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AI Strengthens The Bottom Line Of Shipping Lines Through An Optimized Fleet And Its Deployment

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It has been nearly two years since the start of the worldwide COVID-19 pandemic and its resultant trade challenges, however as we see it today, the global economy is ready for what the possible rebound predicted by the World Bank.

With approximately 90% of the world's goods being transported by sea, and over 70% of these goods moved in containers, the importance of fleet and service optimization is paramount.

The Current Landscape of Shipping Lines

The pandemic has been both cruel and kind to the liner industry.

The first casualty of the pandemic in early 2020 was felt in the disruption of the upstream supply chain in China. For the shipping sector, in a bid to remain viable, liner organizations tried to recover in large numbers; Hellenic Shipping News reported a staggering 630 ships sent for demolition during 2020.

Positive market environment

Demand has always dictated capacity, profits were always based on which side you sat as the balance swung from one side to the other.

The peak in demand after lockdown was exacerbated by a lack of available vessels and containers, causing a chain reaction that has affected not just the shipping lines but the entire supply chain. Existing vessels are now being utilised to their fullest capacity and deployed on routes that saw them many years ago.

This has also resulted in a 500% to 600% increase in freight costs, with Drewry, reporting an increase in the Shanghai-to-Rotterdam route by 640%. McKinsey's video explaining why container shipping prices have surged, shows that - pre-pandemic - a container from Asia to Europe or North America would set you back roughly $2,000, will now cost $12,000 or more.

To take full advantage of the positive market environment, shipping organisations are ordering more vessels to increase their capacity. CMA CGM group, with a market share of 12%, has ordered 22 additional vessels. The combined increase in capacity these new vessels bring could result in an additional 1.45 million TEU containers.

Container shortages

The high demand for goods from China means full containers are leaving China's harbours, but as has always been the case, a laden return to Asia is not only unattractive freight wise but also the time taken for this returned laden to be destuffed and made ready to ship out as an export from Asia just takes too long. Therefore, some carriers are now finding it be far more cost effective to ship these containers back to Asia as empties, rather than as laden, saving them container turnaround time and having them ready for a high freighted export.

As a result of the shortage within the cycle, shipping companies like Hapag-Lloyd are also investing in additional containers to try to ease the bottleneck.

Port congestion

In spite of lockdowns being lifted, there are still significant knock-on effects such as port delays, lack of equipment and other issues due to Covid-19. At the ports of Yantian and Ningbo in China, cargo owners and liner shipping companies are experiencing several weeks of delays due to Covid-19 lockdowns. According to Maersk, this could have an effect bigger than the Suez canal closure, resulting in forced missed sailings, unforeseen and unpredictable delays.

Dealing with further restrictions such as vessel size limitation, Deadweight limitation, draft and air draft, tidal range, vessel age, vessel flag, dry docking, and so on, cause considerable operational constraints further aggravates the problem.

High operational costs and low efficiency

Fleet and service planners who are tasked to keep costs down work with variable freight rates that rise and fall based on market rates, making it difficult to predict long-term costs. More than that, bunker prices - typically accounting for 40% of total costs - need to be managed efficiently in order to keep costs down and maximize profits.

The deployment of vessels within a service is backed by analytical reasoning that considers certain known variables. This means it's crucial to consider the changing scenarios and tweak your plan accordingly.

Aside from the challenge of managing multiple vessels and cargo and balancing sensitive variables, the ongoing issue of minimizing costs is often unresolved. "The true hidden cost behind manual scheduling is the cost of operational inefficiency," says Captain Vijay Minocha, Chief Commercial Officer at Solverminds. "This is seldom - if ever - computed or even discussed. Nor is the question broached as to whether the schedule could be generated in a better way. But we have asked ourselves that question, and the answer is unequivocally, yes! It must - as manual scheduling and high operational costs go hand-in-hand."

Manual vessel and service scheduling

Liner operation teams face a tremendous task of scheduling vessels optimally on manual or outdated systems, while still trying to keep costs down. Expanding trade wars, economic instability, infrastructural speed breakers, a shifting ratio between chartered and owned vessels' to name a few, have a direct impact on profits and bring complications to effective planning. Compound that with daylight navigation ports and scheduling within those port windows, port infrastructure limitations (minimal depth, allowed LOA, allowed beam, tidal restrictions), and you'll see the complexity of the task at hand when carried out manually.

Fluctuations in demand and freight rates have a direct impact on schedule reliability - and customer confidence - and are often catered to by liner companies through blank sailing and idling of ships. Additionally, planners need to consider how they will meet supply with demand and change pro forma schedules to match the cargo flow, and manually adjusting schedules to factor in disruptions reported by the vessel or at the port is tedious, error-prone, and time-consuming.

With so many limiting factors to take into consideration - such as vessel size, cargo demand, port limitations, tides, draft limitations, berth window constraints, MT container supply, route constraints, operational constraints, and commercial constraints - liner companies also need to execute with the right-sized vessel on a service with the right port calls, vessel utilization, minimized fuel, charter, port costs and empty repositioning plan which is global and not local in nature. Additionally, the right cargo composition (TEUs, weights, and contribution) and right time decision-making (freight rates are a function of time and season and now even the influence of a virus) are critical to this optimization.

It is easy to understand why, as a manual process, fleet and service planning is excessively timeconsuming, complex, inflexible - and costly.

