior managing director, global supply chain solutions, Cushman & Wakefield.

"In fact," says Hess, "sometimes a company will pay more for a lease just to have the option of getting out of it in a shorter time frame. It used to be that businesses made network decisions based on a five- to 10-year business plan. Now they want to be able to adjust their networks at the end of 36 months."

First Steps

Given this demand for flexibility and trend toward shorter facilities terms, how should a company approach the site selection process? The first step is to survey your present situation and anticipated needs to address decreasing cycle times, changing supply sources, or increasing operating costs.

"Conduct a comprehensive distribution network analysis to understand each facility's role in the total supply chain," advises Kristian Bjorson, director of the Logistics Practice Group for The Staubach Company, a real estate strategy and services firm headquartered in Addison, Texas. "Analyze overall supply chain costs from a representative period to determine how future sales projections, market trends, and location changes of customers and suppliers will affect your network."

Create a five- to seven-year projection of the company's sales and distribution requirements, Renshaw suggests. Then relate these projections to the forecasted service volumes associated with each vendor

service point (plant or warehouse) and customer demand volume, by location. Transportation costs associated with the movement of goods to and from the DC are a primary location driver.

"It is not uncommon to find transportation costs representing between 60 and 70 percent of the total cost of distribution (including inbound to DC and outbound to customer)," he says. "Generally, the more facilities you add, the lower your outbound transportation costs. Your inbound transportation costs often increase, however, because your load size decreases (from truckload to less-than-truckload quantities) and your shipments are more frequent."

Inventory carrying costs naturally increase with the number of DCs. "If each DC stocks the full product line, that creates a duplication of inventories in multiple locations," Renshaw says. Inventory carrying costs and labor comprise the second most significant operating costs, often representing an additional 18 to 25 percent of the annual distribution center operating costs. Rent, utilities, depreciation and other factors make up the balance.

Bjorson recommends using a computer model that maximizes inventory, transportation, customer service and location objectives. Such models can analyze the movement of goods between vendor locations, alternative DC locations, and the end customer.

Computer Models Can Help

"The job of the computer models is to look at all these factors simultaneously and calculate cost and service ramifications," Renshaw notes.

"The objective of using the computer model is to minimize all logistics costs to supply customer demand while meeting customer service requirements and facility capacities," says James Renzas, president of Location Management Services LLC, Mission Viejo, Calif. "By running what-if scenarios with changing demand levels, customer service requirements, and costs, the modeler can determine the least-cost practical network of sources/vendors, warehouses, and freight modes."

More specifically, a comprehensive computer model can:

- Add or delete customers, products, and facilities from consideration.
- Specify customer demand source by product to account for unique customer or business segment requirements.
- Adjust order cycle/transit time goals to determine the cost of better service.
- Fix the number of facilities used, and determine the best locations for those warehouses.
- Modify costs, capacities, and operating factors by facility, by product, and by a combination of facility-product.

Before embarking on a network modeling process, "A company must define and be clear about customer service expectations because they can influence your decision," Renzas notes. "For example, if every customer needs to be in a one-day service range, that factor reduces your options, requiring you to have more facilities closer to your customers. As we

explore alternative distribution networks, certain costs rise and others fall. The analysis should calculate the existing costs associated with serving customers, reduce that to cost-per-carton or item shipped, and compare options and alternatives in that context."

"The final selection generally is made on that which provides the service at lowest cost and in line with company goals such as flexibility and service," Renshaw says.

At this point in the process, it's time to dig into more detail about the targeted cities. Research and analyze specific criteria related to labor force, distribution climate, and operating costs.

"Using this information," Bjorson says, "you can develop a quantitative and qualitative analysis that weights, ranks, and plots the data in a report. The goal in this review is to arrive at a short list of two or three cities."

"As you narrow the list of potential candidate communities, there are a host of factors to consider," Renshaw advises. These include:

- Labor quality and availability
- Labor management relations
- Labor costs
- Educational and training resources
- Utilities - electric, gas, water and sewage (cost and availability)
- Transportation services and facilities
- Taxes -- state and local
- Public services -- fire protection, police, waste removal, snow removal
- Telecommunication infrastructure and services
- Health and medical services and facilities
- Local laws, construction codes, operating restrictions
- Other quality-of-life factors -- parks, civic facilities, recreation, housing, schools
- State and local incentives -- free land, tax abatement/deferral, training

This stage of the site selection process is time-consuming and requires considerable effort in gathering credible and reliable information. Site location consultants, many of whom maintain extensive databases on communities and states, can help.

At this point, it is time to conduct city visits during which your site selection team gains firsthand experience of the primary economic criteria. From these visits, the team will be able to develop and rank each location, highlighting labor, real estate and tax structures/incentives.

"It's a good idea to interview local distribution operations to verify comparative labor data on hiring, turnover, wage scales, incentives and factors such as the drive time necessary to capture the greatest labor pool," Bjorson suggests.

