

Containership Bay Time and Crane Productivity: Are They on the Path of Convergence?

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Abstract

Containerships are becoming bigger and bigger. Their time at the pier for discharge and load (D&L) of containers are increasing due to their larger bays. A key factor in reducing bay time is the gantry crane productivity (lifts per hour) of D&L. That is, a match between containership bay time growth and gantry crane output growth will keep containership bay time a constant. Thus, are they on the path for convergence?

The paper addresses the relationship between containership bay time growth and gantry crane productivity growth to determine the long-term relationship between the two, using the containership bay time factor model developed by the authors. The paper quantifies the relationship between crane productivity and bay time, indicating no convergence. However, after redefining the gantry crane output, the paper proposes convergence is possible. After the introduction, the paper develops a model that captures these two issues and addresses their behavior for different containership classes. The model tests the relationship between the two variables to determine long-term trends. The paper demonstrates that the slow growth of gantry crane productivity is the foundation for seeking other D&L alternatives in order to keep D&L time of large containerships efficient. The alternatives addressed include: alternate and partial stowing of bays, new D&L technologies (new spreaders and Fastnet), increase in the number of ports of call, etc. The paper concludes by identifying the need for new D&L technologies and provides a method for showing the technologies' contribution to convergence.