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Enhancing Project Integration Using Cloud-based Building Information Modelling: A Conceptual Model

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Abstract: *Construction industry is a project-based endeavour in which its success heavily rests upon the intertwined collaborative gumptions rendered by each of the project team members throughout the project lifecycle. Optimisation of productivity have long been recognised as one of the toughest challenges faced in construction – frequently postulated by many as one of the most inefficient industries worldwide. Consequently, Building Information Modelling (BIM) has been introduced to ameliorate this shortfall, riding on its ability to better integrate the entire project team via a common platform, utilising Information and Communication Technology (ICT) as well as Internet of Things (IoT), or more specifically, through the 'Cloud' as is commonly coined. Nevertheless, its ability has yet to be fully utilised owing to the lack of awareness among construction stakeholders with regards to the array of benefits offered by this Cloud-based technology. In view of this, the authors aim to unmask the capabilities of Cloud-based BIM in enhancing project integration. To this end, a model has been conceptualised by reviewing extant literatures, with the concept of 4C's (Communication, Coordination, Cooperation, Collaboration) adopted as its underlying theory. This conceptual model can be expected to impact the digitisation of project management, thereby optimising productivity and enhancing projects' overall efficiency. This study also lays the groundwork for the better understanding and the future development of Cloud-based BIM and team integration in managing construction projects, both locally and internationally.*

Keywords: Building Information Modelling (BIM), Cloud-based BIM, 4Cs Concept, Team Integration, Conceptual Model

1. Introduction

Over the past two decades, construction industry has accounted for almost one-third of the global economic growth and has been observed to expand at an average of 1% from year-to-year (Razkenari et al., 2020). However, the construction industry has been posited as one of the least efficient industries for a long time. Construction projects have suffered many challenges owing to poor productivity and efficiency, resulting in costly rescheduling and reworks, ultimately leading to project cost overruns. Alreshidi, Mourshed, & Rezgui (2017) and Wu et al. (2017) identified team integration issue which included poor collaboration and communication, team conflict, etcetera as one of the underlying factors contributing to poor productivity and efficiency of construction projects. The delivery of timely and accurate information to the right stakeholders is vital for effective decision-making since construction projects are highly regarded as information-intensive endeavours (Matthews et al., 2015). In