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Technology in Maritime: Dehumanising the Industry or Creating New Job Opportunities?

A Sea Asia 2019 industry insights report

Report Summary

This is the second edition in a series of three reports produced in the lead up to the seventh edition of Sea Asia – the maritime industry’s leading forum for discussion, debate and analysis on the key trends and challenges facing the industry. Sea Asia 2019 will take place in Singapore from 9-11 April 2019.

This report explores how technology has changed the course of maritime over the last few years and the impact that it has had on the current maritime workforce.

It questions if technology will make traditional jobs in the maritime industry redundant, and emphasises the need for the industry, especially that of Singapore as a prominent maritime hub, to futureproof the workforce in a bid to remain competitive.

Acknowledgements and Contributions

The development of this multi-part industry insights report would not have been possible without the insights and contributions provided by these maritime industry’s thought leaders.

- Mr Khalid Hashim, Managing Director, Precious Shipping Public Co. Ltd
- Captain Mike Meade, Chief Executive Officer, M3 Marine Group
- Mr Esben Poulsson, Chairman, International Chamber of Shipping; President, Singapore Shipping Association; Chairman, Enesel Pte Ltd
- Mr Kenneth Chia, Executive Director of the Singapore Maritime Foundation
- Mr Desmond Lim, Chief Commercial Officer of Jurong Port
- Mr Chris Hayman, Chairman of Seatrade UBM EMEA

These industry leaders gave their time to be interviewed for this report, providing their invaluable insights and opinions on the challenges and opportunities facing maritime as the industry moves to embrace technology.

TECHNOLOGY IN MARITIME: AN OVERVIEW

The maritime industry is one of the oldest industries and has long held a reputation for being conservative and relatively slow in the adoption of new trends. With the rise of the Internet of Things (IoT) and digitalisation, emerging technologies are fast becoming one of the industry's greatest disruptors.

While key technological trends are set to revolutionise the way the maritime industry sails its course, they also bring about a key question: Will technology dehumanise the maritime industry?

This report explores the question further, and looks to highlight the importance of future-proofing the current workforce in light of the technological revolution in maritime.

CHANGING THE WORLD OF MARITIME

The benefits of the technological revolution are apparent for most industries, including the maritime industry. For example, in the banking and healthcare industries, artificial intelligence (AI) systems are used respectively to ensure the heightened security of online transactions, and that the amount of paperwork and reports are filtered through to enable better decision-making among doctors.

Meanwhile in maritime, technology has also unsurprisingly made a discernible difference to the way some things are done. Technological solutions such as blockchain and AI have simplified the process of shipping transactions, and allow for greater data analysis that enable companies to improve performance.

As a result of adopting key technologies, the industry has seen increased efficiency and productivity, greater connectivity even while out at sea, and more importantly, improved safety of crew members.

Amidst these benefits, the perceived threat remains that jobs in industries, including those in the maritime industry, will be taken away from the current workforce.

To illustrate, it was estimated in a 2016 McKinsey report that automation technologies could potentially have an impact on half of the world's economy, affecting about 1.2 billion employees and US\$14.6 trillion in wages¹.

With the shipping industry being rooted in traditional methods and ways for so long, it is not much of a surprise if many in the workforce today see technology and automation threatening employment opportunities in the industry.

Captain Mike Meade, CEO of M3 Marine Group adds that the threat is also somehow magnified with the industry being perceived as relatively unprepared for the types of change that technology is set to bring – particularly in the area of skills set.

“The pace of technological change in the [maritime] industry is quicker than we think, and the industry still does not understand the scale of the change yet. This makes it hard to foresee what new change will come about in the industry within the next five or 10 years.

“More importantly, with new disruptors and technologies that are being introduced, new types of ships such as hybrid and solar-operated ships may be built, which may not necessarily require the type of manpower or skills that we have in the industry today to operate,” Captain Meade notes.

But does this necessarily translate to the dehumanisation of the maritime industry?

The fact is that despite the increasing use of technology in areas that were previously reliant solely on a human workforce, humans will still be needed, albeit in a different capacity.

To put things in perspective, Mr Esben Poulsson, Chairman of the International Chamber of Shipping and Enesel Pte Ltd, and President of the Singapore Shipping Association, cites the example of autonomous ships and how an actual human workforce will still be needed, even on such technologically advanced vessels.

“Autonomous ships already exist, trading in enclosed waters between fixed ports. But when trading worldwide, I believe humans will still be required for a long time to come, even if in reduced numbers, and having different skill sets. The analogy is aircraft – here, despite the role of the computer, you still have people in the cockpit,” Mr Poulsson notes.

New skills needed

While it can seem that new technological innovations will make some traditional maritime roles redundant, Mr Kenneth Chia, Executive Director of the Singapore Maritime Foundation (SMF) highlights that it is even more evident that technology is altering jobs, as opposed to eliminating them from the industry.

“There is still the belief within the industry that it is hard for any new technology to replace the instinctive knowledge of an experienced industry worker. With the increased uptake of technology in the industry, it is, however, inevitable that some existing jobs will be reskilled and redesigned.

“For example, while we may now need less crew working on board a vessel due to smart shipping technologies, we also need a larger group of skilled employees onshore to remotely manage what is happening out at sea,” notes Mr Chia.

Drones also provide a good example of how skills needed for traditional jobs in the industry are changing due to technology. Instead of surveyors having to be physically onboard vessels for tank inspections, they now need to possess the relevant skills that can allow them to do their inspection remotely.

