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A Fuzzy Analytic Hierarchy Process Approach for the Decision of Maintenance Priorities of Building Entities: A Case Study in a Facilities Management Company

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Abstract : Building entities are valuable assets of a society, however, all of them are suffered from the ravages of weather and time. Facilitating onerous maintenance activities is the only way to either maintain or enhance the value and contemporary standard of the premises. By the way, maintenance budget is always bounded by the corresponding threshold limit. In order to optimize the limited resources allocation in carrying out maintenance, there is a substantial need to prioritize maintenance work. This paper reveals the application of Fuzzy AHP in a Facilities Management Company determining the maintenance priorities on the basis of predetermined criteria, viz., Building Status (BS), Effects on Fabrics (EF), Effects on Sustainability (ES), Effects on Users (EU), Importance of Usage (IU) and Physical Condition (PC) in dealing with categorized 8 predominant building components maintenance aspects for building premises. From the case study, it is found that 'building exterior repainting or re-tiling', 'spalling concrete repair works among exterior area' and 'lobby renovation' are the top three maintenance priorities from facilities manager and maintenance expertise personnel. Through the application of the Fuzzy AHP for maintenance priorities decision algorithm, a more systemic and easier comparing scalar linearity factors being explored even in considering other multiple criteria decision scenarios of building maintenance issue.

Keywords : building maintenance, fuzzy AHP, maintenance priority, multi-criteria decision making
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