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Challenges Faced During Implementation of Digital Twin in Construction Project Monitoring

M. Dhayanand[1], Mr. A. Aswin Bharath[2], Mr. P. A. Prabakaran[3], Ms. U. Sindhu Vaardhini[4]
Student, Construction Management, Department of Civil Engineering[1]
Faculty, Department of Civil Engineering[2,3,4]
Kumaraguru College of Technology, Coimbatore. India
dhayanandmurthy2001@gmail.com, bharathaswin1234@gmail.com
pasn2007@gmail.com, sindhuvaardini@gmail.com

Abstract: *Digital Twins (DTs) are gaining popularity because they provide precise digital copies of assets, processes, and systems. This is especially true when these DTs are paired with real-time simulation models that make use of modern technologies like machine learning, artificial intelligence, and data analytics. These combinations can provide a comprehensive and dynamic view of the monitored systems. Digital twin (DT) has shown tremendous potential to bring about revolutionary improvements in the field of construction site surveillance. There is, however, a notable paucity of empirical research identifying the constant elements affecting DT adoption in this industry. This research tries to fill that void by identifying the important elements that determine the usage of DT in construction. The study adopts a complete framework with the goal of increasing the use of DT in building site monitoring. The elements influencing the adoption and effectiveness of distributed ledger technology (DT) are divided into three categories: technological, organizational, and economic. Technological factors include the system's appropriateness and the robustness of the data infrastructure. Organizational considerations include the company's openness to innovation and leadership support. Economic aspects include things like return on investment (ROI) and cost-effectiveness. The research technique combines case studies and literature reviews to examine the benefits and drawbacks of DT in construction monitoring. This study's expected output is a comprehensive framework that aids construction businesses in optimizing the use of DT in site monitoring. This would allow for more efficient, data-driven, and forward-thinking processes. The study's ultimate purpose is to provide critical knowledge that will assist the building sector in adopting cutting-edge methods. The industry may better plan for the integration of this sophisticated technology into their operations by knowing the potential of DT and the variables driving its adoption. This, in turn, can lead to more efficiency, lower risks, and improved overall performance.*

Keywords: digital twin, site monitoring, adoption, ROI, monitoring

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