Human-Drive AI: Training and Transitioning the Port Workforce

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The Real Risk: Capacity Asymmetry

1. Skills Shortages

2. Operational Inefficiencies

3. Cyber Vulnerabilities

81%

of maritime firms run AI pilots — but only **11%** have formal policies to guide scaling

38%

cite inadequate training as the main barrier to AI adoption

58%

of terminals still rely on manual data practices despite growing AI investment

Sources: Marcura/Thetius 2025; Tideworks/Port Technology International 2025

The Workforce Transition Challenge

70%

say AI should recommend — not replace — human decision-making

66%

fear over-reliance on AI will erode human skills and judgment

24%

of maritime cadets received structured training on smart or autonomous ships

Sources: Marcura/Thetius 2025; Blue Economy Journal 2025

HUMAN FACTORS IN AI WORKFORCE TRANSITION

Key Insights from the UTech AI Study and Implications for Ports

1 CONTRADICTORY AI ADOPTION

100% of students use GenAI tools

YET OPPOSITION TO AI USE FOR SCHOOLWORK IS HIGH

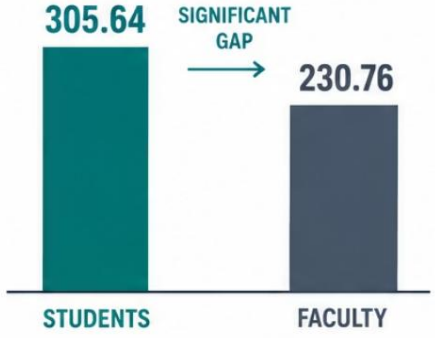
- **59.7%** Somewhat opposed
- **34.1%** Strongly opposed

IMPLICATION FOR PORTS

Employees may already be using AI tools informally, even if they express resistance publicly.

2 GENERATIONAL & SKILLS READINESS GAP

AI TOOL FAMILIARITY (MEAN RANKING)



IMPLICATION FOR PORTS

Younger workers are more AI-ready, while leadership and legacy systems may struggle to keep pace.

3 FEAR OF SKILL & JOB REPLACEMENT

HIGH CONCERN ABOUT AI REPLACING SKILLS/JOBS

- **73.4%** FACULTY
- **37.1%** STUDENTS
- **30.6%** BUSINESS RESPONDENTS

IMPLICATION FOR PORTS

Managing workforce anxiety and building trust will be critical to successful AI integration.

THE BOTTOM LINE FOR PORTS

- Understand adoption realities
- Close readiness gaps across the workforce
- Build trust, inclusion & a future-ready culture

THE WORKFORCE TRANSITION

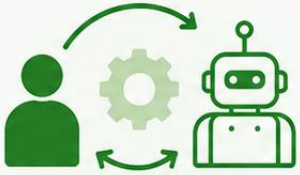
FOUR SHIFTS ARE REQUIRED

1 TECHNICAL SHIFT

- AI-assisted systems
- Predictive analytics

Moving to intelligent, data-driven technologies

2 OPERATIONAL SHIFT



- Human-machine collaboration

Redefining roles and workflows through collaboration

3 CULTURAL SHIFT

- Overcoming fear and resistance

Building a culture of trust, adaptability and continuous learning

4 GOVERNANCE SHIFT

- Policies & ethical frameworks
- Data security & privacy
- Accountability & transparent oversight

Establishing responsible, inclusive and secure AI governance

BUILDING A FUTURE-READY WORKFORCE THROUGH PEOPLE, TECHNOLOGY, GOVERNANCE, AND TRUST

The CMU's Response

BSc. Artificial Intelligence & Computer Systems

Positioning the CMU as Jamaica's Applied AI Hub

Human-Machine Collaboration Training for Faculty & Staff

AI focused Digital Transformation Infrastructure

- Decision Support Systems (DSS),
- Enterprise Data Systems

XR Simulation Research w/ IAMU

Expanding into XR/VR maritime simulations and digital twin port environments.

FESTO Labs, Simulators, and Virtual Welding spaces

Logisitcs 101

Training SMEs in A.I and Cybersecurity

A Shared Responsibility: Strategic Recommendations

Ports + Industry

Embed learning into operational planning and capital expenditure cycles.

Government

Develop national AI strategies, regulatory frameworks, and funding mechanisms

Academia

Modernize maritime curricula to integrate AI literacy requirements.

Regional Bodies

Build structured regional partnerships that co-design training programs, share operational insights, and create pathways from education to employment across the Caribbean.

$1.44 trillion
Jamaica's total national budget

0.1%
allocated to maritime education & training

> **Closing the digital access gap in the Caribbean could boost GDP by 6–12% (IADB). Curricula must reflect diverse access levels with low-bandwidth and offline strategies.**

The ports of the future will be defined by how effectively we prepare people to lead within intelligent environments.

THANK YOU!

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