

The Impact of BIM on the Implementation of Transportation Infrastructure Projects

Abstract

This master's thesis thoroughly investigates the impact of Building Information Modeling (BIM) on German railway infrastructure projects, employing a mixed-methods approach involving qualitative insights from expert interviews and quantitative data from online questionnaires and implemented projects. The study assesses BIM's transformative role in enhancing collaboration, reducing errors, and improving project outcomes. By comparing projects using conventional methodologies with those employing BIM, the research identifies key differences in efficiency, error rates, and stakeholder collaboration. The thesis introduces the Comprehensive Adaptive BIM Integration Framework (CABIF), specifically designed for the railway sector, addressing challenges and leveraging opportunities to enhance BIM's practical application. This framework focuses on stakeholder engagement, process standardization, and continuous learning, contributing significantly to the railway infrastructure sector by evaluating current BIM implementation and proposing a forward-looking framework for enhanced application. The findings emphasize BIM's transformative potential but underscore the need for tailored methodologies and ongoing adaptation to project-specific challenges.



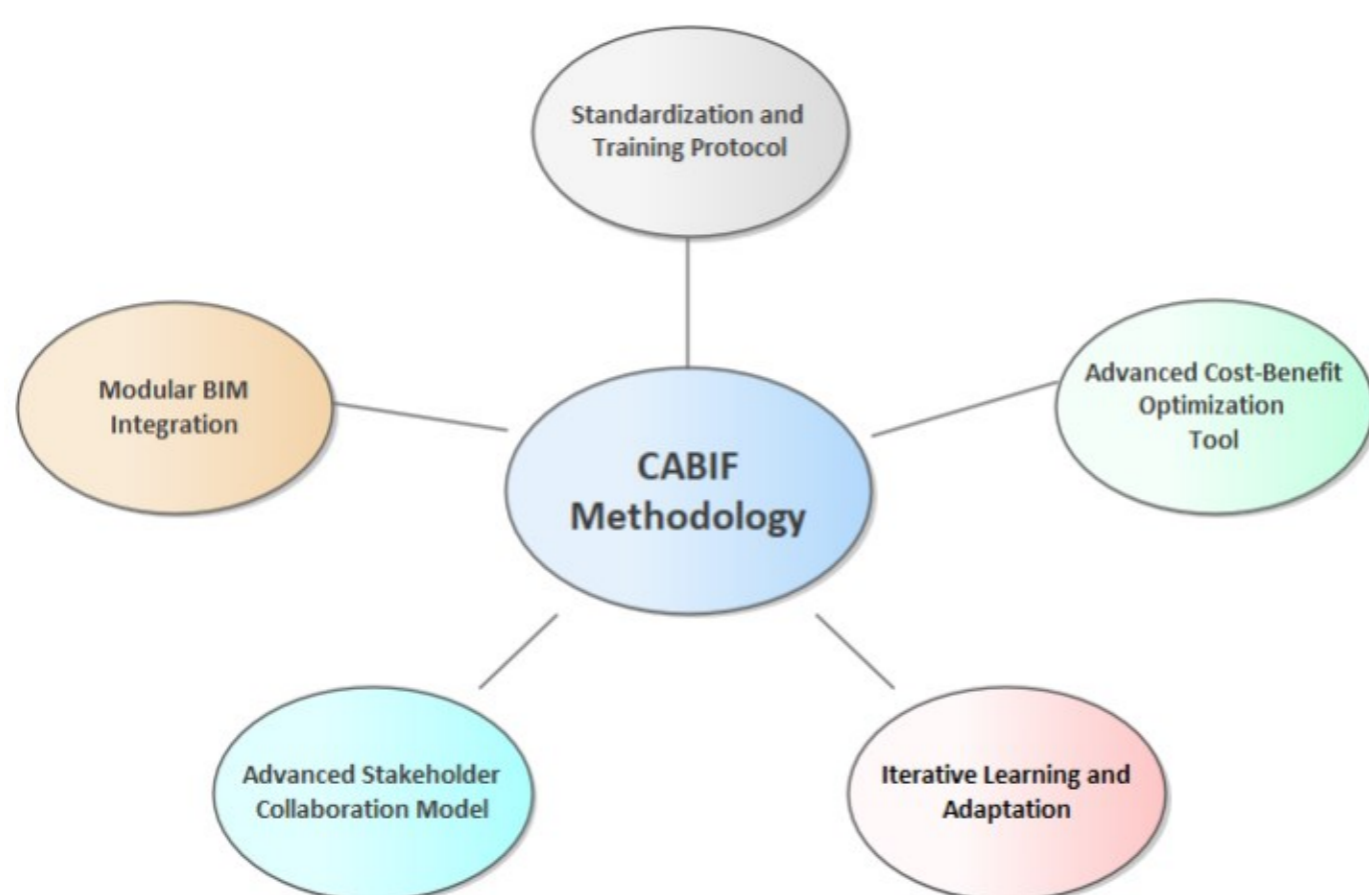
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Methodology

- The main objective of this study is to comprehensively assess the workflow of German railway infrastructure projects, aiming to identify and understand areas that can be enhanced.
- The research employs a comparative analysis, scrutinizing both conventional and BIM workflow processes across various construction phases. It employs a case study approach, strategically selecting four diverse railway projects in Germany to ensure a representative and insightful examination.

Conclusion

- The study on BIM in German railway infrastructure development reveals numerous benefits, including enhanced teamwork, informed decision-making, and improved project implementation.
- Despite challenges like integrating BIM into established workflows and cultural reluctance, the research highlights BIM's transformative potential in elevating project management and operational efficiency.



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