

GLOBAL SUPPLY CHAIN OVERVIEW (CONSUMER GOODS)

OCEAN CARRIERS



Contents

- I. Overview
- II. Services
- III. Facilities & Equipment
- IV. Technology
- V. Rates & Fees
- VI. Stakeholder Interfaces
- VII. Key Industry Data
- VIII. Industry Trends & Challenges
- IX. Selection Considerations
- X. References



Improving Competitiveness and Profitability Through Cost-Effective Supply Chain Solutions

I. OVERVIEW

The majority of world trade is transported by Ocean Carriers. It is the preferred method for transporting large volumes over great distances. Ocean Freight is forecasted to grow in the coming years as the use of containerization by importers increases and the global ocean transportation infrastructure continues to become more efficient.

Although Ocean Freight costs have risen in recent years, they are still among the lowest between the different modes of transportation. However, this advantage of lower transport cost comes as a tradeoff against longer transportation times. A typical voyage from Hong Kong to Los Angeles can take up to 10 days. A voyage from Hong Kong to New York through the Panama Canal can take up to 31 days.¹

Consumer goods are primarily transported in Ocean Containers, which can enable transportation from exporter to importer the entire route without the need for intermediate cargo transfer.

Most international containerized shipments are performed utilizing Ocean Liner Services, which are regularly scheduled stops at various Ports world-wide. For those with large volumes, Ocean Carriers also offer Charter Service.

Most major Ocean Carriers have expanded their services beyond traditional ocean freight to include freight consolidation, warehousing, inland waterway, truck and rail service for door-to-door service under a single contract of carriage.

II. SERVICES

Liner Services

- Regularly scheduled services between major Ports
- Typical Port calls of 1-3 days to unload imports and load exports utilizing shore-based or on-board equipment (e.g., cranes) in a 24 hour/day operation

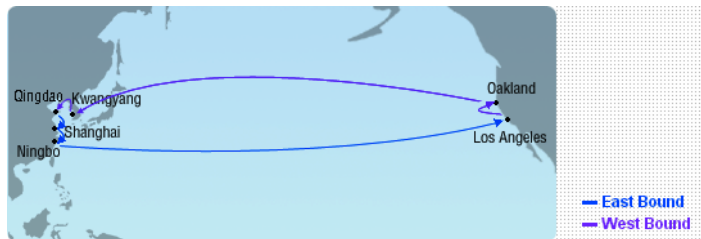


Figure 1 - A typical 14 day trans-Pacific liner route might begin in Shanghai and end in Los Angeles, stopping at various Ports along the way.² On the return trip, the vessel might retrace its voyage or visit other Ports along the way.

Charter Services

- Vessels chartered/leased by importers with shipload quantities
- Lower overall freight costs and greater control over scheduling
- Charter Agreements (charter parties/fixtures) can be time-based (e.g., in months) or voyage-based
- May include crew and equipment or vessel only (bareboat charter)
- Also known as "tramp" steamers (because they operate on irregular schedules and go where the cargo is available)

Logistics Services

- Freight Consolidation
- Container Freight Station Services
- Warehousing
- Insurance
- Inventory Management
- Customs Brokerage
- Container and Chassis Leasing
- Inland Feeder Barges
- Trucking Services
- Rail Services

III. FACILITIES & EQUIPMENT

Vessels

- Most designed for a specific type of cargo for a specific market
- May include equipment for loading/unloading cargo (e.g., gearing) or rely on shore-based terminal equipment (e.g., quay cranes)
- Vessel characteristics may limit access to certain Ports and waterways (e.g., Panama & Suez Canals), including vessel draft (distance to bottom of keel), beam (width), length and height.

Containerships.

These vessels are designed to carry standard-size Ocean Containers in bays stacked on top of each other, both above and below decks. Containership capacity is measured in TEU's (twenty foot equivalent units) equal to the storage capacity of one 20 foot container (or ½ of a 40 foot container). Modern Containership capacities span to more than 8,000 TEU's.



General Cargo Vessels.

These general-purpose vessels can carry a variety of cargo including break-bulk cargo (e.g., large machinery, vehicles, pallets, etc.), Ocean Containers, or any other item that can be stowed on deck or in below-deck holds.

