The Effects of Globalization on Freight Transportation

Lauren Jennings
Office for Economic Development
University of Alabama Huntsville
Huntsville, AL 35899 USA

Abstract

Globalization integrates production, distribution and consumption across borders creating one market. Global business has grown tremendously since WWII. Organizations like the WTO, along with innovations in technology and transportation constitute substantial movement toward globalization. Potential for creating new markets as well as cost savings push companies to consider globalization. Multi-national firms risk longer lead times, higher logistics costs and possible communication problems. Globalization increases the need for efficient supply chains where all modes of transportation are reliable. Congestion at seaports, on railways, at border crossings and on freeways occurring as a result of globalization causes potentially unmanageable strain on infrastructure.

Keywords: Globalization, Freight Transportation, Outsourcing

1. Introduction

Globalization is the answer to an often perplexing question for many companies. Faced with a higher consumer demand for quality products, companies must decide if the benefits of a globally recognized name, lower costs and better products are worth the cost of increased security measures, differences in quality and process standards and potentially longer delivery times impacted on all ends by freight transportation. The increase in container ships at our seaports and cargo freight at our airports is evidence enough that companies have decided the benefits of globalization are worth the costs. Consumer demand for on time delivery and better products forces companies and communities on the path towards better infrastructure and dependable delivery and transport. An important and fierce examination of the ability to coordinate all the pieces that result in successful globalization is imperative for the future of many companies and communities.

2. History of Globalization

Globalization of business is the dynamic end result of historical and current events. The General Agreement on Tariffs and Trade (GATT, 1947) introduced the world to the globalization that would change the face of trade as it was known. Highly visible transnational corporations, able to restructure on a global basis as a result of developments in transportation, information and communication, have tripled their foreign direct investments in each decade since 1960. Even governments benefited from globally formed international alliances and agreements, the most notable and important being the United Nations formed in 1945 [9]. More recently, the North American Free Trade Agreement (NAFTA, 1994) increased global trading in manufacturing products by reducing tariffs and trade barriers and encouraging trade between nations [5].

Innovations in the transportation industry have driven globalization further. Developments such as containerization for ocean shipping allows companies to ship large products more efficiently, thereby decreasing cargo costs. Advancements in transportation that have enabled the world to trade as though it were one community are commercial jets and GPS technology. Communication and information processing using the electronic microchip and the internet have virtually reduced the size of the world by easing the constraints of time and providing a higher level of coordination [6, 9].

Globalization is further driven into the world we know as a result of an ever-increasing world population and the directly related increase in demand for global products [4].

3. Benefits

Companies are rewarded with the advantages of globalization when they look abroad for sourcing options. These advantages include access to new markets, substantial cost savings in production materials and labor wages, an input into the production process, potentially higher quality products and competitive advantage [10].

Obtaining suppliers from other countries allows companies to get exposure in new markets that may have been previously closed to them [16]. Additionally, labor costs in many other countries are far less than in the United States and companies take advantage of this differential to reduce overhead. Many companies believe that sourcing from other countries allows them to acquire preferential input into the production process which may yield a higher quality product for the mass market [6]. Finally and perhaps most appealing, companies that outsource gain a competitive advantage by sourcing globally. The competitive advantage is enhanced when there are lower production costs, lower wages, a globally recognized name and a higher quality end product brought to the marketplace [1].

4. Challenges

Globalization is not without its challenges. Even though advances in communication have decreased the time it takes to reach the end market, it must be recognized that an expanded supply chain inherent to globalization is generally less responsive to changes in demand which may lead to longer order to delivery times and lost sales. Extensive documentation for international shipments and the process of customs clearance may further delay the time to reach the consumer but these steps are highly necessary in a world where terrorism and purposeful damaging of goods is prevalent [3].

Global sourcing increases a company's logistics and transportation costs as a result of international tariffs and duties and longer distances of travel. International tariffs and duties, longer travel distances, language barriers, and time zone changes can all impact the supply of products [15].

Infrastructure such as sufficient roads, port facilities and utilities are necessary for a truly efficient sourcing relationship between parties but such infrastructure may not exist in developing countries. Technology and information systems in developing countries are generally not as advanced as the United States and quality and process standards may differ substantially [7].

