Evaluating the Impact of Building Information Modeling on Optimizing Quality Management Processes in the Construction Industry

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Abstract

The construction industry can be considered as a critical sphere in the nation's economic progress. However, due to an insufficient quality management procedure, this industry has been plagued by considerable problems, including the failure to complete projects within the triple constraints. The purpose of this research is to assess the impact of Building Information Modelling (BIM) on the optimization of quality management processes in building projects. Cost overruns, project delays, and ineffective quality control methods are the issues which confront the construction sector. BIM has emerged as a viable solution in addressing these difficulties by offering a digital platform that improves project stakeholders' cooperation, information flow, and decision-making. The aims of this research were attained by utilizing qualitative and quantitative data acquired through a comprehensive questionnaire survey and a detailed literature survey. The sum of circulated questionnaires was 40 and the number of responses was 75 percent. Correlation and regression analysis was done with the use of SPSS software to analyze the collected data. According to the findings of the study, there is a substantial beneficial association between BIM dimensions (3D, 4D, and 5D) on the quality management process. According to the regression analysis, the adoption of 3D BIM has the greatest influence on quality management, followed by 4D BIM (time) and 5D BIM (cost). According to the study, BIM may greatly improve quality management procedures in building projects. It suggests the significance of boosting awareness, encouraging stakeholder collaboration, and developing standardized BIM guidelines for optimal adoption. More empirical research is required to fully realize the benefits of BIM in quality management.

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