

Intermodal Freight Requirements

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It is quite clear that the transportation industry is changing. Some of the important changes are technological. They range from the proliferation of transportation data on CD-ROMs to smart roads and vehicles. Other changes have to do with resource allocation, centering on the theme of doing more with less. The traditional funding levels and sources are at risk, and the result will undoubtedly be some painful restructuring of the way the nation's transportation infrastructure is built and maintained. A third area of change relates to partnerships, alliances, and relationships among the entities involved in the transportation change process. The theme here might be expressed as more cooperation and less confrontation, more statesmanship and less parochial focus, and more long-term and less short-term perspective.

My research suggests that in addition to these three themes, an important area of change might center on shipper requirements for the 21st century. This research indicates that shippers think they will be going to market differently in the 21st century than is the case today. The 21st century is only 3 years away, and in infrastructure terms this is precious little lead time for a thoughtful, resource-efficient response; it may not even be enough time to agree on a project plan, given current time horizons for such activity.

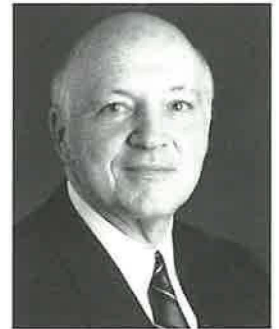
SHIPPER EXPECTATIONS FOR THE 21ST CENTURY

In late summer 1996, Ohio State University conducted a study to determine shipper expectations for the 21st century. The respondents were approximately 200 chief logistics executives of Fortune

1000 firms. I do not propose these results as representing a scientific study, but rather a picture of what cutting-edge, competitive firms are thinking about future transportation requirements. The 1994 and 1996 data points on all of the following charts are actual data, while those for 1998 and 2000 are, of course, estimates or forecasts; all the data shown are based on the survey responses.

I have selected five data sets that cover a range of shipper, transportation, and logistics requirements. There are many other topics of particular relevance today, such as "reverse logistics," "third-party logistics," and transportation requirements in building a global supply chain. Thus, the five data sets presented are not comprehensive, but rather typical of some of the important trends anticipated by shippers between now and the 21st century.

Average order cycle and transit times for domestic shipments of all industries are presented in Figure 1. The data clearly suggest that order cycle time (the time from when an order is placed by the customer until it is received on the customer's dock) is dropping sharply—from around 5 days in 1994 to an expectation of less than 3 days in the year 2000. Similarly, transit time (included as part of the order cycle time) is expected to drop from 57 to 42 hours. This concern with shorter time to market is certainly prompted by notions of just in time and quick response, and a variety of inventory policies that are focused on inventory reduction and increased customer satisfaction. Regardless of the reason, shippers are convinced they will have to find ways of getting to the market more quickly by the year 2000 to be competitive in the marketplace. They undoubtedly expect the transportation system—the carriers, the third parties, and



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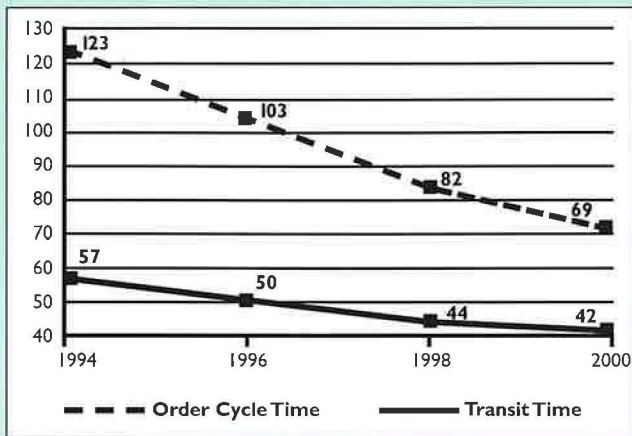


Figure 1 Average order cycle and transit times for domestic shipments (in median hours), all industries.

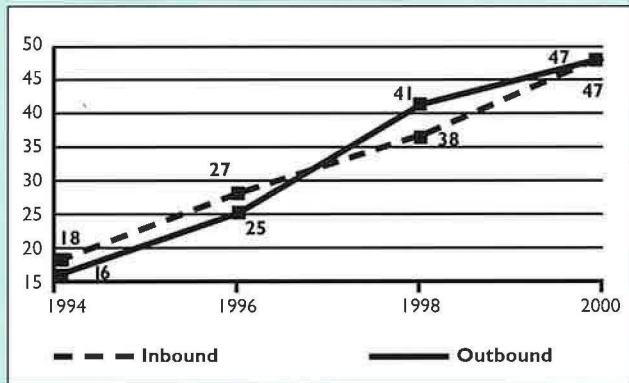


Figure 2 Percentage of inbound and outbound shipments that are just in time or quick response, all industries.

