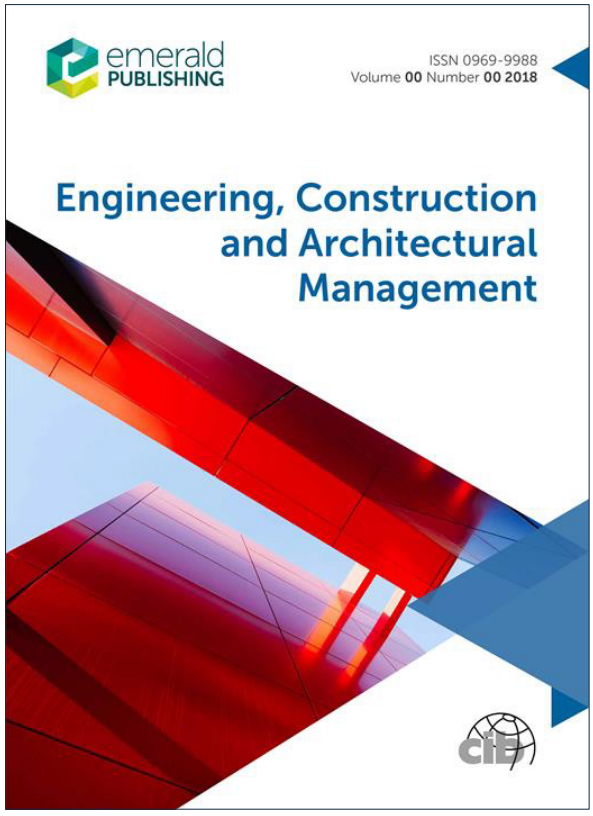
BIM-based approach to optimizing energy consumption in tower buildings: investigation of parameters and factors affecting energy efficiency



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ABSTRACT

This research aims to develop a multi-criteria framework for optimizing energy consumption in tower buildings by evaluating parameters and factors affecting energy efficiency over 30 years. Building information modeling (BIM) is employed to model and analyze the results. This study employed a building information modeling (BIM) approach using Autodesk Revit software to model a residential complex in northern Iran. The study considered various building parameters, including form, orientation, materials, HVAC systems and occupancy patterns, to assess their impact on energy consumption. Climatic data for Astara, Iran, with its humid subtropical climate, was automatically integrated into the energy models. The research focused on optimizing energy consumption by analyzing different building configurations and identifying design strategies that minimize energy use and costs. The results of the modeled building analysis indicate that the average annual energy cost will be $19.2 per square meter ...

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