



MARITIME SUPPLY CHAIN CHALLENGES



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As the world economy started gathering momentum in 2017 and 2018, the volume of sea-borne trade began trending upward, albeit from a low, following the anemic recovery of the previous decade. While prospects for the industry are positive in the next few years, trade protectionism and the possibility of trade wars are still concerning.

In fact, while trade was growing at more than twice the world's GDP between 1990 and 2008, a decade later it has been growing either in tandem with GDP or just above GDP growth. This trend is expected to continue. At the same time, customers demand better levels of service, increasing the pressure on thin-margin shipping lines.

THE CHALLENGE

As growth slowed over the lean years following the financial crisis, carriers invested in mega vessels, leading to falling utilization rates, increased competition, and lower returns. Liners bulked themselves through mergers, acquisitions and alliances. Yet, despite offering low rates, customers remain unsatisfied with the industry's offerings,

thereby opening the door to third parties.

Several players in the maritime information eco-system have an opportunity to offer shipping customers what they need – door-to-door services with real-time information flow – and monetize the offering. The first ones out of the gate are third parties, including both traditional forwarders and a new crop of digital intermediaries. Historically, traditional forwarders have fulfilled this role, but rarely to the extent that customers desired.

The door has been opened then for a new breed of technology-infused intermediaries such as Flexport and XVELA. That being said, neither traditional third parties nor information platforms can take operational decisions and are at the mercy of the asset owners. The main asset-owning players are the shipping liners and the port terminal operators, and each one of these players optimizes its own operations. However, no entity optimizes to create a seamless, efficient door-to-door operation, which is what the customers want and what the intermediaries offer.

The challenge here is the development of an efficient digital system for managing vessel movements, coordinated with terminal operations and land-side movements. Shipping lines that have invested in terminals are in a position to reap customer service and productivity benefits. Closer integration between links in the maritime supply chain can deliver efficiencies in the usage of assets across the network, as the allocation of containers to terminals can become more responsive to the real time capacities of the terminals.

As carriers bulk up and cooperate with alliance partners and terminal owners, they have an opportunity to start controlling their own destiny by engaging directly with more customers and owning their customers' data.

HISTORICAL PERSPECTIVE – TERMINAL OWNERSHIP

In the last part of the 20th century, both the industry and public authorities preferred independent container terminal operators. In other words, terminal

operators not affiliated with a shipping line. There was a belief that affiliated operators would abuse their position with services that favour affiliated shipping lines.

Originally, shipping lines invested in terminals because they needed to secure berthing on arrival. They typically added a vessel to a string so as to provide better frequency and better service to their customers on that string. However, if an expensive vessel ends up waiting for days to berth, either at an intermediate port or at the final destination, customer service does not improve and the investment in the additional vessel does not bring the expected returns. Later on, shipping lines realized that in addition to securing a berth, the business of container terminals is profitable in its own right. Furthermore, it is less volatile than the liner business and despite lower profitability, is more predictable and provides steady returns in the long term.

Following the 2008/2009 financial crisis, the public perception changed and authorities accepted the concept of terminals owned by shipping lines. The change was, in part, the result of recognizing that the terminal business offered stability to the ports. Furthermore, once the lines saw the terminals as a profitable business in its own right, serving competing lines stopped being an issue. Today, the largest shipping lines have ownership in terminals worldwide, and these facilities continue to service competing shipping lines.

MEETING THE CHALLENGE

Terminal development requires an appetite for long-term investment which today is taken on either by the shipping lines or governments – mainly in the form of sovereign wealth funds. Shipping lines that have made the hard investment in terminals (and some have invested in rail and logistics capabilities as well) have not yet made the effort to integrate the management of these elements into a seamless flow of cargo and information for the benefit of their customers.

This, however, may be the next frontier in efficiency and a source of competitive advantage for those industry players which crack this nut. Such cross-asset ownership offers the opportunity to give shippers what they want: door-to-door reliable service, at a competitive price, owing to the value chain optimization across water and land assets. The danger of failing to offer such a service is not only that the field will be ceded to third parties, but that large shippers, such as Amazon, will step into the breach. The giant e-commerce company is already in the process of building its own transportation system.

INTEGRATING AUTOMATION

Another element of the challenge is the move towards automation. With the development of automated warehouses, autonomous cars, and automated terminal operations, customer requirement for low cost and reliability will only increase – even for the maritime sector. Furthermore, these developments are already ushering in an era of advanced sensors and artificial intelligence software, increasing the pressure on the industry to automate.

Local automation already exists in pockets of the industry, but the integration of autonomous operations across the sector first requires an overall platform of operational excellence. The big mistake is to automate sub-par processes, which may be part of the reason why automation has not delivered the expected returns to date (the other reason is that, as mentioned above, it was implemented in pockets and not across the value chain). Operational excellence involves instilling discipline around core transactions and back office processes, as well as transforming business silos into a single digitized process platform to act as the operational backbone.

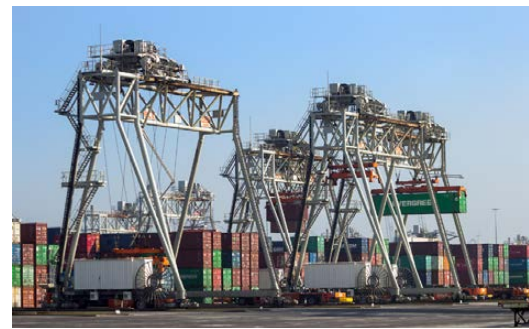
More significantly, Automation will require integration of the different system components in a terminal, and will also introduce a new “middleware” layer, which effectively will replace the traditional function of the dispatch and planning control room of today. The question is who will build it and, more importantly, who will assume the liability for the proper integration?

Naturally, the integration challenge is not just the initial building of the system, but its performance as demands increase, terminals get congested, and customers do not get the service they paid for. This can be achieved with a proper incentive system. For example, the lines may guarantee a minimum level of demand (and therefore a guaranteed compensation) for the integrator and pay it based on a service level agreement rooted in agreed-upon KPIs. This approach effectively makes the integrator/vendor a partner that takes on the risk of operations.

CONCLUSIONS

While the volume of trade is not expected to grow much faster than GDP over the next decade, most projections agree that traffic will exceed the forecasted growth in infrastructure. The result will be bottlenecks and frustrated shippers who are already demanding more than the industry delivers. The challenge is to develop what the customers are clamoring for – end-to-end, reliable and consistent shipping at a reasonably low cost.

While some shippers are still looking to the lowest price per box, most recognize



that randomness and inefficiency cost them money. Inconsistent shipping times mean higher inventory carrying costs, more out-of-stock situations, stranded production lines, and obsolete inventory. As a result, the system – i.e. land transportation, terminal operations and maritime shipping – has to be integrated (and then automated) to deliver consistent travel time with real-time information flows. Although third parties or large shippers can perform some of this function, the shipping lines should also take on the challenge, especially as they may be the biggest beneficiaries of owning and operating a door-to-door system. This is even more important for shipping lines who own or operate terminal and land-side transportation. The benefits include better customer service, bypassing the third parties, owning the customer data, and more efficient operations.

ABOUT THE AUTHOR

Dr. Yossi Sheffi is Elisha Gray II Professor of Engineering Systems and Director of the MIT Center for Transportation and Logistics. Under his leadership, the CTL has launched many educational, research, and industry outreach programs. He has consulted with numerous organizations and founded five successful companies, all acquired by large enterprises. Dr. Sheffi has been recognized in numerous ways in academic and industry forums winning multiple awards and honors.

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