

IN SEARCH OF BLUE OCEANS

Two years on, and amid a raging global pandemic and trade tensions, the Industry Transformation Map (ITM) for Sea Transport is not only still relevant in transforming the maritime industry but plays an instrumental role in helping companies navigate today's sea of change and sail towards new harbours of opportunities.

Kenneth Lim, MPA's Chief Technology Officer and Senior Director, Innovation, Technology & Talent Development, shares the refreshed priority and initiatives under the Sea Transport ITM to support and sustain the maritime industry during these challenging times as well as for the future economy.



2020 has sent the world into an unprecedented, and perhaps the most challenging, period in human history. The recurring mortality of COVID-19 and rising trade tensions among the superpowers have pushed the world into a deep recession. As these events unfold, they are redefining and recreating global trade, economies and everyday life, and at times, permanently.

As the backbone of international trade, the maritime industry has taken the brunt of the impact with key indicators tumbling across the board during the onset of the pandemic, raising serious concerns on how long companies could stay afloat while operating in the red. The disruption that was abruptly thrust upon the industry had left us with only two hard choices: to wait out the storm by tightening belts and becoming vulnerable, or to ride out the storm by radically transforming the way we work and emerging stronger.

Yet, we have reasons to be hopeful. Even though global trade has drastically contracted and would remain dampened for a while, the maritime industry continues to possess certain resilience

as sea logistics remains the most viable channel for fulfilling import demands around the world, even during bad times.

It is encouraging that Singapore continues to be ranked as the world's most important shipping hub on the Xinhua-Baltic International Shipping Centre Development (ISCD) Index for the seventh consecutive year. As an independent ranking of the performance of the world's largest cities that offer port and shipping business services, the ISCD Index's endorsement of our geographical advantage, integrated shipping industry ecosystem and supportive government policies underscores Singapore's strength, sustainability and standing as a maritime nation.

Our original vision of a new world that holds the promises and opportunities of a highly efficient, connected and digitalised maritime future is still relevant today. To reach that destination, however, we will need all hands on deck and a map to navigate uncharted waters as we steer the large vessel of Singapore's maritime industry towards it.

Business disrupted: uneven impact on Singapore's maritime sector as global demand plummeted.

VESSEL ARRIVAL
(IN '000 GT)



↑3.6%
Y-O-Y GROWTH
(JAN - JUN)

2019: 1,381,158
2020: 1,430,932

VESSEL ARRIVAL
(BY NUMBER)



↓21.3%
Y-O-Y GROWTH
(JAN - JUN)

2019: 67,540
2020: 53,138

CONTAINER THROUGHPUT
(IN '000 TEUS)



↓1.07%
Y-O-Y GROWTH
(JAN - JUN)

2019: 18,030
2020: 17,837

CARGO THROUGHPUT
(IN '000 TONNES)



↓7.26%
Y-O-Y GROWTH
(JAN - JUN)

2019: 315,431
2020: 292,546

BUNKER SALES
(IN '000 TONNES)



↑3.69%
Y-O-Y GROWTH
(JAN - JUN)

2019: 23,709
2020: 24,584

The **Sea Transport ITM**¹ is that map – a blueprint for the structured transformation of Singapore's maritime industry through a whole-of-industry digitalisation and a workforce that possesses the necessary mindset and skillsets to support the transformation. While the long-term outlook and four thrusts of Productivity, Innovation, Jobs & Skills and Internationalisation have remained the same, our priorities have shifted towards supporting the more pressing and immediate needs of the industry and economy, as well as building greater resilience among the companies in the wake of the pandemic.

PRODUCTIVITY

Companies are receiving more targeted support to help them stay productive and competitive, and deliver higher value-added to customers. These include the **Maritime Cluster Fund – Productivity Grant (MCF-PD)**^{2 (a)}, that has supported more than 50 digitalisation projects from 2013. The **Industry Digital Plan (IDP)**³ was also launched last year, making it simple and easy for small and medium enterprises (SMEs) to adopt digital technology.