Accelerating Maximum Contribution through hybridised solution such as Optimization and Artificial Intelligence

Maximum contribution - or profitability - is the reason why liner companies seek to attain and maintain a cost-effective, stable, reliable liner schedule network, and why they are turning to optimization engines and artificial intelligence (AI) for solutions. Coupled with operational efficiencies, a reliable, AI-automated liner schedule is the best way to achieve these objectives and overcome these manifold challenges.

Solverminds, a leading global technology company that is well known in the liner and maritime industry for their enterprise resource management solutions (ERP), as well as consulting and data analytics, has introduced the innovative OptiFleet solution. This much-needed link between business and technology is a powerful, easy-to-use tool. It optimizes fleets and services by using the Optimization engine, Time Series forecasts, and its AI platform, simply and efficiently.

“The expansion from ERP to AI-powered solutions for the liner and maritime sector was organic and natural for the Solverminds team,” says Capt. Minocha. “Our in-depth domain expertise and advanced technology platforms mean that - not only do we know first-hand what challenges the planning team face from an operational and commercial perspective - but we have the means and expertise to solve it.”

OptiFleet Helps Make Decision-Making Quick, Easy, and Profitable

OptiFleet takes care of the planning, analyzing, and optimization of the schedule, allowing the trade and operations teams to quickly and accurately make decisions that maximize profit, minimize costs and eliminate expensive delays.

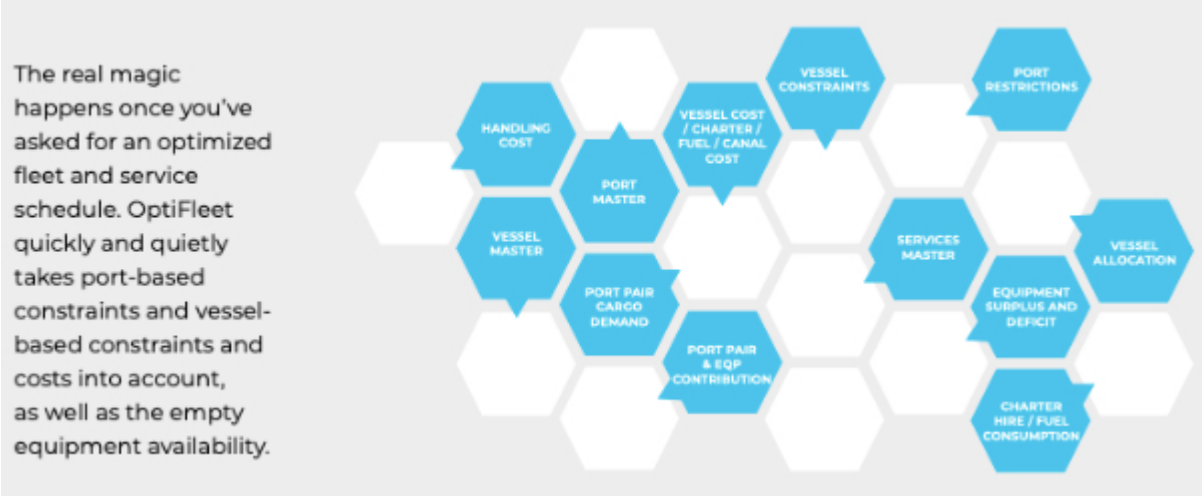
As OptiFleet takes care of the manual drudge work of fleet and service scheduling, it frees up the liner teams to focus on more profitable tasks.

OptiFleet Does the Heavy-Lifting for You

OptiFleet is smart and fast. So you don’t have to wait for, or worry about, your schedule.

Firstly, it automatically takes every service detail into consideration, such as port rotation, distance between each port leg, vessel speed on each leg, terminal productivity, port stay, total sea time, maneuvering time, and service frequency.

It also factors in each of the various vessels' details, such as fuel consumption at speed, charter hire costs, port costs, canal costs, insurance and maintenance, vessel max and eco speed, and bunker cost - as well as all various port capacity, port constraints, and cargo routing criteria to quickly identify optimal port pair allocation by container type, weight, and freight contribution. More than that, OptiFleet can connect to client application data using API services for seamless integration. All of this, before you've even pressed 'go'!



It then identifies the port pairs, quantity of TEUs and weights allocated for each port pair, contribution for each port pair, list of time-chartered vessels within the asset pool, spot chartered vessels (if required), services, preferred customer and commodity with equipment type, quantity of empties and repositioning between surplus to deficit locations, and further maximizes vessel utilization - and ultimately profitability.

It then displays these results graphically so that it is easy for decision-makers to understand the financial profitability, commercial plan, operational plan, and empty plan outputs. You can then request OptiFleet to issue a fleet and service schedule that maximizes profitability by vessel or by service. All before you've finished your morning coffee.

But don't stop there. Once OptiFleet also builds demand forecasts using Time series models for each port pair equipment, optimizes routes for better fuel efficiency, monitors capacity by vessel size or engine capacity, forecasts market supply and demand data inputs — all with a few simple clicks — and never misses the ultimate goal: to maximize profitability.

Of all the tech companies to produce this solution, it is no surprise that Solverminds rose to the occasion. Their expertise in solving real-world challenges through Optimizer engine and AI-powered technology means they are capable, experienced and equipped to add value.

It looks like its blue skies and full ships from here, forward!.

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