

SUMMARY

COMPETENCE NEEDS AND COMPETENCY STRATEGIES RESULTING FROM TECHNOLOGICAL DEVELOPMENT IN THE MARITIME INDUSTRY



Photo: Anne Lise Norheim

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Preface

Menon Economics analyses economic issues and provides advice to businesses, organisations, and public authorities. We are a consulting firm operating at the interface between economics, politics, and markets. Menon combines social and business economics expertise in fields such as social profitability, economic impact, business and competition economics, strategy, finance, and organisational design. We use research-based methods in our analyses and work closely with leading academic environments in most fields.

This is the summary from the published report. The entire report is available in Norwegian on our website www.menon.no

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Summary

Technological advancements are necessitating a reassessment of organisational structures in the maritime industry, as well as the development and utilization of competencies within maritime companies, across the industry, and at the interfaces with other sectors. Technology should not be a goal in itself but should be seen as an instrumental means to achieve shipping companies' objectives. This includes the green transition, increased operational efficiency, improved safety, and reduced lifecycle costs. New technologies result in the evolution of work tasks and the emergence of new organisational methods. This evolution requires new competencies at both individual and organisational levels.

In this report we focus on 13 different technologies that will have varying degrees of impact across all industries. While these technologies are common across industries such as construction, oil and gas, and maritime, their effects and the industries' capacity for adoption differ. There's significant cross-industry transfer value, and much of the base knowledge is shared generically.

Differences in technology intensity and technology gains among shipping companies: Technology adoption vary significantly among shipping companies. Some have embraced numerous technologies from the 13 technologies outlined in this report, while others have only incorporated a few. Over the next five years, most of these technologies will see increased adoption, reshaping the competence needs. However, companies currently using fewer technologies do *not* plan to match the technological lead of other companies. This can be attributed to varying implementation capabilities and incentives. Consequently, *it's likely the technology gaps among shipping companies will persist*, possibly due to the differing potential benefits of technology, driven by company size and operational complexity.

Several shipping companies report that certain expertise becomes outdated due to technological advancements: Competence encompasses knowledge, skills, and attitudes that collectively affect an employee's ability to efficiently and appropriately complete work tasks. Four out of ten shipping companies reveal that parts of their internal expertise have become outdated due to technological advancements. Two-thirds state that they need to hire individuals with different sets of skills to thrive in the future. *The desire to adopt new technologies correlates with increased perceptions of in-house expertise becoming outdated due to technological developments.*

From the shipping companies' perspective, digital competence, and operational experience from working at sea are the most demanded skills: Access to individuals with relevant expertise is viewed as the most significant barrier against acquiring necessary skills to keep up with the industry's technological advancements. Nine out of ten shipping companies affirm that enhancing the skill set of their current employees will be the primary method to address new competence requirements. Nearly six out of ten plan to hire new personnel. A smaller proportion will bridge the skills gap through contracting and outsourcing. This strategy is particularly relevant for technological development tasks, but less so for permanent roles.

Seafarers anticipate a growing demand for digital competence due to technological advancements: Nine out of ten seafarers expect increased requirements for digital skills, and eight out of ten foresee changes in their daily work. Sensors and automated systems on ships are predicted to significantly affect work responsibilities. Four out of ten indicate a need for further education to perform their current onboard tasks by 2030, while six out of ten believe that access to courses or further education would make them a more valuable asset onboard. *Consequently, it's crucial to ensure that*

individuals working at sea possess the necessary competencies in a digital working environment.

About 20 percent of those currently working at sea anticipate transitioning to a land-based career within the next 10 years. Shipping companies emphasize the importance of operational experience from sea in their land-based organisations. It will therefore be important that the industry facilitates the transition for more individuals with operational experience from sea to seek jobs on land, especially considering that over half of this group believe they need courses or further education to transition to a land-based job.

The future will demand a higher level of continuous learning, restructuring, and further education than today: To exploit the opportunities inherent in digital and other technologies, competence is required on two levels:

- *Organisational* competence primarily concerns management and organisational systems. Shipping companies must manage these competences internally as they cannot be outsourced. However, educational institutions can contribute to the development of organisational competence.
- The *individual* competence can be acquired in three principal ways: (i) internal competence development, (ii) recruitment, and (iii) hiring/outsourcing. For individual competence, both educational institutions and other knowledge providers can play a central role.