Other types of Vessels include:

- *Tankers*, designed to carry liquid bulk cargo (oils, chemicals, etc.)
- *Bulk Vessels*, designed to carry dry bulk products (coal, rice, scrap metal, etc.)
- *Ro/Ro Vessels* (Roll-on Roll-off) with ramps for wheeled items (cars, railcars, etc.)
- *LASH Vessels* (Lighter Aboard Ship) with on-board storage of barges (lighters) utilized for shallow inland waterways
- *LNG Vessels* (Liquid Natural Gas) for transporting liquefied natural gas
- *Specialty Vessels*, such as *Heavy Lift*, *Combination Passenger/Cargo*, *Reefer*, *Automobile*, *Livestock*, etc..

Ocean Containers

- Utilized in over 90% of world trade in non-bulk goods³
- Standardized⁴ to enable efficient storage and transfer to and from trucks, railcars, and containerships.
- Non-standard size containers (e.g., 53' length and 9.5' height (High Cube)) are also utilized in those markets with adequate infrastructure
- Most owned by Ocean Carriers and provided to the exporter for loading and return
- Transported over the road by Truck (Tractor) using a chassis (wheeled trailer frame)



Maximum Outside Dimensions			Minimum Inside Dimensions			Payload Capacity	
Width	Height	Length	Width	Height	Length	Weight	Volume
8'	8' 6"	20'	7' 7 3/4"	7' 8 1/2"	19' 3"	48,000 lbs	1170 cu ft.
8'	8' 6"	40'	7' 7 3/4"	7' 8 1/2"	39' 4 3/8"	58,800 lbs	2390 cu ft.

Containers are usually classified according to the type of cargo transported, including:

- *Open Top* (e.g., for high loads)
- *Flat* (e.g., for wide loads)
- *Bulk* (e.g., for free-flowing bulk)
- *Tank* (e.g., for liquids & gases)
- *Garment* (e.g., for garments on hangers)
- *Insulated* (e.g., for perishable goods on dry ice)
- *Ventilated* (e.g., for coffee, tea)
- *Refrigerated (Reefer) Containers* (e.g., for refrigerated and frozen foods).

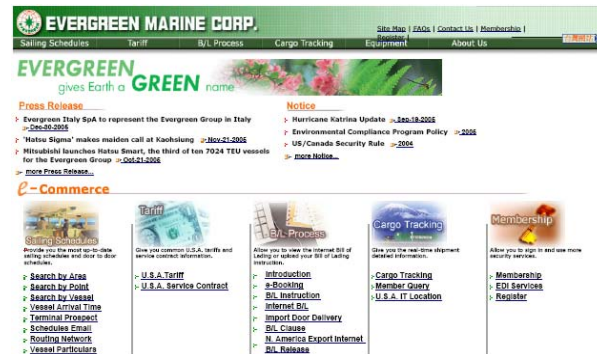
IV. TECHNOLOGY



With rising fuel costs, greater time and schedule restraints, and customer-driven requirements such as Just-In-Time (JIT) inventory, modern vessels now incorporate the latest on-board technological improvements in propulsion, navigation, communication and information systems in order to maximize service reliability and efficiency.

Many Ocean Carriers have adopted modern e-commerce and information systems, including:

- *Electronic Data Interchange (EDI)*, to link and enable computer integration with stakeholder systems;
- *Web-based systems*, for stakeholder on-line tariff and schedule inquiries, information libraries, booking requests, booking confirmation, cargo tracking and payment;
- *Automated information retrieval and reporting*, including Bill of Lading information, Shipping Instructions, Cargo Manifests, Arrival Notices, and Freight Releases



V. RATES & FEES

Liner Service Rates

- Established through contractual negotiation or from published tariffs system
- Ocean Carriers belonging to Ocean Liner Conferences (Associations) utilize rates established by the Conference
- Independent (non-conference) Carriers set their own rates
- Tariffs must be published in order to comply with Federal Maritime Commission regulations

Ocean Carrier Conferences

- Exist for the mutual benefit of their members
- Serve to agree on tariff rates, rules, routes, schedules, pooling resources and promoting trade within the routes served
- Organized based on specific trade lanes (e.g., between the US and Northern Europe (i.e., the Trans-Atlantic Conference Agreement))
- Ocean Carriers may deviate from Conference established rates under certain limited conditions (e.g., by independent action)

