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DEEP SEA SHIPPING

The deep sea shipping industry includes about 500 companies with combined annual revenue of nearly \$9 billion. Major carriers include Crowley, Horizon Lines, APL Limited, and Overseas Shipholding Group (OSG). The industry is **highly concentrated**: the 50 largest companies account for nearly 95 percent of industry revenue.

Deep sea shipping is the transport of cargo to and from foreign ports. Ships that travel within the US or that transport passengers aren't included in this industry.

Competitive Landscape

Demand is driven by macroeconomic trends in global imports and exports. The profitability of individual companies depends on **efficient operations** and a **good safety record**. Large companies have advantages in fleet size and port access. Small companies can compete effectively by chartering services out of smaller ports and transporting unusual cargo. Average annual revenue per worker for a typical company is nearly \$500,000.

The global shipping industry transports over 90 percent of the world's total commerce, according to the International Shipping Federation (ISF). Deep sea shipping is a highly competitive industry; however, competition from other forms of transportation is limited.

Products, Operations & Technology

Deep sea shipping services include **international freight transportation** (95 percent of industry revenue) and cargo loading **and unloading**, known in the industry as stevedoring (4 percent).

The US is the world's largest importer and exporter, shipping 1.2 billion metric tons of cargo annually. Worldwide, over 30,000 large, privately owned vessels transport merchandise across oceans. Less than 500 (2 percent) of these ships are registered in the US. An additional 700 ships are owned by American companies but registered in so-called "**flags of convenience**," primarily the Bahamas, Liberia, the Marshall Islands, and Panama.

Vessels include **dry bulk carriers**, which transport commodities such as iron ore, coal, and food; **liquid bulk carriers** such as tankers that ship crude oil, chemicals, and petroleum products; diesel-powered **container ships**; **general cargo ships**; and **roll on-roll off (RORO)** vessels that transport wheeled cargo such as cars, trucks, and trains. Service takes three different forms: liner, charter, and tanker service. **Liner service** is regular, scheduled stops at ports along a fixed route. Liner routes are dominated by container ships transporting manufactured goods. **Charter service**, also known as **tramping**, is an "as-needed" mode of shipping that moves between ports based on cargo availability. Tramps inexpensively transport a single form of dry bulk cargo (grain, coal, ore, sugar) for a single shipper. **Tanker service** transports crude oil, petroleum, and other liquid products. Tankers can be chartered, but most are owned and operated by major oil companies.

Container-based liner service represents only 30 percent of global ton-miles (cargo weight times distance traveled) yet accounts for 80 percent of the total value of shipments. Liquid and dry bulk cargo represents the other 70 percent of ton-miles shipped but only 20 percent of the total value of shipments.

A ship's capacity is measured by several formulas. **Dead weight tonnage (DWT)** is the total **weight** of cargo, supplies, and crew that can be loaded on an "empty" ship. **Gross register tonnage (GRT)** measures the total **internal capacity** of a vessel. One GRT is equal to a volume of 100 cubic feet. The average tanker is between 250,000 and 350,000 DWT; dry bulk carriers average 100,000 to 150,000. **Twenty-foot equivalent units (TEUs)** refer to a container ship's total cargo-carrying capacity. The average container ship has a capacity of around 5,000 TEUs and can carry around 3,000 40-foot containers. The average deep sea ship travels around 15 to 20 miles per hour (12 to 15 knots). An average excursion across the Atlantic covers 4,000 miles and takes about 12 days. On average, 20 crew members sail with the ship. The **average age** of the US privately owned fleet is around 15 years; 40 percent of the fleet has been built within the past 10 years. Most ships are **rebuilt** two or three times in their lifetime, lasting 25 to 40 years before being scrapped.

Ships depend highly on complex **information systems** to maintain vessel schedules and efficiently manage terminal operations. Deep sea shippers manage ship routing through real-time, web-based tracking systems. Some shippers outsource **route optimization** to technology companies that track weather and wind patterns. Radio frequency identification (RFID) tagging allows customers to track containers and cargo throughout the entire voyage. A mandatory international safety protocol, the Global Maritime Distress & Safety System (GMDSS), replaces Morse Code by automating distress signaling and locating.