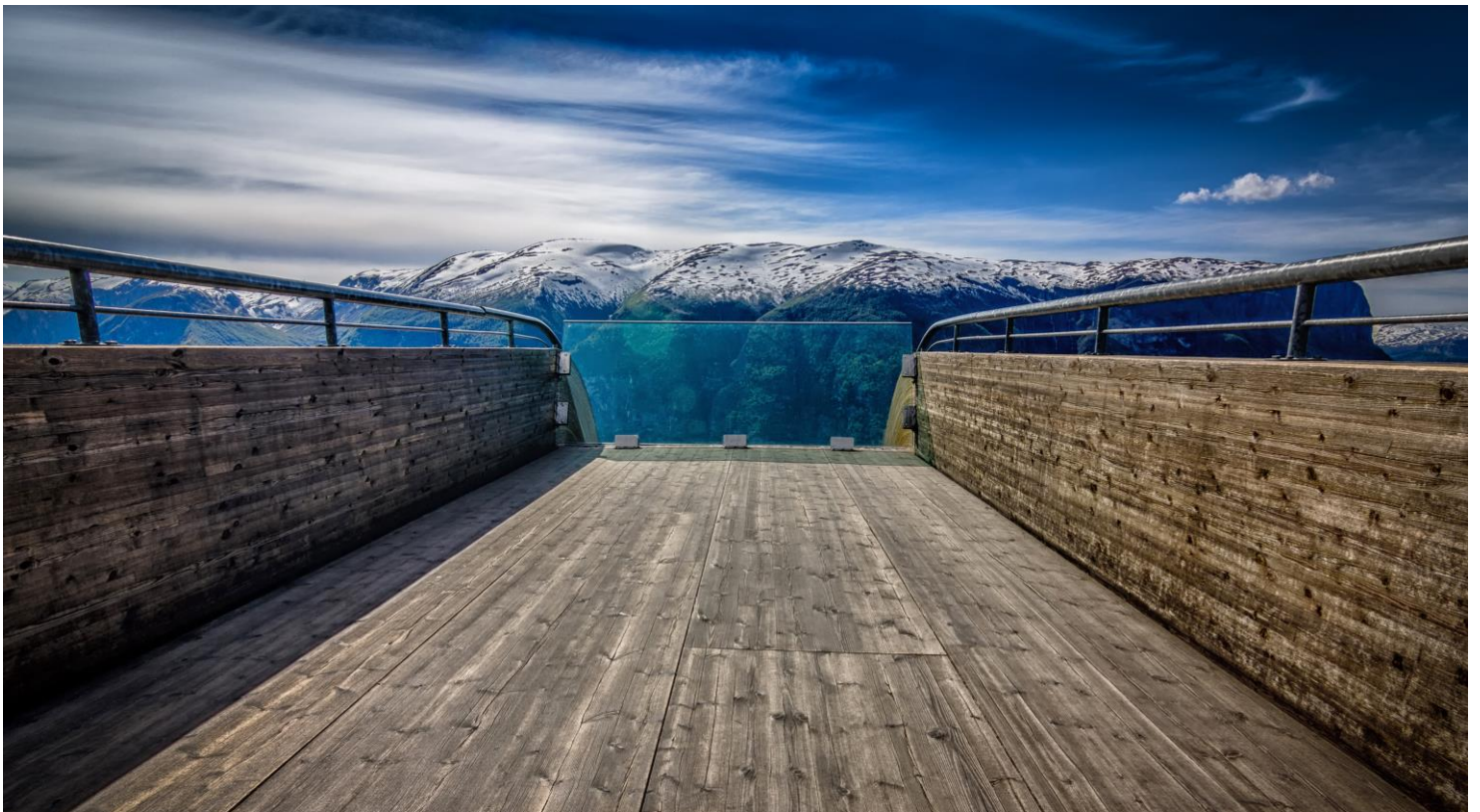
Shipping companies will require both generic and specific expertise. Given the uncertainties related to future technology use and the corresponding competence needs, it's advisable to emphasize generic skills in basic education programs. The rapidly changing technological landscape and the inherent delays in modifying the content and focus of foundational education stress this need. In contrast, further education and training can be

more precisely aligned with the specific needs of shipping companies. This adaptability also extends to the internal competency development efforts of these companies.

Seafarers prioritize digital and collective-based courses over those offering academic credits or degrees. This preference is particularly pronounced among individuals with lower initial education levels and those with extensive sea service. *Notably, the value placed on courses awarding academic credits diminishes with the length of service at sea.*

Conclusions and recommendations: Based on the findings of this report, we have formulated some overarching conclusions and recommendations for the shipping industry and maritime educational stakeholders.

1. **Industry attractiveness:** To attract the relevant competence, it is crucial to enhance the attractiveness of the industry. This is applicable from secondary school level up to adults who already have professional experience.
2. **Show don't tell:** Continuing education and professional development offerings must be designed to meet the specific needs of employees, with learning tools adapted to their characteristics.
3. **Organisational competence:** If the shipping companies are to succeed in utilising the competence and ensure its continuous development, *they must transform individuals into a team, where the team's collective competence is greater than the sum of individual skills.*
4. **Practice-oriented education:** Courses without academic credits should form the core of continuing and further education for seafarers.
5. **Collaboration between academia and industry** is important to ensure that educational institutions understand the competencies required by businesses, and that businesses are aware of what educational institutions can offer.



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