Tian San Shipping, for instance, is one of the first to utilise the IDP grant for the adoption of the vessel management solution which allows them to have real time access to their craft positions, and also helps in crew deployment. By digitalising its core operations, companies have gained a significant competitive edge that directly translates to more businesses and higher profitability.

INNOVATION

There are various research and development (R&D) initiatives supported by the ITM. We have four **Maritime Centres of Excellence**⁴ that promote longer term R&D capabilities in key areas such as the next generation ports^(b), maritime energy and sustainable development^(c), maritime safety^(d) and maritime autonomous surface ship^(e). Technology enterprises, institutes of higher learning and research institutions can access the Maritime Innovation and Technology (MINT) Fund and the Singapore Maritime Institute (SMI) Fund to develop and deepen knowledge, capabilities, innovative products and solutions for the maritime industry. There is also **PIER71**⁵, a joint collaboration with NUS Enterprise, to nurture a vibrant maritime technology start-up cluster.

While some innovations are large-scale projects and require extensive investments in time, capital and labour, like **PSA's container port automation**, additive manufacturing and autonomous ships, others can be quite simple and affordable. Ideas, like leveraging mobile apps or digital platforms to facilitate information exchanges with customers or employees, can be just as effective when they are properly thought through and implemented.

We are actively encouraging more innovation across the industry through regular calls for Joint Industry Projects (JIP), like the recent one initiated together with the Singapore Shipping Association (SSA) to seek fresh ideas to **build a resilient and competitive maritime sector post-COVID-19**⁶. The industry was invited to collaborate and develop practical

Reference Notes:

- a The co-funding support for MCF-PD has been increased from 70% up to 90% from 1 May 2020 to 31 Dec 2020 as part of the MaritimeSG Together Package
- b Centre of Excellence in Modelling and Simulation for Next Generation Ports (C4NGP)
- c Maritime Energy and Sustainable Development (MESD)
- d Centre of Excellence in Maritime Safety (CEMS)
- e Centre of Excellence for Autonomous & Remotely Operated Vessels (CEOPS)

solutions that would address the severe disruption caused by the pandemic to the global supply chain as well as services and operations across the maritime sector. At the close of the call, more than 30 proposals were received, reflecting the companies' enthusiasm for collaboration and showing the potential of JIP as an effective platform to rally the collective resources and experiences of the industry.

JOBS & SKILLS

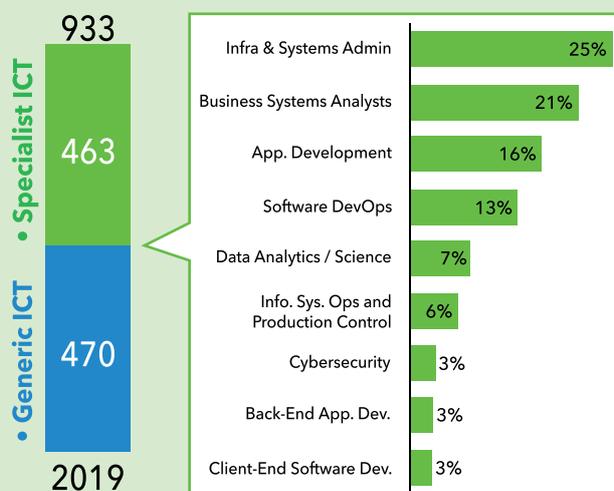
With all the technology transformation, the maritime industry will require a workforce equipped with advanced knowledge and skillsets to manage new business models, systems and processes. Talent who can marry digital skillsets and strong domain understanding of maritime will be highly sought after. In fact, a 2019 manpower study conducted by MPA showed a significant increase in maritime demand for ICT-related roles requiring new skills like data analytics, artificial intelligence and

cybersecurity. At the same time, the maritime industry will continue to need individuals with seafaring experience, commercial savviness and engineering know-how to keep ships sailing and ports running.

The **Skills Framework for Sea Transport**⁷, which reflects the diverse and meaningful career pathways available in the maritime industry, was recently refreshed to keep in line with new technological developments and changing business needs. Individual and companies can use this framework to identify useful skills for personal development as well as career progression. There are also various manpower development programmes offered by Infocomm Media Development Authority (IMDA), Workforce Singapore (WSG), SkillsFuture SG (SSG) and MPA's **Maritime Cluster Fund - Manpower**⁸ to equip the workforce with valuable skills in this rapidly-evolving industry.

