Port Digitalization & Modernization

Fueling our way to become an Asian maritime hub



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PORT & MARITIME DIGITAL LANDSCAPE

7th
Most number of islands in the world (7,641 islands)

188
Million Metric tons of foreign cargo throughputs in 2020

5th
Longest coastline in the world (36,289 kms)



30K
International and domestic vessels

CURRENT INITIATIVES

Port Logistics Industry. In May 2022, ICTSI announced its investment into IT upgrades for its flagship port services (YCPS, Jun 2022).

Financial Support. The Department of Budget and Management has allocated a total budget of P12.47 billion for all the digitalization programs for FY 2023 (PhilStar, Dec 2022).

Regulatory. The PH Digitalization Plan – 10 Point Agenda, under the Executive Order No. 166, has set 'digitalization transformation' as no. 8 in the development agenda.

Statistics sourced from IMO: Philippines Candidature 2022-2023



CHANGE IS INEVITABLE.

Digitalization and new technologies are rapidly changing all industries, including the ports, shipping, and logistics—which largely have been driven by the traditional business models.

- SOREN SKOU.

Photo Courtesy of CNN Philippines, 2013

TOWARDS A SMART PORT

Digital Transformation translates to a cultural change that entails challenging the status quo and incorporating technological advancement.

Governance and Organization

- Reliance on strategies and business models
- Efficient delivery of service
- Cooperation and data-sharing protocols

Digitalization in Cruise Ports

- Customer satisfaction and check-in processes through applications
- Redesigning of terminal
- Smart staffing and operation report applications

Disruptive ICT Innovations

- Automation covering ports and logistics
- Digitalization in commercial operations, planning, and support functions
- Monitoring and simulation using big data

Cybersecurity

- Protection of information technology systems from unauthorized access, misuse, and damage

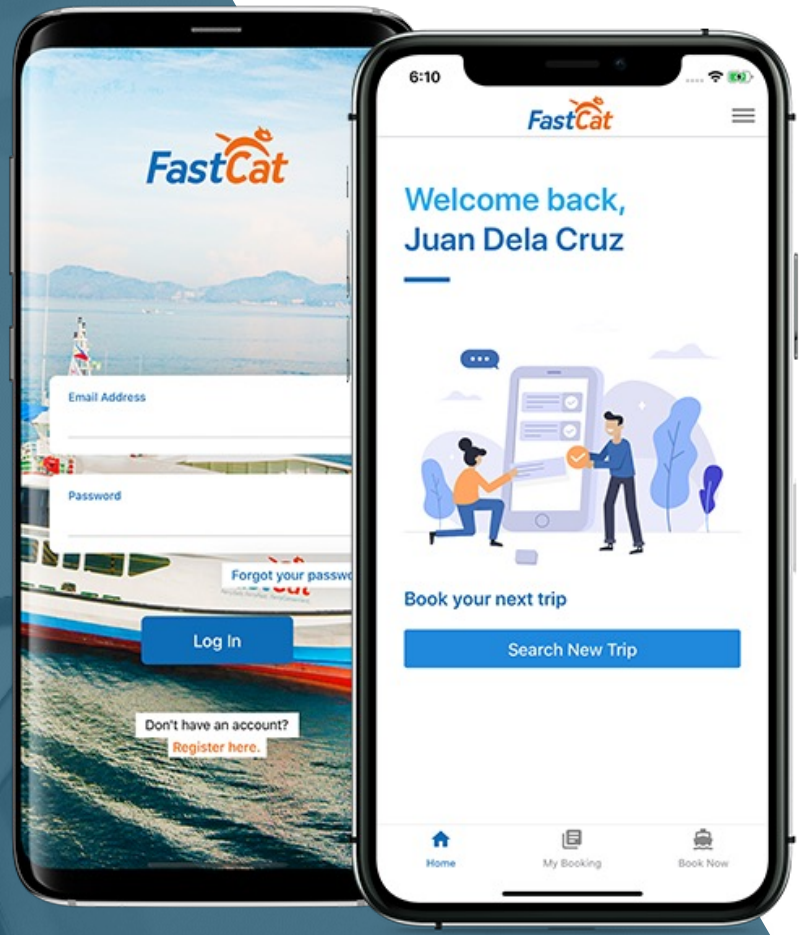
Source: Dr. Jean-Paul Rodrigue, *et.al. Port Economics Management and Policy*, 2022.

