

Initial Post

Incorporating advanced technologies, Industry 4.0 and 5.0 are transforming construction by automating processes and enabling a higher degree of interaction between humans and machine. The integration of AI, the Internet of Things (IoT), and real-time data into building processes imposes efficiency, cost-effectiveness, and predictive maintenance, Metcalf 2024. This 5th generation construction technology adds human-centric innovations focuses on flexibility and sustainable development (European Commission, 2021).

In my experience working in construction, AI-driven planning advanced collaboration for error-free execution during the preliminary designs owing to the use of BIM.

However, digital system dependency creates risk. An example of this is in the bridge project Queensferry Crossing in Scotland where poor PMIS implementation led to cost overruns and delays. The failure of the PMIS to incorporate real-time weather and logistics data led to a host of scheduled conflict problems—idle labour as contract workers were not needed but had been booked, disrupted supply chains, among other problems. This failure contributed to a £270 million budget overrun and reputational damage to those involved (ICE, 2018).

This incident shows that while digital transformation offers major benefits, it also requires robust systems, skilled users, and seamless data integration to avoid critical failures (Zhou, Liu and Zhou, 2015). Construction firms must invest not only in technology but also in digital literacy and system reliability.

References

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