Rate Structures

- Usually based on the cargo's classification (category) and volumetric weight (weight or volume, whichever is higher), plus applicable surcharges
- Cargo Classification takes into consideration the product's value, weight density, stowability, handling characteristics, and damage susceptibility
- Volumetric Weight calculated as the greater of either the cargo's volume (e.g., in cubic feet) (length x width x height) or it's weight (e.g., in tons)
- Surcharges include such voyage variables as:
 - Fuel Costs (Bunker Adjustment Factor)
 - Terminal Handling Charges
 - Currency Fluctuation
 - Hazardous Cargo
 - Unusual Size Cargo
- Rates also consider whether the cargo is a full container load (FCL) (commodity box rate), mixed cargo (Freight All Kinds (FAK)), or less than container load (LCL), which is higher than FCL rates due to additional handling requirements
- Rates fluctuate based on seasonality and demand factors. For example, due to the high demand for Asian imports into the USA for the Christmas season, freight rates during this period for the inbound leg are higher than the return trip to Asia
- A typical 6-month Charter Rate for a 2,000 TEU Container Ship is \$40,000/day⁵
- An average Liner Service Rate for a Trans-Pacific voyage is \$1895/TEU (westbound) and \$816/TEU (eastbound).⁶

VI. STAKEHOLDER INTERFACES

Ocean Carriers interface with many of the Global Supply Chain Stakeholders, including:

- | | |
|--|--|
| <ul style="list-style-type: none"> • Shippers/Importers • Consolidators/NVOCC's • Port Authorities • Terminal Operators • National Regulators | <ul style="list-style-type: none"> • Railroad Companies • Trucking Companies • 3rd Party Logistics Companies • Freight Forwarders • Customs Brokers |
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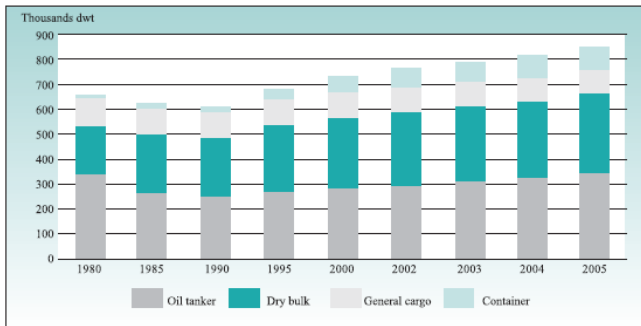
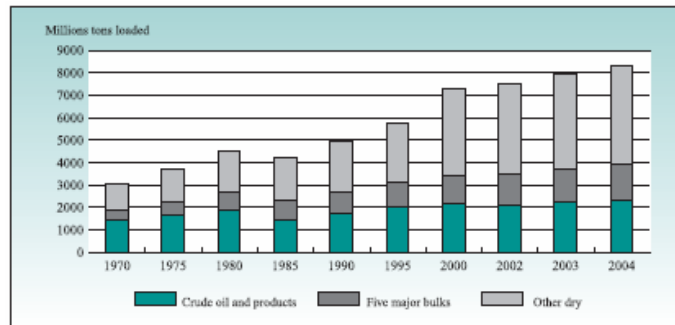
- Customs Authorities
- Conference Associations

As Ocean Carriers increase their service offerings to include seamless intermodal door-to-door service, coordination with these stakeholders has become increasingly important. Ocean Carriers have not only established partnerships and computer integration with many of these Stakeholders, but have also established ownership interest in some of them as well.

VII. KEY INDUSTRY DATA

International Seaborne Trade
 Ocean Carrier Freight is estimated to be over 6 billion metric tons per year, with an annual growth rate of 4.3 percent

Source: UNCTAD⁷



World Fleet Structure

The World Merchant Fleet is estimated to be over 895 million deadweight tons, with an annual growth rate of 1.5% percent.

Source: UNCTAD⁸

World's Leading Container Liners (Based on Number of Ships & Capacity (in TEU's))

Source: UNCTAD⁹

Rank	Ocean Carrier	Country/Territory	Ships (2004)	Capacity (2004)
1	A.P.Moller Group	Denmark	346	900,509
2	MSC	Switzerland	237	618,025
3	Evergreen Group	Taiwan	151	437,618
4	P&O Nedlloyd	UK/Netherlands	158	426,996
5	CMA-CGM Group.	France	178	373,191
6	NOL/APL	Singapore	91	295,321
7	Hanjin/DSR-Senator	S. Korea/Germany	75	284,710
8	NYK	Japan	96	265,192
9	COSCO	China	125	253,007
10	China Shipping	China	106	236,079
11	OOCL	Hong Kong China	63	216,527
12	MOL	Japan	68	213,195
13	Zim	Israel	85	196,420
14	CP Ships Group	Canada	83	196,317
15	K Line	Japan	66	195,750
16	CSAV Group	Chile	74	190,143