DIGITALIZATION & ITS IMPLICATION

Digitalization of Community

Community Systems. Accessibility of information to distributor and terminal operators; Focus on stakeholder interaction.

Blockchains. Also known as Digital Ledger Technologies (DLT): distribution of electronic ledgers in the form of cryptographic units called blocks; Focus on transactions and asset tracking.



Demand Responsive

Focus on customer and market demands to align production and distribution.

First Mover

Importance of speed when bringing a new product to the market.

Cooperation

Focus on cooperation and partnerships (intra & inter organization) with supply chains, competitors and start-ups

Organizational Change

New governance and business models, including new revenue models and pricing systems.

Continuous Change

Continuous adaptation in organizational and managerial processes.

Agility & Resilience

Resilient and flexible infrastructure and assets.

Competencies

Build organizational digital competencies.

Digital Focus

Incorporate digital thinking in all layers of the organization.

Sources: Dr. Jean-Paul Rodrigue, *et.al. Port Economics Management and Policy*, 2022. I Infographic adapted from Van Peteghem (2016).

CHALLENGES OF DIGITALIZATION IN PORTS

Incompatible systems or interoperability issues. Inoperability or mismatched technology domains cause expensive redesigning and reinstallation (old infrastructure meets the new).

Lack of resources. Smaller ports are the most disadvantaged in digitalization due to limited resources. Efficient technology integration requires human resources competence.

Resistance to open data sharing. Ports and logistics companies often avoid sharing any information, unless it is obligatory, despite its benefits. Lack of information sharing also leads to operational bottlenecks.

Security threats. Vulnerability of functions and operations within the infrastructure to cyber-attacks. Lack of monitoring for quick breach detection.

Resistance to digital change. Negative attitudes towards digitalization due to high investment Costs and replacement of human workforce.

Source: Brunila et al. *European Transport Research Review*, 2021.

BUILDING CYBER RESILIENCY IN PORTS

- Upskilling and resolving labor issues
- Developing software based on industry requirements
- Cyber proofing of terminal infrastructures



Access Control

- Identity and access management
- Roles and privilege management
- Password conventions
- Multi-factor identification



Data Security

- Data encryption protocols
- Data classification
- Controls for removable media
- Disposal of old equipment & media

Source: Dr. Jean-Paul Rodrigue, *et.al. Port Economics Management and Policy*, 2022.

Applications

- **'Cashless' ticketing system**, providing routes, schedules, ticket pricing and customer service options
- **Electronic platforms** - website and mobile application
- **Transport service aid** for the elderly and persons with disabilities

Learning

- **iLearn FastCat** – online learning platform by APSTII and Scorpio Transport and Manning Services Inc.
- **Electronic Training Record Book (eTRB)**, a cadetship program tool that provides competitive advantage to trainees

Operations

- **Vesseltracker.com** – vessel tracker system providing AIS vessel movements; online database containing over 1,000,000 vessel and port images
- **Virtual Remote Auditing**
- **Digitalized Human Resources Management System**

Communication

- **Online Helpdesk** – customer service support coupled with automated responses and tracking of any customer issues
- **'The Helm' Newsletter**, an company publication

FastCat

A CASE STUDY

Digitalization in post-pandemic inter-island shipping.

Amidst the economic pressures of COVID-19, Fastcat remained a trailblazer in the maritime industry through digitalization.

Source: Fast Cat Journal, 2023.



Establishing a **'smart port' is anchored on the capabilities of the key stakeholders**, including the customers who utilize and deploy the information systems.

We need to **rethink the way we digitalize our ships and ports**. The industry's varying level of maturity in information systems entails community integration —involving all parties in the value chain.

There must be **a holistic and seamless approach towards digital transformation**, which may include **equipping the smaller players** to adapt to organizational change.

Lastly, the **government must take lead** with a collaborative stance and feasible solutions.



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Thank You!

Questions? Comments?

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FastCat

FamySafe. FamyFast. FamyConvenient.