“One of the key benefits of remote inspection is that it reduces time and cost, and more importantly, the risk to workers. With remote inspection, there is no need for

scaffolding for access, the shutting down of facilities, or as a detailed risk assessment,” Captain Meade explains.

As drones allow for an easy and quick analysis on the safety of the vessel, even before a crew member gets onboard to start inspection, this enhances the safety of the surveyors who sometimes have to put themselves in precarious situations during inspections – drones can potentially save a life within a few minutes of drone flight².

Similarly, video feedback from the drone can be used to assess if human inspection of the vessel is even needed in the first place. The relatively small size of drones also provides inspectors with increased access to remote areas on vessels that may have been previously inaccessible.

However, Captain Meade points out: “Remote inspections also require trained surveyors to carry out the work and a proper certification framework.”

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*Mr Kenneth Chia,
Executive Director of the Singapore
Maritime Foundation*

FUTURE-PROOFING IS KEY

With technology changing the course of how some areas of work are done in the industry, industry leaders agree that the importance of future-proofing and upskilling the current workforce has therefore become more significant. There is a new challenge for existing staff to be retrained so that they can adapt and become part of a new workforce that is revolved around technology.

Fortunately for Singapore, industry leaders are aware of the government’s proactive and supportive stance on the changes happening in the industry brought about by technological and digital developments.

Mr Poulsson acknowledges, “Many people perceive shipping as change resistant and old fashioned, but this is perception is misleading in today’s environment where I sense our industry is becoming ready and prepared to embrace change.

“In Singapore, the Maritime and Port Authority of Singapore (MPA) and global port group PSA are very actively involved in the industry and are correctly seeing that [Singapore is] in a race to be first movers. The government sees itself not as a referee, but as a leader in encouraging the industry to stay agile.”

For example, in early 2018, the MPA announced its plans to further enhance and improve the skills of the maritime workforce as part of the Sea Transport Industry Transformation Map (ITM).



We established an Academy in 2017 that aims to pool training resources in order to build a structured learning environment that all multi-purpose port professionals can tap on. For this to bear fruit, we also believe that the learning platforms must be matched with potential career pathways that will allow employees to reap benefits from these opportunities.”

*Mr Desmond Lim,
 Chief Commercial Officer of Jurong Port*



This aims to create over 5,000 good jobs by 2025 and for those currently in more traditional job roles to undergo skill upgrading to better prepare them for a more automated and digitalised working environment. Maritime companies can also tap on the Maritime Cluster Fund (MCF) to upskill their employees in both specialised and more general areas like data analytics and cyber-security³.

Jurong Port also provides training and career development opportunities for their employees to prepare them for changes in future jobs that would be brought about by global technological trends and industry developments.

Mr Desmond Lim, Chief Commercial Officer of Jurong Port, shares: “We established an Academy in 2017 that aims to pool training resources in order to build a structured learning environment that all multi-purpose port professionals can tap on. With that, they can learn about how they can leverage new technologies and

innovation at the port, be encouraged to adopt an agile mindset that is collaborative and open to change, and finally upskill themselves for future employability in a variety of jobs.

“For this to bear fruit, we also believe that the learning platforms must be matched with potential career pathways that will allow employees to reap benefits from these opportunities.”

While retraining and upskilling opportunities for the existing workforce is important, the industry needs to also look at how it attracts future talent with the right skills needed to propel the industry further.

According to Mr Chris Hayman, Chairman of Seatrade UBM EMEA, “Attracting talent to both the onshore and offshore sectors at a time when technological trends are reshaping the industry is also a key concern that needs to be addressed by industry players.

“Not only do we need to have a good understanding of the new types of skills needed, the industry needs to also be aware of where the talent with the necessary skills can be found and how best do we attract them to work for the changing industry.

“With this in mind, leaders at the upcoming Sea Asia 2019 will look to further discuss this concern at the ‘Future of the Maritime Workforce’ session during the first day of conferences in Singapore.”

Working with schools

Education institutions also play a key role in “producing the right type of graduates”, who will make up the future workforce, to handle potential challenges” that technology may bring to the maritime industry, says Khalid Hashim, Managing Director of Precious Shipping Public Co. Ltd.

This makes the MaritimeONE Scholarship⁴ programme, spearheaded by the SMF and its partners integral in this aim. By being able to attract the right talent into the maritime industry, the scholarships will help Singapore continue its path as a leader.

“With new technologies such as blockchain, AI and augmented and virtual reality continue to be introduced into the industry, it is important that we have people with the right skills to utilise and harness these technologies so as to further propel the industry forward.

“It is important that industry players not only engage and upskill their current staff, but also work closely with Institutes of Higher Learning (IHL) to ensure that we are training the next generation of a skilled and dynamic workforce for a new world revolved around technology,” notes Mr Chia.

Above all, he highlights that players in the maritime scene need to know that change in the industry is bound to happen with the rapid evolution of technological solutions today, and that there are opportunities to be seized.

As Mr Hashim states, “Companies and industry players need to understand that change is going to happen. They have to remain open-minded, be adaptable to changes and ask themselves, ‘Do I want to be part of the change, or have the change run over me?’”

¹ <https://www.mckinsey.com/featured-insights/employment-and-growth/technology-jobs-and-the-future-of-work#Table>

² <https://www.martek-marine.com/blog/drone-technology-maritime-industry/>

³ <https://www.mpa.gov.sg/web/portal/home/media-centre/news-releases/detail/83647952-0b16-4a15-ba04-32f14ba29bb2>

⁴ <http://www.smf.com.sg/scholarship.html>



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