17	Hapag Lloyd	Germany	48	186,610
18	Yang Ming	Taiwan	59	168,006
19	Hyundai	South Korea	36	139,243
20	Hamburg Sud	Germany	68	131,713

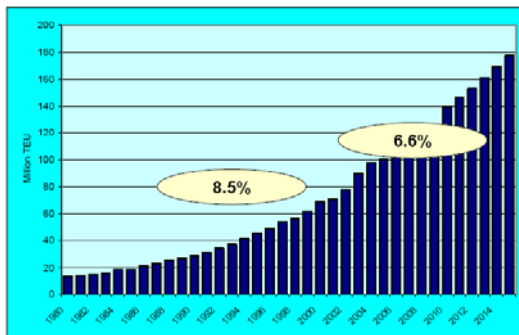
Rank	Ocean Carrier	Rank	Ocean Carrier
1	Italia Line (CP Ships)	10	Maersk Sealand
2	Atlantic Container Line	11	Matson Navigation
3	Cast (CP Ships)	12	MOL
4	Wallenius Wilhelmsen	13	China Shipping
5	FESCO	14	Evergreen Line
6	Hanjin Shipping	15	NYK Line
7	Hyundai Merchant Marine	16	Hatsu Marine
8	OOCL	17	COSCO
9	APL	18	"K" Line

Top Service Quality

(Based on customer survey weighted scores of on-time performance, information technology, customer service, equipment and operations)

Source: **Logistics Management Magazine 2005 Quest for Quality Survey**¹⁰

VIII. INDUSTRY TRENDS & CHALLENGES



Continued Trade Growth

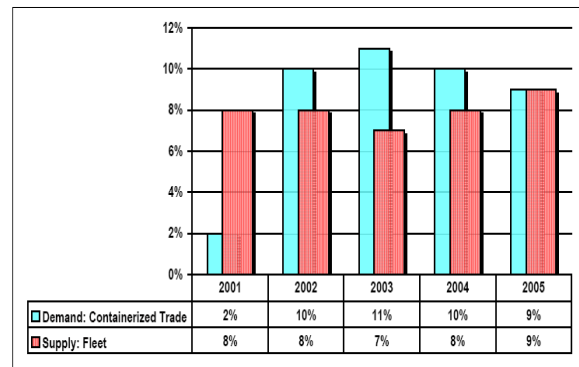
Containerized trade is expected to continue to grow in the coming years. One study forecasts an average annual growth rate of over 6% to the year 2015

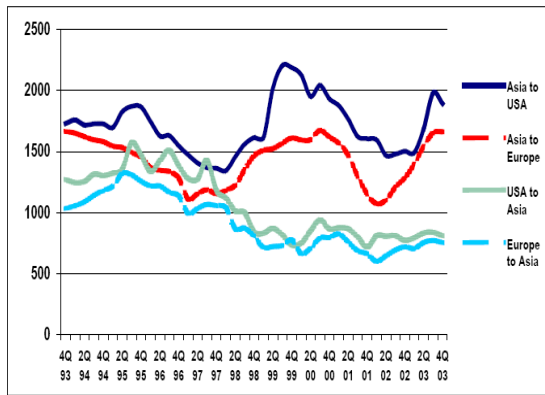
Source: UNESCAP¹¹

Fluctuating Trade Capacity

The last several years have shown that the demand for Containerized Freight has outpaced supply, especially in the Far East trades to the USA and Europe. Historically, however, supply and demand has been cyclical, as construction of new vessels catch up with and outpace demand.

Source: UNCTAD¹²





Increasing Liner Freight Rates (USD per TEU)

Ocean Liner Freight Rates have increased in recent years due to a number of factors including, limited capacity, higher fuel costs, higher ship construction steel costs, implementation of new security requirements and the need to reposition empty containers on return legs to Asia.

Source: UNCTAD¹³

Larger Ships

In order to reduce their operating costs through economies of scale, Ocean Carriers are utilizing and constructing vessels with larger capacities.

