5

Infrastructure: Distribution and Delivery

Distribution and delivery round out the service-sector infrastructures critical to the development and growth of electronic commerce. In some ways this infrastructure is the most important, for distribution and delivery make possible the nexus between the electronic and the real-world marketplaces. While the electronic or digital delivery of goods and services is becoming more common, many on-line purchases must still travel via the physical world to their final destination.

What makes distribution and delivery critical is that all of the benefits and efficiencies engendered by the use of electronic commerce in purchasing—particularly lower costs and just-in-time production and ordering—can be quickly eroded if those purchases face inefficiencies in transit. Exorbitant costs, long delays, and damaged or lost shipments now plague electronic commerce purchases, particularly when they must travel internationally. Such inefficiencies signal to policymakers that if electronic commerce is to grow unimpeded and the investments that companies and countries make to get themselves electronic commerce-ready are to bear fruit, distribution and delivery when structures need to be modernized.

The Internet and electronic commerce can help solve the problem of how to improve distribution and delivery. Electronic commerce can reduce costs in terms of both time and error in paper work. Information flows between shippers, buyers, sellers, and financial partners can be improved.

The changes needed are not unlike those for telecommunications and financial services. Privatization, competition, and independent regulation

together can reduce shipping costs and increase service. Such a policy framework can also help to improve a country's general economic health. But it may be more politically difficult for policymakers to introduce these changes into distribution and delivery because this area tends to be one of the most protected. Yet if left convoluted and inefficient, distribution and delivery could hinder not just the growth of electronic commerce but also a country's participation in the evolving global value-added chain of production.

Why Distribution and Delivery Are Important

Distribution and delivery are central to a country's macroeconomic health. Improvements to the infrastructure of distribution and delivery, which include the transport and postal infrastructure, are positively correlated with productivity gains. Also, value-added for the sector accounts for a sizeable percentage of total GDP and employment.

As growth increases, demand grows for distribution and delivery services, especially in developing countries. At the same time, because foreign aid for improvements to this sector are decreasing, creating the environment where the private sector can shoulder the burden of transport construction is crucial.

Consider these statistics:

- At the macroeconomic level, there is a positive correlation between the transport infrastructure and productivity. Not surprisingly, vehicle-intensive industries benefit most in terms of productivity from improvements to the transport sector, including road building (Fernald 1997).
- Value-added by transport is estimated to account for 3 to 5 percent of GDP, and 5 to 8 percent of total paid employment (World Bank 2000).
- Demand for transport, especially road transport, is growing one and a half to two times faster than GDP in most developing countries, though the percentage of transport infrastructure financing covered by foreign aid is decreasing (World Bank 2000).

Improvements to distribution and delivery not only enhance productivity but also create incentives for private sector investment. As the value-added chain of production becomes increasingly global, aided by technological advances, it is essential that the real-time processing of orders and fulfillment be precisely coordinated with distribution and delivery. This is particularly important in industries with numerous and complex steps along the value-added chain.

Where production, and distribution and delivery are not coordinated, the private sector loses the incentive to innovate and invest in new techno-

logies. In Sri Lanka, for example, inefficiencies in customs clearance and air cargo make it more difficult for apparel producers to move to producing the higher value-added, upmarket designs demanded by stores in Western Europe. A partnership between the private sector, which is willing to invest in electronic commerce technologies, and the government, which needs to speed customs procedures as well as improve road and air facilities, would yield significant benefits to a country that depends on textiles and apparel for 10 percent of GDP and 40 percent of exports.[1]

Electronic commerce increases the importance of distribution and delivery to a country's economic health. As more companies from different sectors move to integrate electronic commerce into their production, the more global and tighter the value-added chain will become. Countries with sleepy, inefficient distribution and delivery systems will not be able to meet the private sector's need for fast turnaround and inexpensive transit. They risk being left behind in the globalization of production as well as the growth of electronic commerce.

While the importance of distribution and delivery to an economy tracks the growth of electronic commerce, the Internet can diffuse improvements to this sector throughout the economy (see figures 5.1 and 5.2). Customers anywhere in the world can now track their shipments over the Internet; even low-cost truck lines, discount air carriers, and ocean vessels offer services similar to those of high-end carriers like United Parcel Service (UPS) (*Wall Street Journal*, 4 November 1999, A1). Electronic bills of lading speed transactions between freight forwarder, carrier (air, sea, rail, or road), importer's agent, importer's bank, customs, and exporter's bank.[2] (*Journal of Commerce,* 21 June 1991, 1.)

