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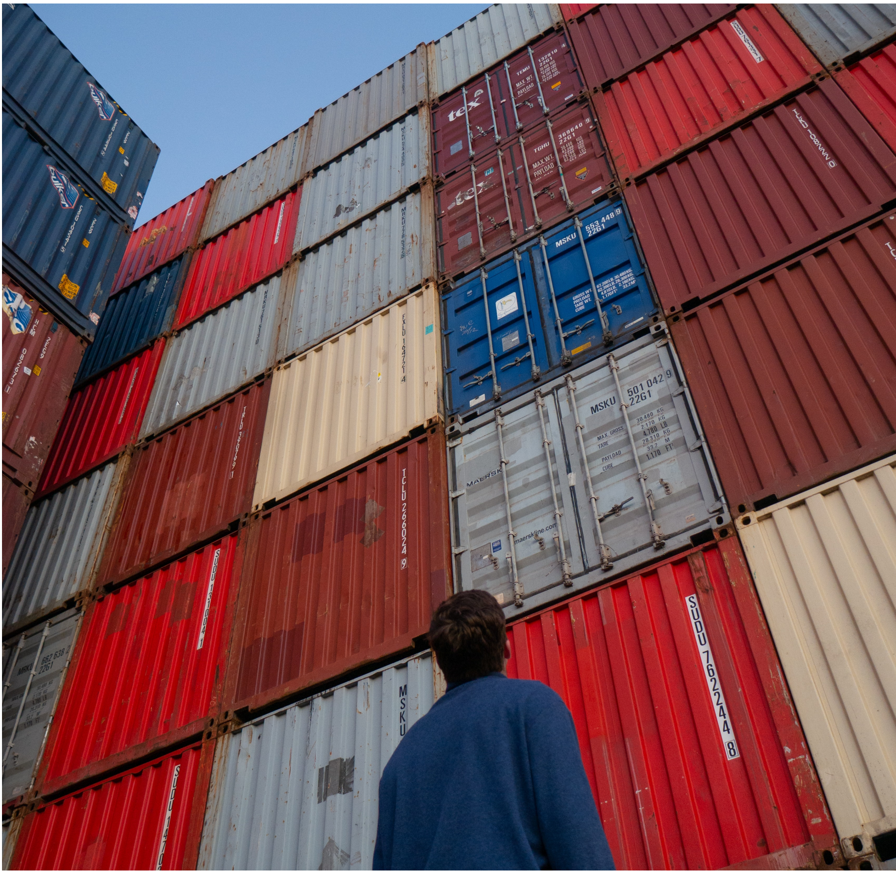
(RE)IMAGINE THE MARITIME INDUSTRY IN A DIGITAL WORLD

Examining the future of maritime industry for successful investment

This report has been prepared for examining the maritime industry through the lens of a venture capitalist. It includes an external analysis of the driving-forces that shape the industry (areas, technologies, and key trends), an analysis of the recent evolution of the business models, and some principles for future successful investments.

This report is based upon sources of information believed to be reliable such as management literature, research papers, company reports and documents, and desk research.



WHERE TO PLAY

Defined as "all enterprises that own, operate, design, build, provide specialized equipment or services to all types of ships and other floating entities" (Melbye et al., 2015), the maritime industry has always been a traditional playground for private equity firms because of its reputation of being an historically owner-operated business, a capital-intensive, and growing steadily industry.