5. Impacts on Freight Transportation

5.1 U.S. Ports

The growth in world population is increasing the demand for goods [4]. This growth, coupled with the benefits of outsourcing, leads companies to globalize their business. More products are being shipped from countries in Asia and other parts of the world. Ninety percent of world trade is moved by sea which increases the need for efficient operations in US seaports such as Long Beach, CA and Los Angeles, CA [2]. These ports receive forty percent of all cargo shipped in to the US and eighty percent of the imports coming from Asia [14]. Because the number of shipments has increased, more container ships are trying to dock at these sea ports, especially those on the west coast of the United States [8]. The limited capacity available at these ports make them able to handle specific amounts of freight and the increase in dockings at these ports causes a faster back up and delay. Land for expansion is scarce for these ports. Container ships have increased in size to handle the increase in shipments and this creates a problem for the ports that cannot handle larger vessels. Further compounding the problem is inefficient truck transport and rail capacity available to handle the increase in ocean shipments, all leading to longer delays at the seaports. Congested land access to these ports for both truck and rail as well as necessary customs clearance and security checks further add to the delays [11, 13].

The following figure and table show the growth in U.S. waterborne foreign trade containerized cargo from 2001 to 2004 at the top ten U.S. ports as well as the percent change and average annual growth rate.

Table 1: U.S. Waterborne Foreign Trade Containerized Cargo Total TEUs 2001, 2004, Percent Change, & Avg. Annual Growth Rate - Top 10 U.S. Customs Ports

U.S. Customs Ports	2001	2004	Percent Change	AAGR
Los Angeles, CA	3,429,000	4,874,730	42.16%	9.193%
Long Beach, CA	3,195,000	3,764,257	17.82%	4.184%
New York, NY	2,355,000	3,163,197	34.32%	7.655%
Charelston, SC	1,159,000	1,421,251	22.63%	5.232%
Oakland, CA	963,000	1,197,331	24.33%	5.596%
Norfolk, VA	885,000	1,206,034	36.28%	8.045%
Seattle, WA	825,000	1,049,105	27.16%	6.192%
Savannah, GA	813,000	1,290,178	58.69%	12.238%
Houston, TX	783,000	1,097,769	40.20%	8.815%
Miami, FL	718,000	794,650	10.68%	2.568%

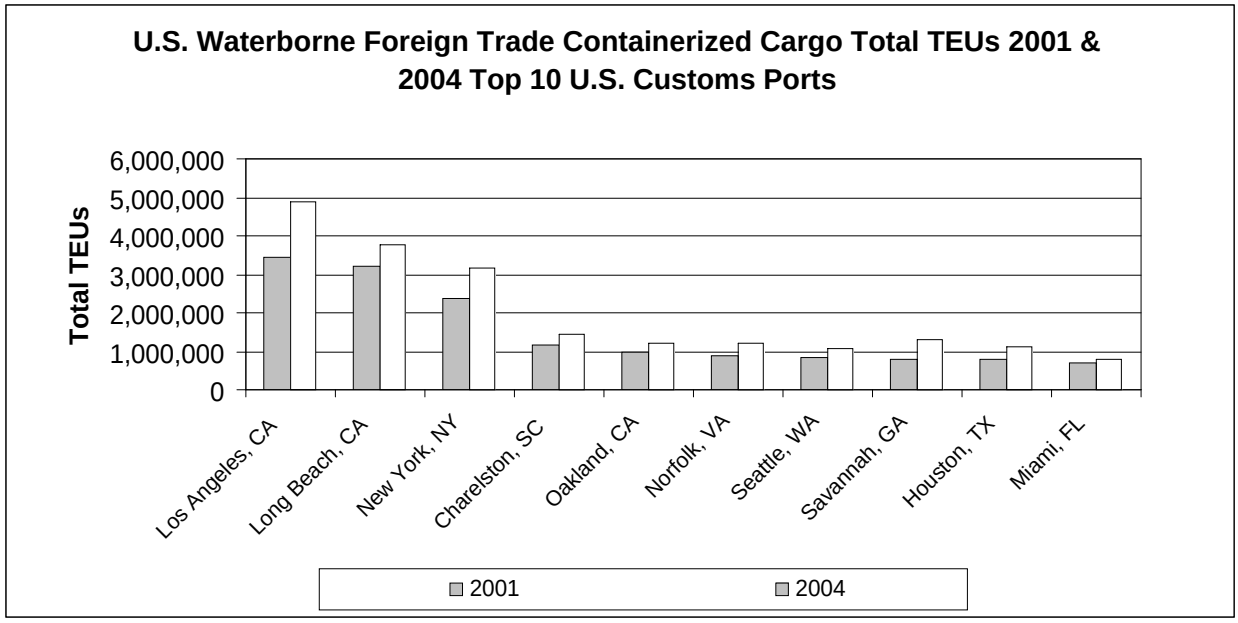

Figure1: U.S. Waterborne Foreign Trade Containerized Cargo Total TEUs 2001 & 2004 - Top 10 U.S. Customs Ports