The average container ship capacity increased from 655 TEU's in 1970 to over 1,750 the TEU's in the year 2000. Post-Panamax vessels (e.g., with over 4000 TEU's) as a percent share of the world fleet increased from under 1% in 1990 to over 15% in the year 2000.¹⁴



Table 2 - Growth in Container Ship Capacity¹⁵

Type	Modified Ship (1960's)	Full Container (1970's)	Panamax (1980's)	Post-Panamax (1984)	Post-Panamax (1992)	Ultra Large (1996)	Ultra Large (2000)
TEU Capacity	1,000	2,000	3,000	over 4,000	over 4,900	over 6,000	over 8,000
Speed (knots)	16	23	23	24 - 24.8	25	25	25
Length (m)	190	210	210 - 290	270 - 300	290 - 320	305 - 310	355 - 360
Width (m)	27	27	32	37 - 41	39.6 - 47.2	38 - 40	38 - 40
Draft (m)	9	10	11.5	13 - 14	13 - 14	13.5 - 14	15

Larger Companies

Ocean Carrier Companies continue to grow and form new alliances, resulting in a greater concentration in Ocean Freight Capacity. Seventy-nine percent of the World's Container Ship Capacity was controlled by 25 Ocean Carrier Companies in 2004.¹⁶ In February 2006, Maersk-Sealand, (the largest Carrier) will merge with P&O Nedlloyd (the 4th largest Carrier), becoming the Maersk Line, which will have over 20% share of world capacity, twice as big as its nearest rival (Mediterranean Shipping Co.).¹⁷

Current Challenges

- *Security Measures.*
Mandated security measures such as C-TPAT (Customs-Trade Partnership Against Terrorism), Advance Manifest Regulations (24 hour rule), the Container Security Initiative (CSI), increased Coast Guard inspections and escorts, and crew visa restrictions, will require additional resources and increased cooperation by Stakeholders in order to prevent restrictions in the free flow of Ocean Freight.
- *Port Congestion.*

Because of increased Ocean Freight volumes and limited Port and Terminal capacities, Congestion into major Ports (e.g., Los Angeles/Long Beach) is expected to continue in the absence of major infrastructure reforms.

- *Electronic Negotiable Bills of Lading.*
Because of various legal issues yet to be resolved, Negotiable Bills of Lading remain one of the last remaining paper documents utilized in international trade, their use often results in delays which can offset gains achieved by quicker routes and computer integration.
- *Container Management.*
With large quantities of imported Ocean Containers eventually returning back to Asia empty for repositioning (e.g., over 40% of US West Coast imports), new Container Management methods need to be adopted to reduce the resulting costs and impacts on the Ocean Freight infrastructure.

IX. OCEAN CARRIER SELECTION CONSIDERATIONS

- Customer Service (Inquiries, Consultation, Quotation, Booking, Cargo Tracking/Tracing, Expediting, Claims/Complaint Handling, Billing Accuracy, Language, Locality)
- Reliability (On-Time Performance)
- Experience (Trade Lanes, Cargo Type)
- Rates (Conference, Negotiable, Charter, Surcharges)
- Financial Stability
- Flexibility (Changes)
- Equipment (Condition, Availability, Automation, Sanitation)
- Cargo Handling Capacity/Capability (Volume, Special, Hazardous)
- Container/Chassis (Availability, Leasing, Management, Interchange)
- E-Commerce (Web, EDI, Schedules, Booking, Payment, Documentation)
- Additional Logistics & Value-Added Services (Pick-up/Delivery, Consolidation, Inspection, Packaging, Labeling, Warehousing, Inventory Management, Customs Brokerage, Documentation Assistance, Drayage, Intermodal Transport)
- Routes (Direct, Land-Bridge, Coastal, Inland Waterway)
- Sailing Frequencies
- Transit Times and Variability
- Through (Door-to Door) or Container Yard to Container Yard (CY) Service
- Ports (Proximity, Congestion, Facilities, Weather, Labor Relations)
- Terminals (Throughput, Equipment, Container Freight Station, Warehousing)
- Loss Prevention (Security, Protection, Liability Limits, Claims, Jurisdiction)
- Government & Regulatory Compliance Assistance (Security, Environmental, Customs)
- Stakeholder Integration (Intermediaries, Banks, Railroads, Trucking Companies, Government)

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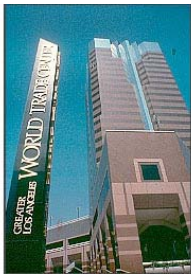
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