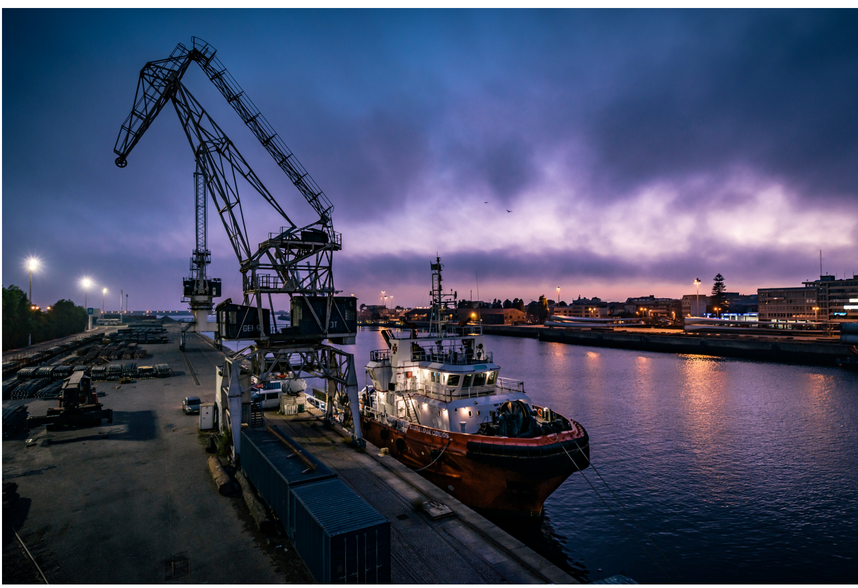
Thus, regarding the global marine vessel market only, its size was estimated at US 201.36 billion in 2018 and is expected to reach US 220.18 billion by 2026, exhibiting a CAGR of 1.10% during the forecast period (Fortune Business Insight, 2020). An integral part of a broader industry commonly referred to as the "blue economy", the maritime industry generally covers the following areas: shipping, ports, shipyards, and maritime equipment or service provider (Jacobsen, 2011). The creation of value is mainly achieved through the shipping activities.

	Established industries	Activities	Sub-activities
Blue Economy	**Maritime industry**	▪ Shipping ▪ Ports ▪ Shipyards ▪ Maritime equipment / service	▪ Offshore, drilling and production, Shortsea, Deepsea ▪ Trade, logistic, supply, security ▪ Offshore vessels, car or passenger ferries, coastal vessels ▪ Security, repair, mechanical / electronic equipment, financial and legal, storage
	Food industry	▪ Capture fisheries ▪ Seafood processing	▪ Boiled ▪ Smoked ▪ Canning ▪ Fermentation ▪ Frozen ▪ Salted
	Offshore industry	▪ Deepwater oil and gas ▪ Wind energy ▪ Ocean renewable energy ▪ Mining	▪ Topsides (production and drilling facilities, power and utilities, accommodations, ops support) ▪ Hull (global performance) ▪ Mooring system ▪ Riser system

Figure 1: Part of the maritime industry within the "blue economy"
(source: author analysis)

Because the maritime industry depends on the global maritime trade and the shipping demand, it is highly influenced by the performance of the world economy (Stopford, 2009). The demand for ship increases during economic growth and decreases during the recession.

This is why the maritime industry is currently suffering the full force of the COVID-19 crisis (A -7.3% drop in the world sea freight market is thus forecast, Transport Intelligence, 2020). But there are other forces that shape this industry: the environmental regulations (the maritime industry has become the focus of green initiatives and fully engage in the course to decarbonization, i.e. Poseidon principles), and the digital revolution of course.



Stressed by physical and financial volatility, the maritime industry has been slow to ride the wave of digital transformation, to modernise its processes and to adopt new, faster and cheaper technologies, and has therefore failed to anticipate the profound change taking place.

The digital revolution has completely transformed the nature of the existing rivalry within the maritime industry, making it increasingly intense. Indeed, while the cost of capital or the ownership of assets such as ships or warehouses were strong barriers to entry for potential competition, digital has made it possible for a whole new generation of new entrants to emerge on the market. This new wave of start-ups is challenging traditional players by offering products and services that improve or leverage existing business models (LBM: by improving efficiency, reducing costs, simplifying supply chain) and by creating new business models (RBM: marketplaces, multi-modal collaborative platforms). There is then a digital disruption: a loss or shift in value between traditional actors and new entrants who divert value from all or part of the value chain.