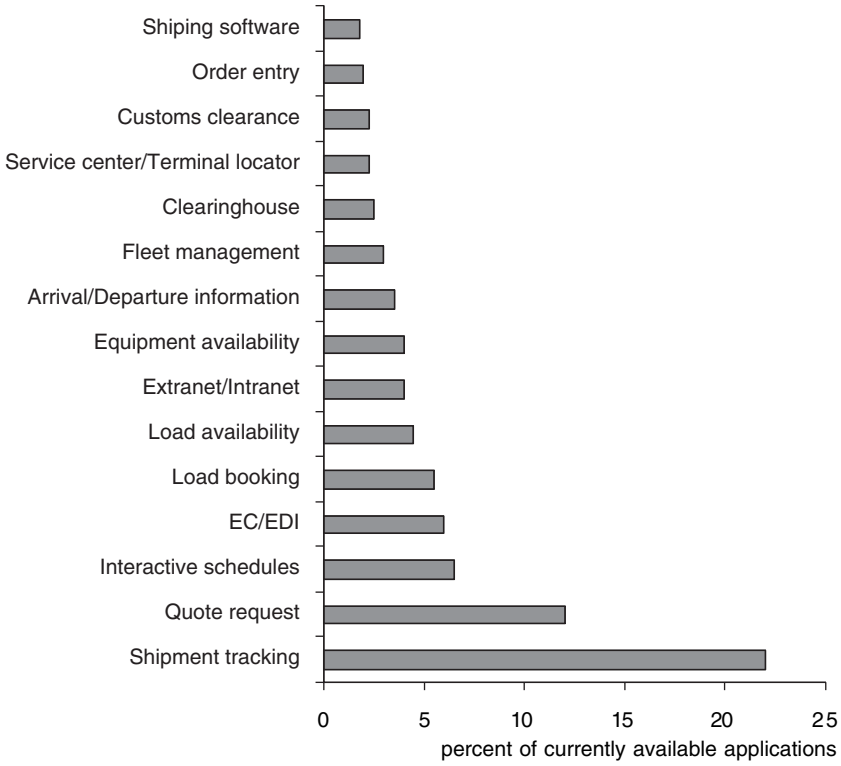
At the same time electronic commerce, in particular B2C, creates new challenges for distribution and delivery. In physical stores, it is the customer who handles and pays for order fulfillment (by choosing the goods and paying for them at the cash register) and delivery (by transporting those goods home), at the expense of the customer's own time. In electronic stores, however, it is the seller's responsibility to coordinate order fulfillment and delivery. Even Wal-Mart is having a difficult time adjusting its logistics geared for store-based transactions to deliver on-line orders to individual customers (*The Economist*, 26 February 2000).

Many companies are responding by outsourcing their electronic commerce distribution and delivery. Retail operations can outsource to companies like Fingerhut and Bechtel that specialize in order fulfillment. Cisco Systems is working with Fed Ex to merge input orders in transit from factories in the United States, Mexico, Scotland, Taiwan, and Malaysia so

1. Field research by Catherine Mann and colleagues in Sri Lanka, October 1999.

2. The legality of electronic signatures is critical to make electronic bills of lading work (see Chapter 8).

Figure 5.1 Distribution of leading Internet applications in the global freight transport market

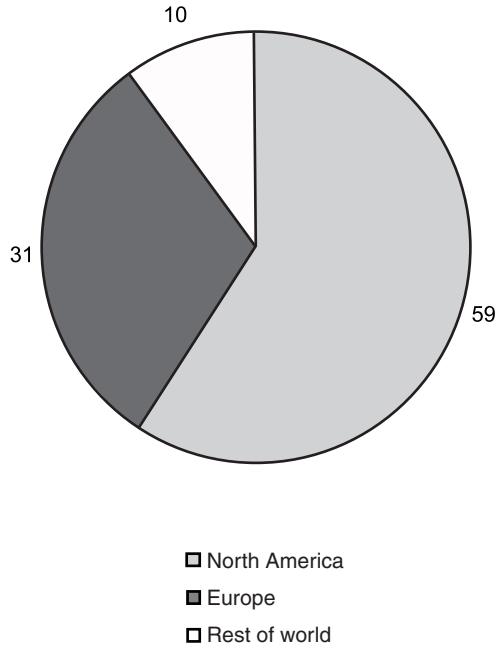


Source: UNCTAD (2000), 47.

that the parts can be assembled directly at the customer's location, saving Cisco considerable sums on warehousing (*Wall Street Journal,* 4 November 1999, A1). Similarly, Toshiba determined that it was losing market share to Dell Computer because it could not deliver custom-ordered computers as quickly; by outsourcing assembly to FedEx, it regained market share.