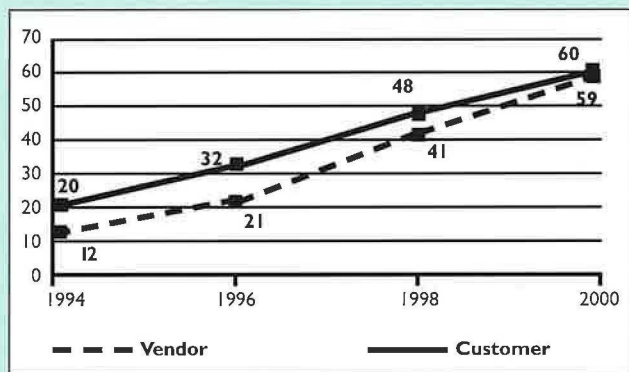


Figure 3 Percentage of total vendor and customer orders transmitted by electronic data interchange, all industries.

the infrastructure—to facilitate this process. During the 1990s, shippers have discovered a whole new lexicon that describes their inventory and information linkages with their vendors, their third parties, and their customers. This lexicon includes not only just in time and quick response, but also vendor-managed inventory, continuous replenishment, direct store delivery, and many others. The general objective is to provide higher levels of service with a lower inventory investment.

Figure 2 presents the number of shipments for all industries that were inbound (just in time) or outbound (quick response) in 1994 and 1996, and expectations for future uses of these inventory strategies. The data suggest that by the year 2000, almost one-half of shipments inbound and outbound will be delivered using short-interval inventory response strategies. Again, the carriers, the third parties, and the transportation and logistics infrastructure are expected to support this significant shift in go-to-market strategy for both the buyer and the seller.

For almost the entire last half of the 20th century, shippers have used inventory to buffer uncertainty in the channels of distribution. The basic strategy has been to build warehouses and distribution centers close to the market and fill them with inventory. Part of the strategy has also been to build production warehouses close to production sites and fill these warehouses with inventory. This approach has resulted in an average turn of around six to seven times per year for trade inventory throughout the U.S. economy.

In the 1990s, however, it has become obvious to forward-thinking companies that buffering uncertainty with inventory is a very expensive strategy. This realization, along with the availability of new technology (rapidly dropping in cost) has suggested to these forward-thinking companies a shift to a strategy of trading inventory for information as the primary tool for buffering uncertainty. The data in Figure 3 suggest that by the year 2000, 6 out of 10 customer and vendor orders will be transmitted by electronic data interchange (EDI). While the survey did not specifically ask about other means of electronic communication, or what is now termed electronic commerce (e.g., shipment tracking, advance ship notices), these means would probably follow the same trend as that indicated in Figure 3. Some prior research also suggests that if one were to ask the shippers about their expectations regarding the carriers' ability to participate in this electronic network, those expectations would follow the same profile as the data presented in Figure 3.

SOURCE: Ohio State University Current Patterns Study, 1996.

Figure 4 identifies the percentage of freight moving intermodally in the domestic transportation system. Shippers expect to move significantly more intermodal freight in the United States by the year 2000. They expect the necessary infrastructure, drayage capability, electronic networking, and other capabilities to be available to facilitate this movement of freight. Transportation economists might argue that this upsurge in intermodal movement will not take place unless shippers can see reasonable rates of return on the investment. Again, Figure 4 indicates shippers' expectations with regard to the movement of freight. If the transportation infrastructure does not support those increased capacity requirements, the shippers will find a way to move the freight by diverting to other modes or rearranging the architecture of their logistics system.

Figure 5 traces the average inventory turnover at the plant and field levels. The data suggest that shippers expect to double inventory turnover between 1994 and 2000. This improvement would involve a drop in average trade inventory throughout the economy from 2 months to 1, but is consistent with some of the findings from earlier charts. Such a decrease would represent a tidal shift in the inventory required to feed an expanding and competitive economy. It would place higher and higher expectations on carriers, third parties, and the transportation infrastructure to support this more rapid throughput. Pressures would be created throughout the transportation industry to lead, not follow, technology development in order to facilitate changes of this magnitude.

At Ohio State University, we have been tracking these changes in shipper expectations for more than two decades. During this time we have seen some significant shifts in both performance and expectations. In the early 1990s, shippers and their customers seemed to become more aggressive in their expectations. However, we have not seen the shift in expectations that is suggested in Figures 1-5. According to our monitoring during the past several decades, the data in these figures suggest a watershed for the transportation industry, broadly defined, during the next decade. I believe these data strengthen my claim that a new transportation planning coalition should be developed that includes the shipper as an active partner.