<table>
<tr><th colspan="2"></th><th>Key Benefits</th><th>Key Trends</th><th>Key Technologies</th></tr>
<tr><td rowspan="2">Digital Revolution</td><td>Existing Business Models</td><td>▪ Cost reduction
▪ Performance enhancement
▪ Capacity optimisation
▪ Trade prediction
▪ Process optimisation and simplification</td><td>▪ Revenue management
▪ Real time information
▪ Automation
▪ Collaborative robots
▪ Collaborative platforms
▪ Bill of lading automation and security
▪ Fuel and energy management
▪ Advanced navigation
▪ Smart containers
▪ Capacity management</td><td rowspan="2">▪ Data and analytics
▪ Blockchain
▪ Internet of Things (IoT)
▪ AI
▪ Global trade management
▪ Electronic communication
▪ Digital forwarding
▪ Enterprise technology
▪ SaaS
▪ PaaS</td></tr>
<tr><td>New Business Models</td><td>▪ “One-click” online booking platforms
▪ High-margin services (intermodal and warehousing solutions)
▪ Focus and specialization</td><td>▪ Marketplaces
▪ Multi-modal collaborative platforms
▪ Supply-chain transparency
▪ Sensitive shipping</td></tr>
</table>

Figure 2: Impact of the digital revolution on maritime industry business models
(source: author analysis)

These new start-ups allow traditional players to take a new look at the maritime industry by helping them re-imagine their business, accelerate their digital transition, but also create real opportunities for growth through innovation (via incubation or excubation programs according to the innovation stage). This wave of new players shakes the industry by bringing many benefits: cost reduction, performance enhancement (efficiency), capacity optimisation, trade prediction, process optimisation and simplification through automation, or visibility and transparency.

This is the reason why more and more private equity firms are investing in start-ups or technologies related to the maritime industry. Indeed, according to the Journal of Commerce (2017), investors injected more than $430 million into 29 companies dedicated to introducing technology into the transportation and logistics industries between 2012 and 2017 and that nearly 90% of this money was invested between 2015 and 2017, with the largest investment being made in 2016 (i.e. Flexport or Freightos).

Trends	Sample of Start-ups
Marketplaces	Freightos, iContainer, GoCargo, xChange, CoLoadX, Kontainers, Logistitrade, MyForwarder, Nyshex, Simpliship, Tendertool, Transnations, Vamaship
Pricing	Xeneta, PredictHQ
Supply-chain optimisation	ClearMetal, Project44, Fourkites
Real-time tracking	AIM, Awarepoint, Particle
Capacity optimisation	HawkEye360, Kayrros
Trade prediction	SpaceKnow

Figure 3: Sample of new maritime industry new players per key trend

(source: author analysis)

HOW TO WIN

For all the reasons mentioned above, there is a real interest for a venture capitalist to invest in the maritime industry and through its financing in the new wave of maritime industry start-ups, to actively contribute to reinventing this industry.

Nevertheless, these investments present not only risks related to the industry itself (regulatory, market or physical risks) but also risks related to the technologies such as: shift in R&D and CapEx to more sustainable options, loss of returns from sunk costs into seafaring assets.

In order to limit all these risks, a number of investment principles could be adopted (Investment strategy selection and decision-making):

Purposeful

Reconciling financial return objectives with sustainability objectives (e.g. by investing in startups that contribute to the decarbonization of the industry through new energy solutions).

Precautionary

Limit opportunity profits by creating an investment portfolio consisting of 80% of startups focused on improving existing business models (Series B+: startups that are already generating revenue and need funds to grow, scale-up their business or expand into new markets), and 20% of startups focused on creating new business models (Seed, Series A).