These efficiencies can be erased or even eliminated where competitive distribution services are lacking and high-end, rapid delivery companies like DHL, Fed Ex, and UPS or local counterparts are limited or prohibited altogether. One example of how the efficiencies of electronic commerce can be eroded by the inefficiencies in distribution and delivery is in El Salvador, where on-line buyers typically have items shipped to a post office box in Miami, where private courier companies like Gigante Express consolidate shipments for delivery to buyers. These buyers have benefited

Figure 5.2 Internet use in freight transport by region based on application count (percent)



Source: UNCTAD (2000), 49.

from the on-line global marketplace, but have had to sacrifice prompt delivery.

Policy Changes for Distribution and Delivery

Distribution and delivery for retail electronic commerce purchases often entail high shipping costs, long delays, and even missing or damaged products. Policymakers can work to improve the distribution and delivery sector, thereby encouraging the growth of electronic commerce, by following a general policy framework of privatization, competition, and independent regulation. It has been widely shown that such policies tend to reduce distribution and delivery costs and improve service.

Of all the service-sector infrastructures important for electronic commerce, perhaps the most difficult for policymakers to liberalize is distribu-

tion and delivery, precisely because it is the most protected. Protection discourages private investment. Indeed, as of December 1998, the transport sector in all developing countries accounted for only $14 billion in private sector investment, compared to $53.1 billion for the telecommunications sector, and $26.8 billion for the energy sector (Rogers 1999). Latin America and the Caribbean accounted that year for more private sector investment than any other region, in large part because of a general opening of service-sector infrastructures.

But private investment in distribution and delivery is increasing as many developing countries open up competition. The World Bank has documented the benefits that countries are experiencing from private provision of distribution and delivery services. In Colombia, for example, privatizing road maintenance has reduced costs by 25 to 50 percent. Labor costs are 50 percent lower in privatized rail services in Argentina and Brazil. Competitive franchising in bus operations has reduced operating costs by 25 to 40 percent in European countries like the UK, Denmark, Finland, and Sweden. In Venezuela the withdrawal of protection from state-owned monopolies has reduced shipping costs by 30 percent (Gwilliam 2000).

But there are many areas in the infrastructure of distribution and delivery where protection still exists and competition is limited. These areas vary by mode of transport and by region. It is up to policymakers to ensure competition exists along all modes. This is especially important for the fulfillment of electronic commerce purchases, which usually travel across national borders and use multiple transport modes.

One area for caution is the cross-subsidization from a distribution or delivery sector that remains protected to one where competition is increasing. Six years ago, UPS filed a complaint with EU competition regulators and the US-EU International Competition Policy Advisory Committee alleging that the German post office, Deutsche Poste, was using revenues from the sale of government land ($3 billion in 1998 alone) and from very high first-class mail charges to acquire private logistics, express and parcel companies that compete directly with UPS and other carriers (*Traffic World*, 31 May 1999; *The Economist*, 13 May 2000, 67-80). Moreover, although Deutsche Poste has invested substantial sums in e-commerce ventures (buying 10 percent of GF-X, an on-line freight exchange whose other owners include Lufthansa and British Air), it apparently has been losing money on its parcel freight business for years.

In Morocco, Fed Ex has to pay the state-owned post office a fee for every package the company receives or sends.[3] Also, the post offices in many countries, including the United States and Japan, are moving into

3. Field research by Sarah Cleeland Knight, 15 September 1999.

e- commerce offerings like on-line bill payment that compete directly with the private sector (OECD 1999b).

Digital Delivery

The digital delivery of inputs and final products is becoming increasingly important for electronic commerce, and it offers special challenges for policymakers. In particular, certainty and trust—especially in the preservation of intellectual property rights—is critical if electronic commerce is to grow unimpeded. (See chapter 7 for further discussion of intellectual property protection.)

The private research firm Forrester projects that as soon as 2004, one-quarter of Internet purchases will be delivered by digital download (Spiegel *E-Commerce Times,* 24 January 2000). The digital delivery of products like music and software is already common, and the private sector is working on other products for digital distribution. These products hold substantial benefits for developing countries in particular. For example, electronic books can enhance education in poorer and remote areas. And since prices for electronic technologies generally fall quickly, even the poorest of school districts might soon have better access to cutting-edge information.

Apart from intellectual property protection, key policy concerns that could hold back ubiquitous digital delivery are authentication and the treatment of digitally delivered products in trade negotiations by members of the WTO. These issues are also discussed in more detail in the next chapters.

Conclusion

Policymakers need to confront inefficiencies in distribution and delivery by ensuring that the sector is competitive across all modes. Active competition, both domestic and foreign, backed by independent regulatory agencies, can help policymakers circumvent the political obstacles to removing protections from this heavily entrenched sector. Only with low shipping costs, speedy delivery, and excellent service can the physical distribution of goods bought over the Internet grow unencumbered. Countries should use GATS 2000 as a starting point for analyzing their distribution and delivery systems.