I am aware that it is difficult to build trusting relationships with the shipping community. I recently went through an experience in which I tried to get a group of shippers together to discuss some transportation policy issues in a focus group setting. I knew the executives, some for many years, and still had great difficulty in bringing them

to the table. Those who finally agreed to attend wanted to talk only about those narrow issues which directly affected their companies. Where are the statesmen, for both the transportation industry and the shipper community? The idea of a coalition of the two groups is a tough sell, but it must succeed if infrastructure dollars are to be appropriately allocated, if U.S. industry is to remain competitive in both the domestic and global arenas, and if transportation policy and priorities are to be directed at creating a robust and competitive transportation infrastructure.

It might appear that I am a pessimist about establishing a dialogue on these issues, but I am not. I know there are some exciting initiatives taking place around the United States in which coalitions are being formed to bring all of the players together and to search for local and regional solu-

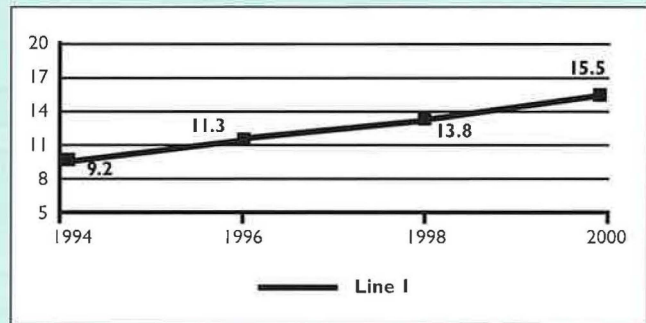


Figure 4 Percentage of freight moving intermodally, all industries.

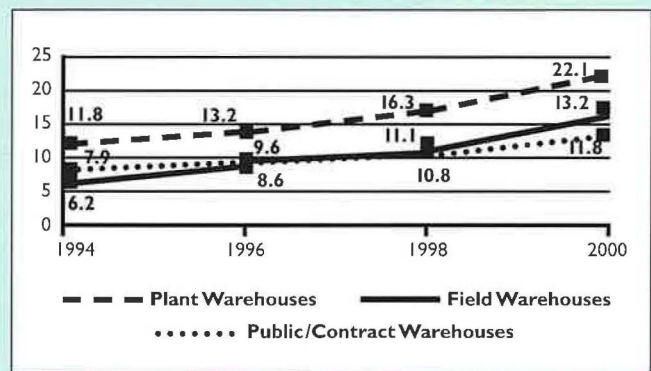


Figure 5 Average inventory turnover at plant/field distribution centers, all industries.

SOURCE: Ohio State University Current Patterns Study, 1996.

tions that work. I would like to summarize briefly a first-hand experience I have had during the past 5 years—a brief case study that has convinced me it is possible to build a coalition of shippers, carriers, MPOs, and public-sector representatives.

THE INLAND PORT: A CASE STUDY

For the sake of this discussion, let us agree on the definition of a port. We naturally and automatically associate the word “port” with vast bodies of water or major waterways. If we held to this definition and had ever seen the Scioto River flowing through Columbus, we would not deem Columbus a port city. Yet this definition is too narrow. Instead, we can define a port as a site that facilitates and engenders international trade and transportation by virtue of its location, business climate, and facilitating services and infrastructure, as well as its attitude toward development. By these measures, Columbus and other similar inland communities are indeed ports. What are some of Columbus’ specific assets that warrant this designation?

First, Columbus is home to major importers, exporters, and domestic shippers that are using its port facilities right now. They include Honda and its many suppliers, Lucent Technologies’ Global Provisioning and Export Center, Worthington Industries, Consolidated Stores, the Limited, and Spiegel’s/Eddie Bauer, as well as a plethora of smaller firms without the marquee names.

Second, Columbus has all of the physical infrastructure and services required to transport and distribute goods efficiently throughout the United States. These include the following:

- Highway connections—I-70, I-71, I-270, US 23, US 33, US 40, US 62
- Rail connections and ramps—Conrail’s Buckeye Yard and Marysville Intermodal Terminal, Norfolk Southern’s Discovery Park, CSX (Columbus’ ramps perform the most lifts in the Midwest, except for Chicago.)
- Airports—Port Columbus International, Rick- enbacker International (Grantee of Foreign Trade Zone No. 138)
- Truckers, forwarders, brokers—all the major players
- Distribution/warehousing space—over 86 million square feet
- Local customs services—Customs Port-of-Entry 4103

Columbus’ Coastal Port Partners

Although water is not needed for a community to

be a port, some water is obviously needed for the conduct of international trade. We need the coastal ports, and they need us. The coastal ports provide the ocean links to foreign markets and suppliers, and Columbus provides access to the inland manufacturing and consumer base. This idea of forming alliances with coastal ports was derided by some in Columbus when first introduced, but was warmly welcomed by those at the ocean ports. Columbus has established and recently renewed partnership agreements with the ports of New York, Virginia, and Los Angeles. Our primary joint activities have been in marketing, but there have also been some attempts to affect the level of transportation service.

