Analyzing the Applicability of Digital Technologies for Productivity Improvement of Construction Supervision

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Abstract

Over the past decade, productivity in the construction industry has consistently lagged behind other sectors. Construction supervision processes, in particular, are characterized by repetitive tasks and a high dependency on human labor, which often result in project delays and cost overruns. This underscores the urgent need for measures to address declining productivity.

This study examines the implementation of digital technologies as a means to enhance productivity and proposes evaluation model. The developed model quantitatively assesses the relationship and impact of digital technology adoption on productivity. The analysis evaluates productivity gains based on the extent to which digital technologies replace traditional labor-intensive processes. The hypothesis posited is that "increased substitution of manual tasks through digital technologies leads to improved productivity," aiming to establish the causal link between digital adoption and construction supervision efficiency.

The study presents significant findings on the relationship between digital technologies and productivity. Furthermore, pilot applications of digital technologies were conducted at construction sites to evaluate their practical applicability and analyze case studies of their implementation in supervision tasks. These results provide insights for developing effective strategies for the successful integration of digital technologies. The findings also highlight the variability in digital technology effectiveness depending on work type and construction stages, underscoring the necessity of tailored evaluations and pilot applications to establish precise and practical implementation strategies.