Investment Portfolio	Business Models	Funding stages
80%	Existing	Series B, C, D…
20%	New	Seed, Series A
Sustainable Maritime Industry		

Figure 4: Maritime industry startups investment portfolio
(source: author analysis)

Impactful

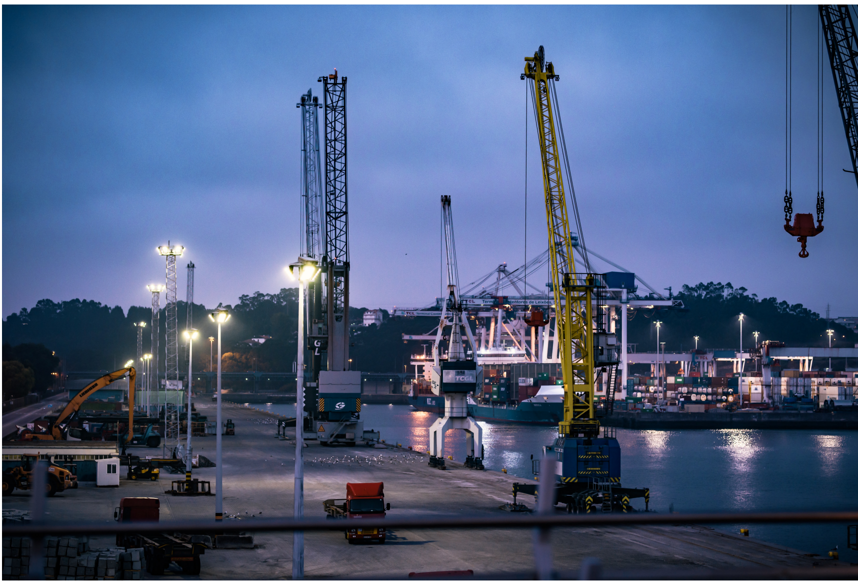
Ensure that the investments provide social, environmental and economic benefits for the current and the future maritime industry.

Solution-driven

Direct investment towards innovative solutions to maritime industry challenges (both land-based and ocean-based) - including circular economy approaches.

Partnering

Partner with key shareholders and stakeholders (public, private and non-government sector entities) to accelerate progress towards a sustainable and successful maritime industry.



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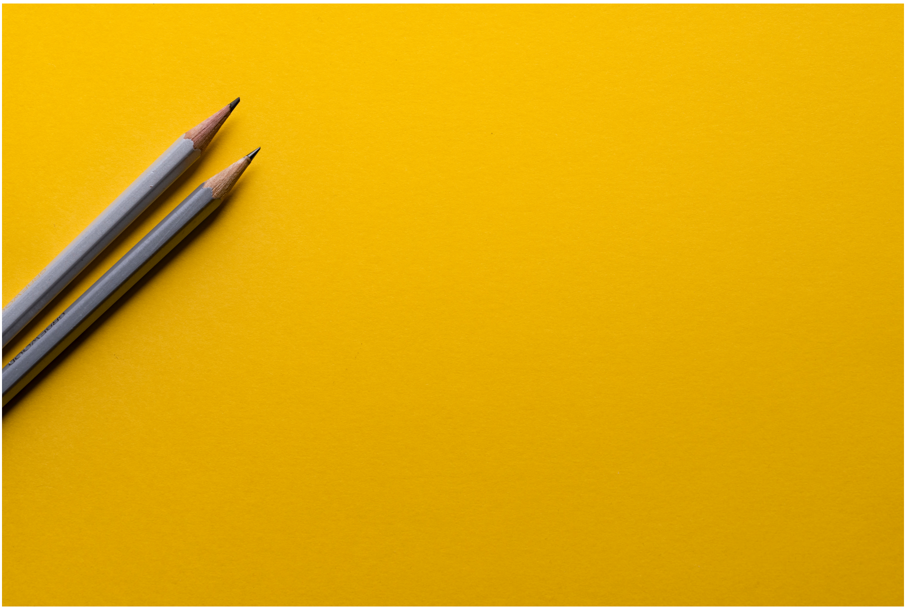

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