Strong demand for specialist ICT roles in the maritime sector

The maritime companies surveyed in 2019 reported having 933 ICT job roles in total, of which about 50% were in specialist roles. This suggests that companies are serious about maritime digitalisation.



DIGITAL TALENT SHORTAGES



Digital Outlook
(strategists, user researchers, etc.)



Technology Skills
(developers, architects, AI/ML experts)



Data Literacy
(data scientists and engineers)

During the pandemic, we are pulling together resources from WSG, SSG, and partner organisations, such as Singapore Maritime Foundation, SSA, Singapore Maritime Officers' Union, to organise virtual job fairs and career workshops and to offer attachment and training opportunities in the maritime sector. The details of these events and opportunities are posted online on **Maritime Singapore Connect**⁹, **myCareersFuture**¹⁰ and MPA website.

INTERNATIONALISATION

MPA and Enterprise Singapore are working closely to expand the overseas footprint of local maritime companies and groom them into global champions. During this pandemic period, the internationalisation efforts and momentum are maintained through new ways of communications, like leveraging virtual platforms for webinars and video conferences with potential international partners to explore collaboration opportunities.

ANCHOR HOME AND FULL SAIL AHEAD

MPA will continue to support the maritime industry towards the outcomes set out in the Sea Transport ITM. For companies who are keen to explore new opportunities in digitalisation, a good place to start is the **Maritime Digitalisation Playbook**¹¹. It provides a systematic roadmap to help companies develop a focused and effective digital plan to support their digital transformation journey.

**Need more help to get started?
Write to us at MPA.**

Write to us too if you have a good story to tell about your digital transformation and innovation efforts, however big or small, we will also like to hear about them.



Reference Notes:

- 1 *Sea Transport ITM* - <https://www.mpa.gov.sg/web/portal/home/maritime-singapore/industrytransformation>
- 2 *Maritime Cluster Fund - Productivity Grant (MCF-PD)* - <https://www.mpa.gov.sg/web/portal/home/maritime-companies/setting-up-in-singapore/developing-manpower/maritime-cluster-fund-mcf>
- 3 *Industry Digital Plan (IDP)* - <https://www.mpa.gov.sg/web/portal/home/maritime-companies/research-development/industry-digital-plan>
- 4 *Maritime Centres of Excellence* - <https://www.maritimeinstitute.sg/Programmes-Initiatives?tabs=smicoe#tabs2>
- 5 *PIER71* - <https://www.pier71.sg/>
- 6 *to build a resilient and competitive maritime sector post-COVID-19* - <https://www.mpa.gov.sg/web/portal/home/maritime-companies/research-development/call-for-proposals/CFP2020>
- 7 *Skills Framework for Sea Transport* - <https://www.skillsfuture.sg/skills-framework/sea-transport>
- 8 *Maritime Cluster Fund - Manpower* - <https://www.mpa.gov.sg/web/portal/home/maritime-companies/setting-up-in-singapore/developing-manpower/maritime-cluster-fund-mcf>
- 9 *Maritime Singapore Connect* - <https://www.maritimesgconnect.com/>
- 10 *SGUnited Traineeships Programme* - <https://www.wsg.gov.sg/SGUnitedTraineeships-Trainees.html>
- 11 *Maritime Digitalisation Playbook (MDP)* - <https://www.mpa.gov.sg/web/portal/home/maritime-companies/research-development/maritime-digitalisation-playbook>

ENHANCING COMPETITIVENESS THROUGH INNOVATION



Interested to chart your future through digitalisation and innovation? Learn from industry leaders like PSA, who have benefitted from support schemes under the Sea Transport Industry Transformation Map.

For PSA, the leading global port group behind the world's busiest transshipment hub, success and innovation are closely intertwined. Constantly at the forefronts of ideation and collaborative research, PSA is seeking to strengthen its market position as well as come up with innovative breakthroughs for port operations.