On the basis of these partnership agreements, we have been seeking ways to promote and market each other jointly. For example, in Columbus we invite representatives of the three ports to attend and deliver presentations at our quarterly Inland Port Commission meetings, and we make use of each other’s marketing materials and booth spaces at trade shows, such as the International Intermodal Expo in Atlanta. In addition, we put an article in every issue of our newsletter that describes recent developments at one of the partner ports. The area in which we have had the best success is the work we have done together on overseas marketing. For 2 years, the commission has been sending delegations to seminars in Europe and Asia to deliver presentations to representatives of the carriers, forwarders, and exporters in order to acquaint them with the many advantages of distributing through Columbus. In this endeavor, we have received invaluable assistance from the marketing staffs of the coastal ports in identifying appropriate parties to invite to the seminars, setting up sales calls, and carrying out overseas marketing activities.

A Coalition

An absolute requisite for inland port development is a shared mindset concerning what the port is, and can be, if a strategic direction is defined, and coordinated efforts are pursued among various parties that have heretofore been unrelated and relatively unknown to each other. The following are some examples of how this has played out in Columbus.

We have a metropolitan planning organization (the Mid-Ohio Regional Planning Commission [MORPC]) that has taken a keen interest in planning for the transport of freight, not just people. This interest has been demonstrated not only in MORPC’s past research efforts in support of the Inland Port, but also in its ongoing planning for

future research. The shift to this mindset occurred about 5 years ago. Since that time, MORPC has orchestrated two studies: the Phase I study explored infrastructure requirements for furthering Columbus' port development; the Phase II study examined institutional arrangements in both the private and public sectors that would serve to further or inhibit this development.

The Phase I study, completed in 1994, was the first feasibility study in Ohio funded with Surface Transportation Program funds, under the flexibility provisions in the Intermodal Surface Transportation Efficiency Act. During the Phase I study, the various inland port councils were convened in forums at which MORPC and its consulting team could learn about infrastructure problems, their relative severity, and how they should be addressed. These forums included shippers, truckers, forwarders, the railroads—all with their businesses to attend to, but willing to be drawn together to provide their input on infrastructure planning.

The following committees have been established to address specific issues concerning the ongoing development of the Inland Port:

- **Transportation Infrastructure Improvement Committee**—This committee was formed as a result of the Phase II study to provide a continuing forum for considering the physical infrastructure needs of the port, to recommend enhancements thereto, and to advocate the implementation of past recommendations.
- **Transportation and Distribution Service Committee**—Also formed as a result of the Phase II study, this committee's task is to identify and address service deficiencies that inhibit the efficient flow of freight through the port.
- **Information and Technology Committee**—This group, which I chair, was just recently convened to advise the commission on the ways in which current and emerging technology can be harnessed to enhance Columbus' port efficiency to the benefit of all the Inland Port's current and potential stakeholders.
- **Shippers Council**—This group has evolved significantly since its inception. At first it was simply a committee of shippers, convened to address ser-

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vice deficiencies from the shippers' perspective. In the course of its deliberations, however, the group realized that to induce service enhancements more effectively, it would have to take a different form. Thus last year the group was spun off as an independent, nonprofit corporation known as the Greater Columbus Shippers Alliance. The GCSA is a shippers' association that intends to address all manner of service needs on behalf of its members, and is presently working on developing ocean, rail, and less than truckload (LTL) programs.

The first two of these groups include representatives of both the private and public sectors, and each of these groups has among its membership representatives of firms in different businesses, drawn together to consider and solve common problems.

All of this committee activity occurs under the auspices of the Inland Port Commission, which includes members from a wide range of public and private institutions and is convened by the Greater Columbus Chamber of Commerce.

SOME CONCLUDING THOUGHTS

In this brief space, it is impossible to provide all of the texture surrounding the issues. There are, however, at least three conclusions that can be drawn:

- New public-private coalitions will be required to address the challenges of the 21st century.
- Continuous and creative (nonpartisan) shipper input will be required to drive process change effectively.
- The bottom line is community, regional, and national economic vitality and global competitiveness.