Assessing the Indicators Influencing Port Resilience: A Comprehensive Literature Review

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Abstract : In recent decades, the world has endured severe challenges in light of climate change, epidemics, geopolitics, terrorism, economic uncertainties, as well as regional conflicts and rivalries. The appropriate use of critical infrastructures (Cis) is confronted. Ports, as typical Cis cover more than 80% of the global freight movement. Within this context, even the minimal disruption of port operations could cause malfunction of the holistic supply chain network and substantial economic losses. Hence, it is crucial to evaluate port performance from the perspective of resilience. Research on resilience and risk/safety management has been increasing, however, it needs more attention, as it could prevent potential socio-economic losses and inspire decision-makers to make resilience-based decisions to answer the challenges, such as COVID-19. To facilitate better moves from decision-makers, ports need to identify proper factors influencing port resilience. Inappropriately influenced factor selection could have a cascading effect on undesirable port performances. Thus, a systematic evaluation of factors is essential to stimulate the improvement process of port resilience investigation. This study zooms into container ports considering their critical role in international trade and global supply chains. 440 articles are selected after relevance ranking, and consequently, 62 articles are scrutinized after the title and abstract screening. Forty-one articles are included for bibliographic analysis in the end. It is found that there is no standardized index system to measure port resilience. And most studies evaluate port resilience merely in the recovery phase. Only two articles cover absorption, adaption and recovery state. However, no literature involves the prevention state. Hence, a uniform resilience index system is expected with a clear resilience definition. And port safety and security should also be considered while evaluating port resilience.

Keywords : port resilience, port safety and security, literature review, index system, port performance

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