

## **Analysis of Causality between Defect Causes Using Association Rule Mining**

**Authors :** Sangdeok Lee, Sangwon Han, Changtaek Hyun

**Abstract :** Construction defects are major components that result in negative impacts on project performance including schedule delays and cost overruns. Since construction defects generally occur when a few associated causes combine, a thorough understanding of defect causality is required in order to more systematically prevent construction defects. To address this issue, this paper uses association rule mining (ARM) to quantify the causality between defect causes, and social network analysis (SNA) to find indirect causality among them. The suggested approach is validated with 350 defect instances from concrete works in 32 projects in Korea. The results show that the interrelationships revealed by the approach reflect the characteristics of the concrete task and the important causes that should be prevented.

**Keywords :** causality, defect causes, social network analysis, association rule mining

**Conference Title :** ICSCE 2016 : International Conference on Structural and Construction Engineering

**Conference Location :** Berlin, Germany

**Conference Dates :** May 19-20, 2016