Peer Response

by Ali Alzahmi - Friday, 16 May 2025, 6:12 PM

Fahad, your Industry 4.0 and 5.0 review of healthcare is thoughtful and completely relevant. What I especially liked about your approach was the attention you paid to the practical manifestation of the digital innovation in the real context of healthcare. The story that you gave about the 2022 failure of the NHS Meditech Electronic Health Record (EHR) system is particularly powerful (Barmecha & Last, 2023). As you correctly pointed out, this outage had severe effects on healthcare delivery with service interruption of important patient data like their medical history, lab results, and course of treatment. This disruption caused late treatments, scheduling of the appointments, and chances of medical errors (Mondal & Sameer, 2025). From my professional experience in the support of an IT upgrade in a hospital, I have found similar problems when temporary systems' downtimes impacted patient care, triggered staff frustration and workflow interruptions.

Regarding the financial and reputational implications of such a failure (Stanimirovic, 2024), the author discusses the need to build resilient digital infrastructures in healthcare. Further on, Stanimirovic (2024) state that the human-centric principles of Industry 5.0 (such as safety, resilience, trust, etc.) need to inform healthcare technological advancement in order to ensure safety to both patients and service providers.

I completely concur with your recommendation of necessity of investment to go beyond upgradation to workforce training, backup systems and overall precautionary measures on risks. Coelho et al. (2023) confirm this by highlighting the need for organisations to merge technological advancement with human resilience approach. You may also refer to the findings of Osipov, (2021), where the author identifies the relevance of system redundancy and user preparedness to maintain the provision of healthcare services in a safe mode even in cases of technological failure.

All in all, your analysis provides a balanced and realistic view of the situation. Your conclusion that the healthcare organisations should equally consider the aspects of technological efficiency and patient safety reflects the true sentiment of Industry 5.0 principles.

References

Barmecha, J., & Last, Z. (2023). Electronic health record and patient safety. In A. Agrawal & J. Bhatt (Eds.), *Patient safety* (Chapter 9). Springer, Cham. Available at: https://doi.org/10.1007/978-3-031-35933-0_9 (Accessed: 16 May 2025).

Coelho, P., Bessa, C., Landeck, J. and Silva, C. (2023) 'Industry 5.0: The Rise of a Concept', *Procedia Computer Science*, 217, pp. 1137–1144. Available at: https://doi.org/10.1016/j.procs.2022.12.312 (Accessed: 16 May 2025).

Mondal, R., & Sameer, M. (2025). Connected healthcare system technology interventions to improve patient safety by reducing medical errors: A systematic review. *Global Journal on Quality and Safety in Healthcare*, 8(1), 43–49. Available at: https://doi.org/10.36401/JQSH-24-23 (Accessed: 16 May 2025).

Osipov, V.S. and Skryl, T.V., (2021). Impact of digital technologies on the efficiency of healthcare delivery. In *IoT in healthcare and ambient assisted living* (pp. 243-261). Singapore: Springer Singapore. Available at: https://link.springer.com/chapter/10.1007/978-981-15-9897-5_12 (Accessed: 16 May 2025).

Stanimirovic, D. (2024). Failures and fallacies of eHealth initiatives: Are we finally able to overcome the underlying theoretical and practical orthodoxies? *Digital Health*. Available at: https://doi.org/10.1177/20552076241254019 (Accessed: 16 May 2025).

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Re: Initial Post

by Ali Yousef Ebrahim Mohammed Alshehhi - Sunday, 18 May 2025, 3:41 PM

Hi Fahad,

I enjoy your straightforward, thoughtful answer. Your case study of the NHS Meditech EHR blackout is excellent at demonstrating to us just how digital dependency in healthcare, wonderful as it makes things more efficient, is absolutely devastating when the technology fails. The NHS blackout you mentioned is exactly what Coiera (2015) terms "digital brittleness"—where excessive reliance on digital infrastructure renders it more susceptible when backup systems (in this case, paper records) are either absent or not adequate.