Designated to operate Singapore's next generation port at Tuas, which will be the world's largest fully automated container terminal in a single site with a total handling capacity of up to 65 million twenty-foot equivalents units (TEUs) annually, PSA has embarked on many innovation projects to develop automation and intelligent control systems to become more effective and efficient.

One such innovation is the automation of quay cranes for safe and efficient container operations. Instead of being confined to a cabin 17 storeys high, crane operators would be able to control the automated quay cranes (aQCs) from an off-site office. Operating the aQCs via integrated consoles, operators would be able to handle at least two cranes each, with potential upside in productivity as the technology matures.

Complementing the aQC project is the trial of two Autonomous Prime Movers (APMs) for transporting containers within the yard. The ongoing trial of these APMs will set the stage for PSA to apply and retrofit autonomous technologies onto its existing PM fleet for mixed-mode operations (i.e. driverless and manual driven modes) in the port's dense traffic environment.

PSA has also partnered with the **Singapore Maritime Institute (SMI)**¹² to leverage the capabilities of local research institutions to deepen maritime R&D capabilities. This led to the launch of an R&D Grant Call last year to develop novel systems and concepts for the automation of wharf-side coning and vessel-side lashing for container terminal operations. Automating such activities is a complex challenge, given the wide range of lashing equipment and container fittings in the market and the highly unstructured environment onboard the vessel. If successfully developed, this innovation could significantly improve the efficiency of such operations and enable a safer working environment.

A collaboration with the Centre of Excellence in Modelling and Simulation for Next Generation Ports (**C4NGP**)¹³ has enabled PSA to run simulation tests with different scenarios to identify the optimal configuration of placing transponders for the effective localisation of the Automated Guided Vehicles (AGV). This has allowed PSA to shorten the time and effort required for actual deployment vis-à-vis carrying out validations via physical trials.

Beside automation projects to improve port efficiency, PSA was able to venture into new business adjacencies – thanks to the establishment of the world’s first maritime-focused Additive Manufacturing (AM) Prototyping Facility at Pasir Panjang Terminal. Equipped with state-of-the-art 3D printing technologies, the facility will allow AM components including large metal parts for port equipment to be produced on demand to optimise inventory holding. This will enable PSA to expand its competencies to serve the wider maritime industry, and improve its business resilience.

Mr Ong Kim Pong, Regional CEO Southeast Asia, PSA International, said that the support schemes under the Sea Transport ITM, such as the MPA **Maritime Innovation and Technology (MINT) Fund**¹⁴, have provided substantial assistance to drive PSA forward in its digital transformation and innovation journey: “These initiatives have helped to accelerate technology adoption, encourage product and solution development, and allowed us to adopt leading-edge technologies from non-maritime industries for use within the port environment. These developments are instrumental in honing PSA’s competitive edge as a leading global port operator, capable of providing port services and innovative cargo solutions that are smarter, safer, more efficient and sustainable.”



*MR ONG KIM PONG
Regional CEO Southeast Asia
PSA International*

In fact, the availability of funding and R&D resources has enabled PSA to accelerate its digital transformation vision. Mr Ong said that it is important to gain a first-mover advantage and a competitive edge through the continuous innovation of port services and solutions, and offering best-in-class services to customers. Efforts include leveraging data-driven insights for informed decision-making and to improve business processes.



“Along with keeping productivity and efficiency high, PSA is also investing in and encouraging staff to upskill and reskill in preparation for a fast-changing digital future through job redesigning and cross-deployment opportunities. Employees are our most valuable asset. Building a resilient workforce is critical to overcome future challenges and will contribute to a stronger Singapore core. R&D collaborations with our valued maritime partners are helping to strengthen and align such efforts, creating long-term benefits for Singapore,” Mr Ong added.



Reference Notes:

12 Singapore Maritime Institute (SMI) - <https://www.maritimeinstitute.sg/default.aspx>

13 (C4NGP) - <https://www.eng.nus.edu.sg/c4ngp/>

14 Maritime Innovation and Technology (MINT) Fund - <https://www.mpa.gov.sg/web/portal/home/maritime-companies/research-development/Funding-Schemes/mint-fund>



STEPPING UP TO DIGITALISATION

In the quest for higher productivity and service excellence, harbour craft operator Tian San Shipping turns to the Sea Transport Industry Digital Plan to accelerate its digital transformation efforts.

