

BIM Model and Virtual Prototyping in Construction Management

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Abstract : Purpose: The BIM model has been used to support the planning of different construction projects in the industry by showing the different stages of the construction process. The model has been instrumental in identifying some of the common errors in the construction process through the spatial arrangement. The continuous use of the BIM model in the construction industry has resulted in various radical changes such as virtual prototyping. Construction virtual prototyping is a highly advanced technology that incorporates a BIM model with realistic graphical simulations, and facilitates the simulation of the project before a product is built in the factory. The paper presents virtual prototyping in the construction industry by examining its application, challenges and benefits to a construction project. Methodology approach: A case study was conducted for this study in four major construction projects, which incorporate virtual construction prototyping in several stages of the construction project. Furthermore, there was the administration of interviews with the project manager and engineer and the planning manager. Findings: Data collected from the methodological approach shows a positive response for virtual construction prototyping in construction, especially concerning communication and visualization. Furthermore, the use of virtual prototyping has increased collaboration and efficiency between construction experts handling a project. During the planning stage, virtual prototyping has increased accuracy, reduced planning time, and reduced the amount of rework during the implementation stage. Irrespective of virtual prototyping being a new concept in the construction industry, the findings outline that the approach will benefit the management of construction projects.

Keywords : construction operations, construction planning, process simulation, virtual prototyping

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