

## Impact of Modern Technology on the Quality of Sustainable Construction in the Sri Lankan Construction Industry

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The Sri Lankan construction industry, a key driver of national development, is experiencing significant transformation through the integration of modern technologies. This study examined the impact of modern technologies such as Artificial Intelligence (AI), Building Information Modeling (BIM), Augmented Reality (AR), robotics, and 3D printing on the quality and sustainability of construction practices in Sri Lanka. Utilizing a mixed-methods approach, including quantitative analysis via SPSS and qualitative insights from content analysis, the study explored the relationship between technology adoption and sustainable outcomes. The findings reveal a strong positive correlation between the use of these technologies and enhanced sustainability in construction projects. However, the study also highlights substantial challenges, including high implementation costs, a shortage of skilled personnel, and inadequate policy frameworks. To overcome these barriers, it proposes strategies that involve educational reforms and government-led initiatives to promote broader technological adoption. This study contributes to the academic discussion on sustainable construction by providing practical insights for industry stakeholders, policymakers, and practitioners. It also emphasizes the critical role of modern technologies in advancing the sustainability and resilience of the construction sector in Sri Lanka, underscoring the importance of a strategic approach to integrating these tools into existing practices for the industry's long-term growth and competitiveness.

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