Tian San Shipping (TSS) is one of the largest harbour craft operators in Singapore. Besides providing ferry services for passengers, vehicles and equipment, the company undertakes flotsam and garbage collection and serves as first responders to oil spills in the harbour—ensuring clean waters in one of the world’s busiest ports.

TSS has a 50-year heritage in Singapore and a strong culture of service excellence and continual improvements. However, with a growing fleet of more than 50 vessels deployed throughout the Singapore harbour, TSS decided that a digital transformation would greatly advance the productivity and efficiency of its operations. As such, the priority was to implement a digital platform that could streamline and integrate its business processes, optimise resource allocation, and improve communication internally and with its customers.

Supporting harbour craft SMEs like TSS with the solutions and skills for a swift transition is the **Sea Transport Industry Digital Plan (IDP)**¹⁵ – a step-by-step guide charting out the digital solutions that SMEs could adopt at specific growth stages, as well as the training programmes required to enhance employees’ digital skills.

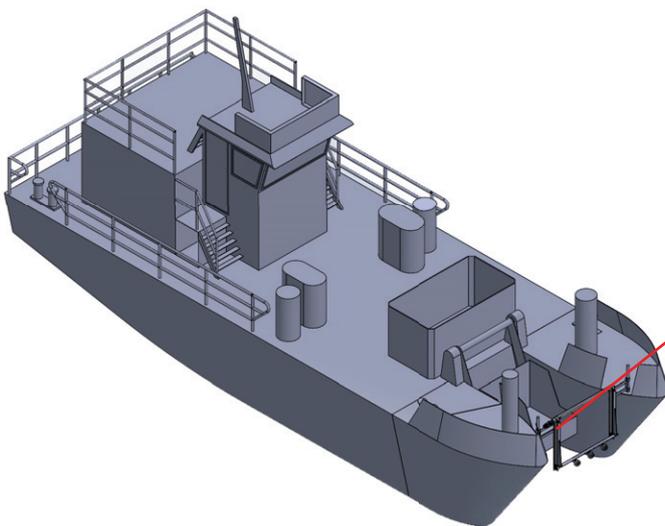
For TSS, the application for IDP had resulted in the adoption of a vessel management solution in the form of a digital app that could be easily accessed via web browsers or mobile devices. The solution enabled TSS to track the real-time and historical movement of its harbour crafts on a “live” map, use embedded filters to toggle the information display by craft or operation type, search for available harbour craft nearest to a destination vessel, as well as manage its vessel fleet and assign its service crew.

More importantly for this service provider, the customer satisfaction scores have improved. Encouraged by the outcomes, TSS' Executive Director Mr Mark Ko is excited about rolling-out the solution to more of his harbour crafts and clients. "We have been highly impressed with how the IDP is focused on ensuring project success. Not only does it identify the relevant and appropriate technologies for companies who are new to digitalisation, it has connected us with a vendor who had a proven track record for delivering on projects.

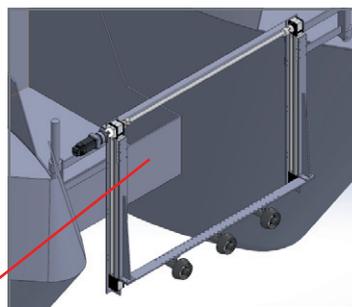
"We were also very pleased with the IDP grant application process, which was simple and straightforward. Given what we required, the IDP had put forth a recipe for successful technology implementation, which we achieved in a matter of months. It also gave us a platform to evolve and be ready for the next generation port of Singapore, and enabled us take the first steps in a long journey towards automation," said Mr Ko.

Besides digitalising its core business processes, TSS is also collaborating with Ngee Ann Polytechnic to automate the retrieval of trapped flotsam. Funded by the **Singapore Maritime Institute**¹⁶, the flotsam retrieval project entails the development of a customised device for the safe and easy retrieval of free-drift flotsam, as well as flotsam in hard-to-reach areas like pier walls, columns and staircases. In fact, TSS has forecasted that the device could improve the productivity of such operations by 15% and 50% respectively.