5.2 U.S. Air

Many companies are forced to ship their products by air to ensure on-time delivery of seasonal or time sensitive items as well as keep up with just-in-time systems because of the delays at seaports and the congestion on U.S. highways [8, 13]. Many major commercial airports feel the strain due to limited capacity and availability of plane slots. Land for expansion in most major markets is at a premium if not simply unavailable. Opposition to noise and operating hours puts additional strain on the operational capacity of airports [13].

5.3 U.S. Borders

The creation of the North American Free Trade Agreement has increased the number of shipments coming across U.S borders from Canada and Mexico by both rail and truck. Many of the border facilities are experiencing delays because they are not large enough to efficiently handle the growth in the movement of goods. Limited road capacity at border facilities coupled with inadequate staffing leads to additional congestion and delays. Security inspections and incompatible customs and immigration procedures further add to these delays on both sides of the border [11, 12].

The following tables show the growth in rail and truck freight coming into the United States from Canada and Mexico.

Table 2: Incoming Rail Container (Full) Crossings – US/Canada and US/Mexico Borders

	1996	1997	1998	1999	2000	2001	2002	2003
US/Canada Border	329983	464081	903584	1150936	1215439	1331382	1386143	1402388
US/Mexico Border	142236	156064	175490	226014	266235	266572	269550	266469
US/Canada Border - Percent Change = 324.99% Average Annual Growth Rate = 19.83%								
US/Mexico Border - Percent Change = 87.34% Average Annual Growth Rate = 8.16%								

Table 3: Incoming Truck Container (Loaded) Crossings – US/Canada and US/Mexico Borders

	1996	1997	1998	1999	2000	2001	2002	2003
US/Canada Border	1420629	1966186	4231848	5331429	5334847	5570782	5817762	5673101
US/Mexico Border	1703402	1742414	1991368	2309816	2350100	2372125	2523074	2600019
US/Canada Border - Percent Change = 299.34% Average Annual Growth Rate = 18.90%								
US/Mexico Border - Percent Change = 52.64% Average Annual Growth Rate = 5.43%								

5.4 U.S. Highways

A higher frequency and volume of shipping puts more trucks and transport vehicles on highways. Recent years noted an increase of 80% in vehicle miles traveled resulting in congestion on major highways [13]. Truck delivery is often the final step in delivery of products to companies. Congestion at airports and seaports increases the time for products to be loaded on to trucks. Advanced security measures and a vast increase in the number of products produced overseas means more time for the product to reach its final desitnation. The reliability of delivery by truck is impacted by congestion at seaports and airports and difficult trips in and out of these ports due to proximity to congested highways [11].

6. Conclusion

Among the most serious issues that must be remedied if the United States is to take full advantage of the economic benefits of a global economy is the need to address infrastructure capacity shortfalls. Assisting the progression of global trade requires relief in the congestion that it causes at a minimum.

Reaching these goals requires improved port access and investments in better technology by carriers and gate operators. The “inland” port concept is being examined around the country. Inland ports provide a location for staging containers. These facilities can offer a variety of port services at remote locations, increase a port’s hinterland and reduce local congestion (at seaports and ultimately other routes) [11].

Converting former military bases to all-cargo airports has been examined as an option to reduce the stress on commercial airports. These facilities are often far from major shippers, a drawback that many analysts believe makes this option infeasible. Analysts tend to agree that expansion of existing international airports with new runways, cargo warehousing and freight handling facilities will be necessary [11].

Automated procedures to make clearance easier and more secure at borders are in the early stages of development. Potential for use of these technologies to resolve current capacity and operational constraints is promising [11].

The Federal Government must give considerable attention to harmonization of regulatory practices, trade documentation paperwork, and customs procedures. The increase in trade volumes and the introduction on internet technology accelerates the need for paperless transactions among seaports, airports and borders. The future will require existing infrastructure to be used more efficiently and new infrastructure to be carefully developed [11].

7. References

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