I appreciate the way you brought the material failure back to basic Industry 5.0 concepts. As Metcalf (2024) outlines, this

transformation isn't just about more technology but rather reimagining human needs, resilience, and sustainability as inherent in systems themselves. Healthcare is probably the most critical area in which system failure can literally kill people.

One of such major learnings of your article is the element of readiness. HIMSS (2022) report highlights that healthcare organizations must implement redundant systems, real-time backup procedures, and simulation-based disaster recovery planning. Solutions in hardware or in cloud aside, it is most important to build human capacity for being able to do things during digital outages—what Raja Santhi & Muthuswamy (2023) would call "contextualized resilience."

Furthermore, adopting hybrid system design—integrating AI-driven systems with human supervision—can trade off risks (Xu et al., 2021). This aligns with the growing call for human-in-the-loop systems, where automation supports but never replaces critical human decision-making.

Your submission cites the key point: in Industry 5.0 era, digital innovation must commit to human safety and system reliability foremost.Excellent analysis.

References:
Coiera, E. (2015). Guide to Health Informatics (3rd ed.). CRC Press. HIMSS. (2022). EHR Outage Preparedness Toolkit. [Online] Available at: https://www.himss.org/resources/ehr-outage-preparedness-toolkit Metcalf, G. S. (2024). An Introduction to Industry 5.0. Springer. Raja Santhi, A., & Muthuswamy, P. (2023). International Journal on Interactive Design and Manufacturing, 17(2), 947–979. Xu, X. et al. (2021). Journal of Manufacturing Systems, 61, 530–535.

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by Koulthoum Hassan Ahmad Flamerzi - Sunday, 18 May 2025, 4:08 PM

Thanks, Fahad, for this post. It is well-reasoned and comprehensive. The Meditech EHR outage you highlighted is, yet another example of the weaknesses bound to exist within digital health frameworks, particularly within such massive and foundational systems like the NHS.

The impact of the incident could have been lessened with the use of redundant backup systems, both cloud and local, with the self-sustaining mechanisms. These backups would let for uninterrupted patient care even during system-wide outages. Mirrored backup in the real world, for example, allows for undisturbed patient data access (AlHogail, 2022).

Aligned with Industry 5.0, temporal focus on resilience and human centred design with cyber-resilience planning, is another crucial safeguard. These include strategic measures like testing the endurance of the utilized EHR frameworks, extensive recovery strategies for the computerized data repository, and specially designed incident management teams for the healthcare industry (Van de Walle et al., 2020).

Moreover, training in digital skills for the healthcare workforce is mandatory. This enables the staff to manage the shift to offline or other formats during downtimes. Further enhance the institutional self-preparedness and confidence is simulated system outage drills (Sturmberg et al., 2019).

I particularly want to highlight the last point on the need to balance innovation with preparedness, as that is very crucial. While integrating smarter healthcare via Industry 5.0, systems in use must be sophisticated, and not lacking in robustness, security, and focus on the patient.

Excellent work on analysing in detail and critically evaluating the case.

References:

AlHogail, A., 2022. Designing Resilient eHealth Systems: A Framework for Enhancing Cybersecurity Preparedness. *Health and Technology*, 12(1), pp.57–67. Available at: **https://doi.org/10.1007/s12553-021-00590-0** [Accessed 18 May 2025].

Sturmberg, J.P., Bircher, J., Tabenkin, H. and Ivanova, K., 2019. Health system redesign for health system strengthening: a complexity and systems thinking approach. *Health Research Policy and Systems*, 17(1), p.111. Available at: **https://doi.org/10.1186/s12961-019-0504-z** [Accessed 18 May 2025].

Van de Walle, S., Van Dooren, W., Bouckaert, G. and Peters, B.G., 2020. *Public Sector Performance: Management, Motivation, and Measurement*. Cambridge: Cambridge University Press.

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