When the project completes in September 2020, TSS would be the first private company in South East Asia to have such an advanced, automated flotsam retrieval craft. The innovation would enable TSS to retrieve far more than its already impressive output of three tonnes of flotsam per day, and contribute to a greater ripple effect on Singapore's environment and marine ecosystem.



Schematic of the automated flotsam retrieval device installed on the harbour craft.
Credits: Ngee Ann Polytechnic.



Did You Know?

An Industry Digital Plan for the bunkering sub-sector is currently being developed. It would provide a digital roadmap to guide bunker suppliers, bunker traders, bunker barge operators and bunker surveyors in the adoption of digital solutions. Stay tuned for the announcement in 4Q 2020!

Reference Notes:

15 Sea Transport Industry Digital Plan (IDP) - <https://www.mpa.gov.sg/web/portal/home/maritime-companies/research-development/industry-digital-plan>

16 Singapore Maritime Institute - <https://www.maritimeinstitute.sg/>



SETTING SAIL FOR THE MARITIME INDUSTRY

A pair of trainees onboard the SGUnited Traineeships Programme share their exciting experience picking up new skills in a ship management company that could be a maritime career in the making.

Meet Cindy Yeow and Luqmanul "Hakeem" Bin Yusof.



Cindy graduated from Murdoch University in 2019 with a Bachelor of Art, majoring in Psychology. She loves hanging out with friends and meeting new people when she is not absorbed in the next psychothriller (think *Parasite* and *The Platform*).



Hakeem is a self-professed Indiana Jones who is adventurous and enjoys exploring new places (especially those off the beaten path) to the beat of K-pop. He has just graduated from University of Plymouth in 2020 with a Bachelor of Science (Hons) in Maritime Business and Logistics.

Both Cindy and Hakeem have joined BSM as trainees on 14 July 2020. Cindy took on the role as an assistant human resource officer in the HR Department and Hakeem a technical assistance at the Dry Fleet Department supporting the procurement and certification of vessels.



What is SGUnited Traineeships Programme?

It is a programme supporting fresh graduates from ITE, polytechnics, universities and private institutions to take up traineeship across all sectors. These traineeships aim to help trainees gain valuable industry-relevant experience and skills while widening their professional networks. Up to 21,000 traineeships will be created this year. All trainees receive a training allowance that is co-funded by Workforce Singapore and participating organisations.



Who is BSM?

BSM or Bernhard Schulte Shipmanagement is an integrated maritime solutions provider who has been around for more than 135 years. BSM manages a fleet of 600 vessels, 18,000 seafarers and 2,000 shore-based employees to deliver safe, reliable and efficient ship management services across the world.

BSM is extremely glad to participate in the SGUnited Traineeships Programme as well as other government initiatives to develop the maritime industry. We are an organisation that stands by grooming eager learners and supporting the training of future generations. With SGUnited Traineeships Programme, it has definitely helped us identify and engage suitable trainees as we provide them the first step they need to kickstart their career during this challenging period. We look forward to support more initiatives like this in the future!

Captain Raymond Peter
Managing Director,
BSM Singapore

***Maritime Frontier** has caught up with them to find out how they were getting on in their traineeships and their career outlook of the maritime industry.*

Q: Tell us briefly about your traineeship at BSM and what you like about your role.

Cindy: This is a generalist role involving operational HR duties and team projects. I am learning how to optimise processes from my supervisor. What I really like about my role is the exposure to HR and the maritime industry, and my supportive and communicative team. I have to hit the ground running. There are so many things to learn and interesting people to meet!

Hakeem: My colleagues are super supportive. They share their knowledge and experiences unstintingly and check on my progress regularly. What I truly enjoy is that I do not just learn to do certain tasks, but understand why these tasks are being done and the impacts if they are not carried out properly. This allows me to learn and deepen my knowledge on the operations and technical side of ship management.

Q: How did you discover this traineeship opportunity?

