

DEA-Based Assessment of Inland Dry Port Efficiency in ASEAN: Evidence from Myanmar

Khun Aye Han Kyu

Ph.D. student, Faculty of Engineering, Department of Industrial Engineering
Mahidol University
Bangkok, Thailand

khunayehankyu.kahk682000@gmail.com

Abstract

Inland dry ports play a vital role in enhancing logistics efficiency, regional connectivity, and trade facilitation within emerging economies. Despite their strategic importance, efficiency disparities remain significant across ASEAN inland logistics systems. This study evaluates the relative operational efficiency of selected ASEAN dry ports using Data Envelopment Analysis (DEA) by decomposing performance into technical efficiency, pure technical efficiency, and scale efficiency while identifying returns to scale characteristics. The findings reveal that Vietnam and Thailand operate on the efficiency frontier with optimal scale utilization. Cambodia and the Philippines demonstrate near-efficient managerial performance but experience decreasing returns to scale, suggesting overcapacity. In contrast, Malaysia, Myanmar, Laos, and Brunei exhibit low technical and scale efficiency with increasing returns to scale, indicating underutilized infrastructure and insufficient cargo throughput. Notably, Myanmar's inefficiency is primarily scale-driven rather than managerial, highlighting strong potential for improvement through throughput expansion, infrastructure utilization, and enhanced regional logistics integration. The study identifies a frontier-transition-lagging efficiency structure within ASEAN inland logistics and provides empirical insights for policymakers seeking to strengthen dry port performance and competitiveness in emerging economies.

Keywords

Data Envelopment Analysis, Dry Port Efficiency, Inland Logistics, ASEAN, Myanmar.

Biography

Khun Aye Han Kyu is a PhD candidate in Logistics and Engineering Management at Mahidol University, Thailand. His research focuses on dry port logistics efficiency, logistics service quality, customer satisfaction, and inland logistics performance in emerging economies, particularly in Myanmar and ASEAN countries. His work aims to improve the performance and competitiveness of inland logistics systems and to support evidence-based policy and strategic development in regional supply chains. His broader academic interests include sustainable logistics, multimodal transport, humanitarian logistics, and regional supply chain integration.