

Closing the skills gap: Digital skills readiness of Makassar port workers

Introduction

Indonesia is in the midst of an ambitious multi-billion dollar infrastructure build which is seeing billions of dollars invested into projects for railways, ports, roads and power plants. These new facilities provide an opportunity for young people aged 16 to 30 to step into jobs that require digital knowledge and capabilities. Yet, there is a gap between this infrastructure investment and the workforce required to operate and optimise the technology that comes with it.

To understand this skills gap we examined a new seaport in South Sulawesi's capital of Makassar. This is Indonesia's fourth largest city while the port is a key piece of infrastructure for eastern Indonesia. The port is managed by Pelindo Regional IV, one of four ports merged under the Ministry of State Owned Enterprises.

A digital literacy framework was created to measure the skills of workers and compare it to management expectations. The framework covers nine areas of digital competency with a total of 30 indicators.. They combine foundational digital skills with specific task-based digital skills required in the workplace.



Meeting with Pelindo representatives (Image: Sherah Kurnia)

The nine areas are:

1. Computational and algorithmic thinking - ability to translate real problems into models or algorithms that people and computers can easily process.
2. Digital communication, collaboration, and community connection - ability to connect, communicate and work together via digital platforms.
3. Digital content fluency - ability to produce and manage digital content and generate creative ideas and innovations.
4. Digital citizenship - ability to use and access digital technologies responsibly and ethically.
5. Digital identity and security - ability to protect sensitive digital data/information and use digital technologies safely.
6. Digital learning - ability to optimise digital technology to build and develop knowledge.
7. Technology concepts and operation - ability to understand and use digital technologies, ranging from software, hardware, network, and other advanced technologies.
8. Data and information literacy - understand the processes and strategies for digital data creation, collection, validation, storage, access and use.

9. Supply chain management-related digital skills - covers all knowledge related to the end-to-end process of supply chain management (e.g., procurement, production, warehousing and distribution) and port logistics operations.

Findings

The research team conducted interviews and a survey with young employees (16-30 years old) at Makassar port to understand their digital literacy competencies.

The survey data from Makassar port employees reflect their current level of digital literacy across nine areas with a score out of five.

They scored highly in two indicators - *digital learning* (4.3) and *digital identity and security* (4.3) with slightly lower scores in *technology concepts and operations* (4.2) and *digital citizenship* (4.1). Low scores were found for *computational and algorithmic thinking* (2.36) and *supply chain management-related* (2.34).

A focus group discussion was held with Makassar port management to understand the digital skills they consider necessary. Their expectations around the level of digital literacy skills among employees across the nine areas was either very important (5 out of 5) or important (4 out of 5).

Overall the digital literacy level of employees does not fit management expectations across most nine areas. There is a slightly higher level of competency than management expectations in two areas - *digital learning* and *digital identity and security*.

However there is a significant lag behind management expectations regarding computational and algorithmic thinking (2.1) and supply chain management-related competencies (2.7).

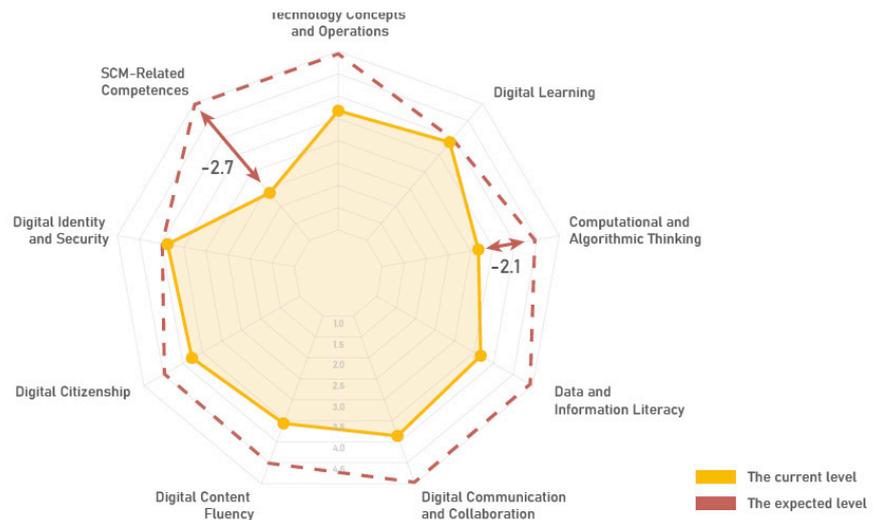


Figure: Showing the gap between the current digital literacy level of Pelindo Regional IV employees and the expected level of Pelindo IV management

Challenge

The Indonesian government has made digital transformation a core of its plan to boost economic productivity and efficiency and is well aware of the need to do this through the development of digital skills. This is seen in its 2020- 2024 National Mid-Term Development Plan, known as the Rencana Pembangunan Jangka Menengah (RPJMN).

“Employees need to increase their management and digital literacy capabilities. There are so many activities that are completed manually, which in our view, become inefficient.”

We look at this challenge through the different digital competencies of employees at the Makassar port managed by Pelindo Regional IV.

Our analysis reveals that employees already have the ability to understand the concept of and use digital technologies, ranging from software, hardware, network, and other advanced technologies. However, some improvements are needed to increase their ability to perform device troubleshooting.

The digital citizenship competency level shows that employees can participate in the digital society by using and accessing technologies responsibly and ethically. This capability can be improved by increasing their knowledge of digital ethics and cyberbullying.

The digital content fluency level reflects employees’ ability to produce and manage digital content and generate creative ideas and innovations. This indicator is just slightly under the management expectation and improvement is needed in both digital content creation and digital

innovation.

We also found that competencies that reflect the ability to communicate and collaborate through digital platforms in an online community is still lacking among employees. Our data revealed that it is particularly low in terms of involvement in an online community.

The data and information literacy indicators show that employees still have limited capacity to understand the processes and strategies for data creation, collection, validation, storage, access and use. This digital skills dimension needs further improvement, particularly regarding employees' information processing ability.

Employees lag significantly behind management expectations regarding computational and algorithmic thinking and supply chain management-related competencies. Management has high expectations for those competency areas which are critical to port operations. For instance computational and algorithmic thinking is used in optimising berth allocation planning while supply chain management-related digital skills are

needed to take the advantage of technologies and software applications to enhance port operational efficiency and effectiveness.

Recommendation

Apply the digital literacy framework to assess staff competencies and gaps periodically.

Provide staff training that targets digital skills that are required to improve port operations and overall human capability.

A way forward

- Establish an in-house staff training program - across operations and commercial, information engineering and technology, to human resources, finance and business transformation - to improve the overall digital competencies of employees.
- Encourage and sponsor employees to take further studies to improve digital competencies by enrolling in a university or VET school, depending on their specific needs.
- Strengthen cooperation between local VET schools and Makassar port. Such collaboration could be facilitated by establishing a partnership that involves the government, Makassar port and VET schools to align and enhance the curriculum and prepare job-ready graduates.
- Undertake periodic assessments of the digital competencies of employees using the digital literacy framework as an assessment tool.

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