

World Congress and Exhibition on Construction & Steel Structure

November 16-18, 2015 Dubai, UAE

Decision support for project prioritization in A/E/C industry

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Project prioritization is a dilemma that faces all parties of the construction industry. At a time when the nations' economies and infrastructures are in dire need for effective management practices to address their maintenance, the architecture/engineering/construction (A/E/C) industry is in an escalating trend of efficiency loss. For owners, including governments, assessing high and low priority projects, while the need for essential services grows and project complexity increases, is overwhelming. It is often driven by limited budgets and they are frequently made with little economic, engineering, and/or operational rationale. It is the responsibility of the A/E/C professionals to facilitate decision making processes to guarantee the continued success of the industry. In an attempt to mitigate this drawback, researchers from the academic and professional domains have addressed this issue. These included airfield pavement rehabilitation, risk factors in PPP infrastructure, best management practices, among others. These advancements have been very field specific due to type of project, nature of evaluator, and/or parameter of consideration. To assist decision making for multi-criteria projects, a five stepped robust methodology- build on weighted criteria, transparency, shareholder objectives, consistency, and goal alignment- is provided. The aforementioned methodology is augmented with automated decision support tool through the use of machine learning (ML) and information retrieval techniques. It has been proven to be successful in healthcare, automotive, and higher education projects. The proposed methodology is instigated to provide a better understanding of decision consequences as well as time and cost savings.

Biography

Tarek Mahfouz has earned a PhD in Civil Engineering with a specialization in Construction Engineering and Management from Iowa State University. He is an Associate Professor of Construction Management at Ball State University. His expertise is in the areas of knowledge management, machine learning, decision support, intelligent information modeling and statistical modeling, among others. He has over 25 publications in reputable journals and conference proceedings. He has been serving as an Editorial Board Member of reputed journals. He is an Associate Member of the American Society of Civil Engineers (ASCE) and the Association of Technology, Management and Applied Engineering (ATMAE).

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