Peer Response by Ali Alzahmi

Koulthoum, you have come up with a good reflection on the transformative effects of Industry 4.0 and 5.0 in construction. I particularly liked the way you drew attention to the use of AI, IoT, and real-time data in optimising the construction processes (Chrusciak et al., 2025). Your understanding of Building Information Modelling (BIM) shows the actual understanding of how digital tools are streamlining teamwork and eliminating design errors (Deng et al., 2022).

Your Queensferry Crossing project example is an outstanding case in the real world. It is concerning that poor PMIS implementation led to scheduling conflicts, idle resources, and an overrun of a £270 million budget (Kang et al., 2024). This is consistent with my experience in construction management where the inability to synchronize the digital systems often translates to additional costs and lack of operation efficiency.

I concur with your conclusion that the digital transformation is not enough without user's training and system integration. According to Bucci et al. (2025), Industry 5.0 does not only require the implementation of technology, but also a a human-centric plan to attain resilience. You may also reflect on the idea of digital maturity by Fernandes and Costa (2024), which identifies how organisations need to balance out technological readiness against capability of workforce so as to get maximum value.

In conclusion, your post suggests realistic and pragmatic perspective of the digital transformation journey in construction. Your suggestion on investing in technology and digital literacy has strong backing and is tremendously relevant to the industry players who are interested in sustainable and effective outcomes of their projects.

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Peer Response by [Fahad Abdallah](#)

Koulthoum, your analysis provides a practical picture of what is happening in the construction industry. It is well taken that you use your example of how AI and BIM technology enhance collaboration and accuracy in the early design stages. These innovations are necessary for large infrastructure projects to become efficient and sustainable, as proven by Metcalf (2024). One thing that especially caught my attention in your reflection is the actual example of the Queensferry Crossing project. As you indicated, the refusal of the Project Management Information System (PMIS) to use live weather and logistics data had operational and financial drawbacks (Rinchen et al., 2024). I have witnessed similar problems in small-scale projects where delays and issues of misunderstanding occurred because of the poor configuration of digital tools. This demonstrates the importance of ensuring that digital systems are not only applied but also tested and monitored throughout the project life cycle (Caballero, 2024).

Your call for balance in investment in technology, as well as human capability, is crucial. Alenezi (2023) is right to say that digital systems are not enough to bring success when there is a lack of users who are capable and have seamless integration across the data. Additionally, Coelho et al. (2023) lay greater emphasis on Industry 5.0 being human-centric, highlighting that digital literacy and operational resilience are complementary to technological evolutions. In conclusion, your reflection reflects a good measure of balancing the opportunities and risks of digital transformation in construction. The recollection of the fact that human elements, such as digital skills and the reliability of systems, are just as critical as the technology instruments is timely and crucial for practitioners seeking a sustainable result (Caballero, 2024).

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Peer Response by [Ali Alshehhi](#)

Hi Koulthoum,

Thank you for your reflective post—a very clear and applied overview of how Industry 4.0 and 5.0 are impacting the construction industry. I was especially able to connect with your experience of AI-driven planning and BIM, since these technologies are indeed changing how teams are working together and avoiding mistakes early in a project.

Your case example of the Queensferry Crossing project was ideal. It's a great reminder that despite the fact that there are advanced systems in place, if they're not integrated correctly or fed real-time information—like weather or logistics—then they will actually cause more problems than they solve. As Succar and Sher (2014) indicated, tools like BIM are only as good as the systems and data behind them.

I also totally concur with your observation about the need for digital literacy. Possessing the right technology is half the solution. Oesterreich and Teuteberg (2016) stated that if employees are not ready or trained for digital technologies, they will not gain the optimum benefit, and the systems may not even be used correctly. Similarly, Perera et al. (2020) emphasize upskilling the workforce alongside digital adoption to attain synchrony between human capabilities and tools.

Now that we're moving into Industry 5.0, with its increased emphasis on people and sustainability, it's more critical than ever to make sure technology enhances the human beings who work alongside it—doesn't crush them. Demir and Döven (2021) write about this shift, and I think it's one that the whole industry needs to embrace: technology that works for humans, not just with them.

Lastly, your post reminded me of what Margherita and Braccini (2020) posited, which is that digital transformation must be designed with socio-technical systems in mind—not just around performance gains—so that humans can be enabled to adapt, innovate, and co-create solutions. That kind of thinking seems essential to us getting to those resilient, agile outcomes Industry 5.0 holds out.

Your posting really grasped that equilibrium between innovation and practicality. Excellent reading!

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