Systematic Literature Review on Critical Infrastructure Interdependencies impacted by Natural Disasters

Rana Khallaf ,Kang, K., \., and Hastak, M.

Abstract

Infrastructures have been known to show interdependent relationships amongst each other, which manifest especially in cases of natural disasters. These interdependencies may affect their serviceability and ability to return to their original status. There is a need to identify the interdependencies amongst these critical infrastructures especially in order to understand the dependency and plan mitigation strategies. Previous literature has focused on specific case studies of natural disasters or identifying theoretical frameworks for the critical infrastructure interdependency. Hence, a methodical approach is needed to identify critical infrastructure interdependencies in cases of natural hazards and extract patterns among them. Systematic Literature Review (SLR) is a structured and methodical approach to answer questions in a research. This paper applied SLR for collecting appropriate infrastructure interdependency articles and case studies and identifying patterns of multidimensional infrastructure interdependencies and layers. One of key findings in this paper is that civil infrastructures are attributed more to the physical services/functions/material supply interdependencies whereas civic infrastructures are more associated with informational, logical service supply interdependencies. The findings are expected to assist decision makers in prioritizing the infrastructure types and layers for disaster mitigation and response plans.

International Conference on Maintenance and Rehabilitation of Constructed Infrastructure Facilities 2017, June