

Predictive Model to Identify the Productivity of Colombo Port Based on Ship Movement

CH Liyanaarachchi^{1#}

¹Ocean University, Sri Lanka

charith.liyanaarachchi@gmail.com

Transportation significantly impacts national development, influencing both national integration and the global economy. The maritime industry, especially ports and terminals, plays a pivotal role. The Port of Colombo, a key transshipment hub on the main international shipping route, is crucial for international trade. It comprises a state-owned terminal (Jaya Container Terminal) and two privately owned terminals (South Asian Gateway Terminal and Colombo International Container Terminal), each with varying facilities and productivity levels, influencing demand from shipping lines. This study analyzed 300 terminal performance reports from these terminals, focusing on berth productivity, vessel productivity, and crane productivity. Data analysis was conducted using Google Colab, employing graphical interpretations, descriptive statistics, multivariate analysis, ANOVA tests, linear regression, and five prediction models to calculate productivity at all three terminals. The findings indicated a significant impact of crane productivity, berth productivity, and vessel productivity on terminal performance. Further investigation revealed that waiting time significantly affects crane productivity. Additionally, it was found that optimizing crane scheduling and reducing vessel turnaround time can further enhance terminal productivity. Results showed that CICT has superior crane productivity compared to JCT and SAGT.

Keywords: *productivity (BP/CP/VP), regression models, waiting time*