Define all potential real estate scenarios to understand each city's issues, weaknesses and strengths, as well as windows of opportunity created by current real estate market conditions and expected changes. Bjorson recommends using a real estate spreadsheet to help your team evaluate

each city by availability, cost, and accessibility of potential distribution centers.

Once the list of qualifying communities has been narrowed to a "short list," Renshaw advises companies to begin negotiations with those communities offering the greatest potential benefits. Before finalizing this stage of the process, it is important to have identified one or more specific sites located within the community of interest so that the unique requirements of these candidate sites can be considered during the negotiation process.

Here's where incentives offered by the community become very important. "If a locale offers tax credits, for instance, make sure they really mean something," Renshaw cautions. "Kentucky has a program that gives tax credits equal to five percent of employees' wages for 10 years. This sounds great, but the problem is that most companies don't have the kind of tax liability to be able to use such a credit. It could take 100 years to collect the money."

Before signing on the dotted line for a site, take care to review the deal one last time. Verify that the candidate site meets the requirements of the proposed DC operation in terms of future expansion capabilities, soil conditions, environmental issues, easements, set back requirements, zoning restrictions, and so on.

Research on specific sites needs to be exhaustive, Renshaw emphasizes. "After you've closed a deal, you don't want to discover a major environmental issue, find that the soil can't support the size building you need, or learn that there are community restrictions on trucking hours and access. The worst thing is to find a surprise like this after you buy or lease the site. That is not only very embarrassing, but it could ruin your career."

Taking the time to get the site selection process right can offer big payoffs, with benefits up and down the supply chain.

On The Rebound

The past two years have been tumultuous ones in the industrial real estate market. Lease/buy statistics paint a picture of a market on the rebound from a significant downturn. Changes in warehouse/distribution space activity give an indication of underlying recovery in the outsourced space/3PL sector.

During the first quarter of 2003, according to real estate services firm Cushman & Wakefield, there were 4.11 billion square feet (sf) of warehouse/distribution space inventory in the U.S. marketplace (with marketplace being defined as the 32 major markets tracked by Cushman & Wakefield). Approximately 449 million sf of that warehouse/distribution space was vacant. The overall estimated vacancy rate for industrial space was 9.9 percent (up from 8.7 percent from the first quarter of 2002). The average rental rate for warehouse/distribution space was \$5.38/sf/yr.

Construction statistics for first quarter 2003, however, were truly the indicator of anticipated market activity. Only 15.1 million sf were completed during the first 90 days of last year, of which 13.7 million sf was considered warehouse/distribution. This equated to a 13.1-percent drop in total completions from the first quarter of 2002.

The nation's industrial real estate market statistically hit the bottom of the cycle by mid 2003. By the end of that year, the direct absorption (or rise in the demand for space) for warehouse/distribution product totaled a positive 24.1 million sf, while the total market reported a negative 598,000 sf of net absorption.

During calendar year 2003, approximately 200 million sf of the 278 million sf of industrial space that was leased is defined as warehouse/distribution space. 55.6 million sf of new construction was completed, with 39 percent being build-to-suit, 61 percent attributable to spec, and 48.1 million sf under construction. This represented a 15.1-percent increase, or 6.3 million square feet increase in new construction starts over 2002's total.

The demand for industrial space in 2003 was spurred by corporate consolidations and consumer spending (which sustained the orders for manufactured goods in 2003). Third-party logistics/transportation firms, the fastest growing segment of industrial-using tenants, were the primary drivers of the demand for space, particularly in the latter half of the year.

In 2003, the top 5 industrial markets for leasing activity were:

1. Atlanta -- 26.8 msf
2. Chicago -- 25.5 msf
3. Ontario, CA -- 20.6 msf
4. Dallas -- 19.5 msf
5. Phoenix -- 17.5 msf

The industrial real estate picture showed signs of recovery in 2004. In both sales and leasing, 12 markets experienced increases, while the remaining 20 markets showed decreases.

Despite this fact, however, leasing activity quarter to quarter increased from 42.6 msf in warehouse/distribution space to 54.8 msf warehouse/distribution product. The greatest indicator of recovery is the increase in construction completions and product in the construction pipeline -- there is currently 54 msf of space under construction vs. the 36.8 msf under construction 12 months ago.

Industrial real estate activity continued to improve during the first quarter of 2004. The total market inventory is now up to 7.44 billion sf, of which warehouse/distribution space accounts for 4.23 billion sf.

The total amount of vacant industrial space in the market is 716 msf, of which 433 msf is warehouse/distribution. The estimated vacancy rate has declined to 9.6 percent (vs. the above noted 9.9 percent in Q1-03). Average triple net rental rates for warehouse/distribution space, however, have decreased to \$5.11/sf, or five percent from where they were at this same time in 2003.

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