

Flash Analysis

Credit risk management

The future of sea ports

>>> Digital transformation within the logistics chain and its implications for inter-port competition

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Automation in port terminals is just the beginning of a fundamental change in the global logistics industry. Fully autonomous supply chains and increasing volatility of international trade flows are set to reignite competition between ports. Both port authorities and container terminal operators will have to develop their business models to make the most of the opportunities presented by Logistics 4.0.

The sea port industry is evolving

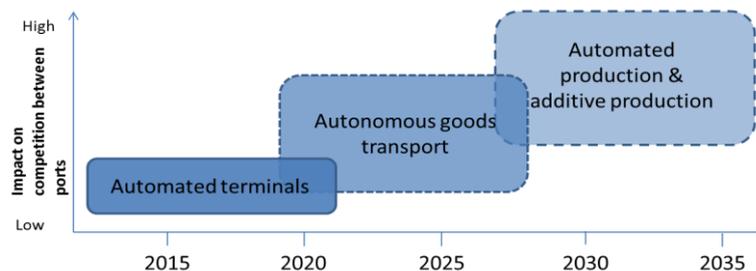
In the 1990s and 2000s, the sea port industry had to deal with the huge increase in container traffic (from 85 million TEU in 1990 to 570 million in 2010). The structural changes in global trade and increasing consolidation between container shipping companies are now causing port operators and authorities to shift their strategic focus away from adding new terminal capacity towards increasing the efficiency of existing port infrastructure.

This transformation is accompanied by an array of technological innovations, which are having a significant impact on competition between the various stakeholders. Three trends appear to be particularly relevant in this change process:

1. The automation of processes at the terminal
2. Autonomous goods transport
3. The automation of production & additive manufacturing

The implications of these developments and the timeframe, in which they will come about, vary depending on location and regulatory framework. The key Europe/Asia route, including Chinese ports and those in the North Range area, are likely to be among the pioneers of these trends.

The automation of port terminals is just the beginning



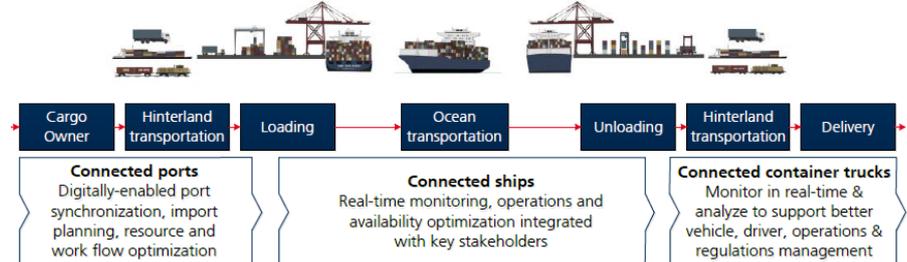
The automation of handling processes at container terminals is also one method that port operators are using to respond to the operating conditions required to deal with the new ultra large container ships (> 20,000 TEU). Self-driving transport vehicles, semi-autonomous cranes and fully-automatic access points for HGVs have already become a reality. As well as reducing operating costs (around EUR 30/TEU), these technologies also help operators to make more efficient use of existing space despite increasingly long peak load periods. Peak load conditions also affect hinterland connections and are providing a new incentive for innovation in this area.

Autonomous goods transport in the starting blocks

The ports themselves act as hubs, linking inter-modal competition on the land (road/rail/waterways) with the global network of shipping companies. After pressure to improve efficiency from competition between sea-based providers has already had far-reaching consequences for shipping, auton-

omous mobility is set to revolutionise goods transport on land. The majority of technical hurdles have already been cleared and, depending on the regulations in place, this technology could reduce transport costs throughout the entire supply chain by up to 30 %. This saving is an order of magnitude higher than the savings achieved by an automated terminal. Such a quantum leap forwards is also changing competition between the various ports.

Ports as a hub in the autonomous logistics chain



Source: Fraunhofer CML (2017), Accenture (2016)

Ports compete for the hinterland

When it comes to deciding which ports to use for handling various trade flows, forwarding agents and shipping companies look primarily at the total costs of the transport chain. As a result, each port has its own catchment area, within which the port forms the most efficient hub for the flow of goods. The huge shift of cost structures in the hinterland transport will result in a rearrangement of these "captive areas" surrounding the ports. With its high density of ports in the North Range area and Mediterranean, Europe in particular is expected to experience significant shifts in market shares between different ports.

Automated production is changing value creation chains

While autonomous goods transport is merely waiting for the right underlying regulatory conditions, the effects that automated manufacturing and data-driven logistic management will have on the future of sea ports are more difficult to forecast.

Volatility of trade flows is set to increase

The global gap between labor costs was one of the main driving forces behind the breakdown of the value chain and the resulting global expansion of trade. However, the increasing integration of robotic technology into the production process is eroding the role of wages in production. This may have a negative impact on global trade volumes and pose a threat to some ports' sustainability in the future.

However, it is quite certain that the dynamism of technical innovations will increase volatility in supply chains. While global labor cost differences are changing slowly and therefore are easier to forecast, technological breakthroughs in robotics can have a sudden impact on production facilities and the competitiveness of industry clusters. This volatility poses a particular risk to ports that are primarily geared towards exports and have very little diversity in the goods they handle.

Increasing competition in hinterland areas and rising volatility in trade flows represent major challenges to ports and terminal operators, whose business models are typically based on stability. Careful analysis of the sustainability of port projects is also becoming increasingly important to investors in their effort to tackle the risks resulting from the changes.

The future of sea ports: From infrastructure to an integrated logistics system and attractive ecosystem



The industry's leading companies have already recognised that merely providing efficient infrastructure is not enough to achieve long-term success. DP World's strategy of developing free trade zones to improve the appeal of ports is one example of what the future of this industry could look like. New business models might transform ports from the trade hubs of today into centres of the global value chains.