

Enhancing Port Competitiveness through Digitalization and Sustainability Initiatives: The Case of Port of Colombo

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Digitalization makes port logistics activities more competitive in the maritime supply chain. The main objective of this study was to identify the impact of the directions of digitalization on port competitiveness in the presence of sustainable initiatives in the port of Colombo. The study focuses on five main directions: automation, connectivity, ICT, safety and security, and environment management, and investigates the impact of these directions on port competitiveness using regression analysis. The mediating role of sustainability initiatives has also been analyzed through the Hayes Process Macro. Data was gathered from the most relevant parties in the maritime logistics service, such as the shipping line, SLPA, SL Customs, and terminal operators in Colombo port. Results show the positive influence of these directions, and ICT, safety and security were the ideals among these directions. Automation, connectivity, and environmental management impact port competitiveness through sustainability initiatives due to the full mediation effect. Also, the impact of ICT, safety, and security on port competitiveness is partially mediated by sustainability initiatives. Both have direct and indirect relationships with each other. Considering the higher level of impact of sustainability initiatives on port competitiveness, the study can conclude that the port operation is aligned with sustainability in the Colombo port. However, automation, connectivity, and environment management need more concern by developing infrastructure, investment, governance practices, trading partnerships, legal frameworks, and capacity building in port of Colombo.

Keywords: *digitalization's directions, sustainability initiatives, port competitiveness, port sustainability*