



Building Information Modeling Strategy in Mitigating Variation Orders in Roads Projects

Musab Abuaddous ^a, Ja'far A. Aldiabat Al-Btoosh ^{b*}, Mohammed A. KA. Al-Btoush ^c,
Abdulrazzaq Jawish Alkherret ^b

^a Department of Civil Engineering, Hijawi Faculty for Engineering Technology, Yarmouk University, Irbid, Jordan.

^b Department of Civil Engineering, Jerash University, Jerash, Jordan.

^c Faculty of Engineering, Isra University, Amman, Jordan.

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Abstract

Most governmental projects in Jordan have cost overrun, it rises during the on-going stage to increase the cost and prolong the time of the project. Unfortunately, until this moment, there is no particular management system in Jordan construction industry to minimize cost overrun and variation order adopted by the government. In contrast, global construction industry has witnessed a huge transformation in terms of the use of digital technologies, particularly Building Information Modeling (BIM) which is a revolutionary digital technology and operation that is reshaping the Architecture, Engineering and Construction (AEC) industry. approach and objectives causes before of this paper are firstly to review the factors contributing to variation orders in governmental road projects in Jordan, secondly, to propose a BIM design applications strategy to minimize variation orders, to achieve the objectives a quantitative approach was followed by distributing a questionnaire, then the data was analyzed statistically using relative importance index, the results were as follow. Our findings suggests that the most important factors causing change orders were as follow: Inaccurate quantity take-off (0.66); Labours or material not meeting the specifications (0.63); Logistic delays (0.60); Internal politics (0.566); and the equipment and tools are not available (0.55). The results also indicate that Contract Parties, Consultant, Contractor and Other Variations had significant positive effects on V. O, whereas the effects of BIM Design Applications, Facility Operations Simulation, Exploration Design Scenarios, BIM Design Detection, (BIM Quantity Take-off and Cost Estimation) had a passive impact on V.O. Lastly, BIM has obtained a great reputability by enhancing the productivity in construction society, minimizing the total cost of the projects, and many other benefits.

Keywords: BIM; Cost Overrun; Adoption Strategies; Jordan.

1. Introduction

Construction projects are usually exposed to various types of challenges that could cause a delay. This delay along with the cost overrun can have severe impact on the economic status of the project especially when it has political roots. Hence, the delay of a construction project which targeting an economic development can increase the frustration among the population and postponed an economic development. [1-3].

Therefore, construction delay can be defined as the exceeding in time either after the completion date specified in a contract, or after the date that the parties have agreed upon for implementing the project. However, for a project to

* Corresponding author: j.btoosh@jpu.edu.jo

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