Cindy: I stumbled upon an article about the SGUnited Traineeships Programme in Facebook that talked about supporting fresh graduates during the current pandemic-induced recession. I am grateful that I was able to land the traineeship through the programme, especially one that I am truly passionate about. It is undoubtedly a challenging period in the job market right now. Some of my friends who were retrenched in March 2020 have remained jobless. I am appreciative of initiatives like SGUnited Traineeships Programme which gives fresh graduates like myself a chance to gain valuable experience during these trying times. It will give us a leg up in our job applications in future.

Hakeem: I have always wanted to work in the maritime industry but there were limited job offers in the market. When I noticed some companies were using #SGUnitedTraineeships in their job posting, I checked it up and that was how I found out about the programme. Imagine my joy when I saw BSM offering traineeships. I immediately applied for it, and got into a role I was looking for.

Q: What is a key challenge during your traineeship and how do you address it?

Cindy: The key challenge is the limited knowledge I have on the maritime industry as well as the various roles and functions within BSM that I am supporting. Thankfully, I have great training materials and a helpful team who readily answers my queries. On my own, I have also gone online to learn more about ship management and maritime HR.

Hakeem: For me, the challenge is the telecommuting arrangement which is part of the business continuity plan. I only have three hours in the office each day to interact with my colleagues, while the rest of the workday is spent at home doing self-learning or participating in video conferences. I have to learn to prioritise and organise my tasks to make the most out of the limited time I have during the traineeship.



Q: Has being in a traineeship altered your views about the maritime industry?

Cindy: It has certainly opened up my eyes. My dad has worked in ship repair before and I always had this impression that it was a tough and dangerous industry. After joining BSM, I now have a macro and more holistic view of the industry and is able to appreciate more about the industry, like the strict safety protocol put in place to protect the lives and safety of the workers.

Hakeem: My stint at BSM has shown me that the shipping industry is a far more challenging and interesting sector than what I have learnt in schools. The textbooks have barely scratched the surface of the highly complex and connected ecosystem in the maritime industry. Being where I am now in BSM allows me to learn about the various challenges faced by vessels at sea and reflect on the right solutions and innovations to overcome these situations.



Q: Will you consider a maritime career after your traineeship at BSM?

Cindy: Definitely! Shipping is an important and resilient industry that connects the world through the sea trade. It makes the maritime industry diverse, involving people from every nationality and culture. The notion of these travellers from faraway places has perhaps appealed to the inner romantic in me (*whisper: I wish the traineeship could be longer - there's just so many things I want to learn!*) I am glad to have found a role I am passionate about and in an industry that holds so many promises. I guess, like my father, the sea is in my blood after all.

Hakeem: Goes without saying. The idea of international trade and shipping has always fascinated me. I was influenced from a young age by some of my relatives working in the maritime industry, who used to tell me stories of their adventures at work. It has led me to take up maritime business at the polytechnic and university so that I can pursue a maritime career. Ship management is a vital part of the maritime logistic chain that requires immaculate planning and coordination to ensure the smooth flow of goods from producers to consumers. With BSM, I have found my calling.



**Quick
Job Search
Advice**

“

“If you are like me and interested in a maritime career, try maritimesgconnect.com. Many of my cohorts have found opportunities through MSC.”
- Hakeem

“For those still looking for jobs, don't give up! Stay optimistic and leverage SGUnited Traineeships Programme and other resources, like MyCareersFuture.sg and LinkedIn, particularly those with government grants and support.”
- Cindy

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ABOUT US

Maritime Frontier is a quarterly electronic newsletter produced by the Maritime and Port Authority of Singapore. The publication aims to inform and engage the maritime industry as well as workforce in Singapore on the various initiatives and opportunities under the four pillars of Productivity, Innovation, Jobs and Skills, and Internationalisation of the Sea Transport Industry Transformation Map. To subscribe, please email Neo_jia_ling@mpa.gov.sg or Viknesh_G@mpa.gov.sg

EDITORIAL TEAM

Kenneth Lim
Dawn Chen
Neo Jia Ling
Viknesh G

WRITERS

Cactus Communications

DESIGN

Lins Advertising & Marketing