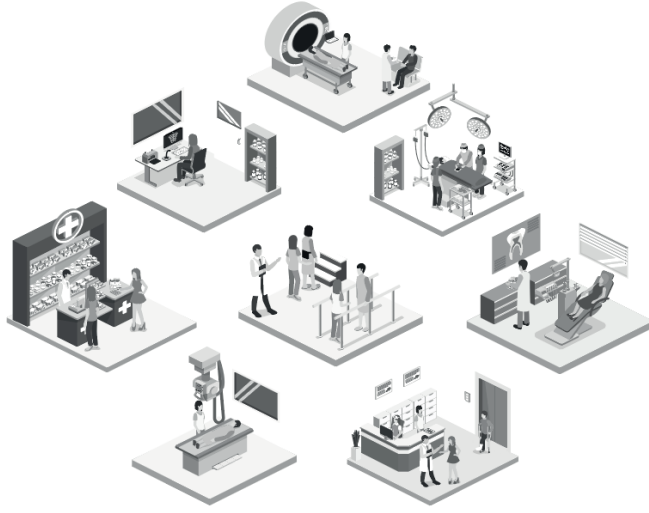




BÖLÜM 8

*Öğr. Gör. Erdem YÜCESAN
Dr. Öğr. Üyesi Canan BULUT*

DİSİPLİNLERARASI YAKLAŞIMLARLA SAĞLIKTA DİJİTALLEŞME: İNOVASYON EKOSİSTEMİ VE GELECEK PROFİLLERİ

4. Bu projede GDPR ve KVKK uyumunun sağlanması neden kritiktir?

- A) Projenin finansal maliyetlerini düşürmek için
- B) Hasta verilerinin güvenliğini ve mahremiyetini korumak için
- C) Klinik süreçlerin süresini kısaltmak için
- D) Donanım ihtiyaçlarını azaltmak için
- E) Yazılım lisans maliyetlerini ortadan kaldırmak için

Doğru Cevap: B

Açıklama: Veri koruma yasaları, kişisel sağlık verilerinin güvenli işlenmesini ve gizliliğin korunmasını garanti eder.

5. AB Yapay Zekâ Yasası (AI Act) kapsamında bu tür bir yüksek riskli sistemin devreye alınabilmesi için aşağıdakilerden hangisi zorunludur?

- A) Algoritmanın kaynak kodunun kamuya açık olması
- B) Ön piyasa değerlendirmesi ve sürekli izleme süreçlerinin tamamlanması
- C) Veri paylaşımının tamamen serbest bırakılması
- D) TRL seviyesinin 3'ün altına indirilmesi
- E) Klinik rehberlerin kaldırılması

Doğru Cevap: B

Açıklama: AI Act'e göre yüksek riskli sağlık uygulamaları için uygunluk değerlendirmesi, veri kalitesi gereklilikleri ve sürekli izleme zorunludur.

KAYNAKLAR

- Bendowska, A., & Baum, E. (2023). The significance of cooperation in interdisciplinary health care teams as perceived by Polish medical students. *International Journal of Environmental Research and Public Health*, 20(2), 954. <https://doi.org/10.3390/ijerph20020954>.
- Bertagnolli, M. M. (2023). Advancing health through artificial intelligence/machine learning: The critical importance of multidisciplinary collaboration. *PNAS Nexus*, 2(12), pgad356. *PNAS Nexus*. 2023;2(12): pgad356. <https://doi.org/10.1093/pnasnexus/pgad356>
- Brown, M. E., & Treviño, L. K. (2006). Ethical leadership: A review and future directions. *The Leadership Quarterly*, 17(6), 595–616. <https://doi.org/10.1016/j.leaqua.2006.10.004>
- Bui, T., Ruiz-Cardozo, M. A., Dave, H. S., et al. (2024). Virtual, augmented, and mixed reality applications for surgical rehearsal, operative execution, and patient education in spine surgery: A scoping review. *Medicina*, 60(2), 332. <https://doi.org/10.3390/medicina60020332>.
- Car, J., Ong, Q. C., Erlikh Fox, T., et al. (2025). The digital health competencies in medical education framework: An international consensus statement. *JAMA Network Open*, 8(1), e2453131. <https://doi.org/10.1001/jamanetworkopen.2829788>
- Carayannis, E. G., & Campbell, D. F. (2011). Mode 3 knowledge production in quadruple helix innovation systems: Twenty-first-century democracy, innovation, and entrepreneurship for development. In *Mode 3 Knowledge Production in Quadruple Helix Innovation Systems: 21st-Century Democracy, Innovation, and Entrepreneurship for Development* (pp. 1-63). New York, NY: Springer New York. <https://link.springer.com/book/10.1007/978-1-4614-2062-0>
- Chen, Z., Liang, N., Zhang, H., et al. (2023). Harnessing the power of clinical decision support systems: Challenges and opportunities. *Open Heart*, 10(2), e002432. <https://pmc.ncbi.nlm.nih>

- gov/articles/PMC10685930/.
- Cresswell, K., & Williams, R. (2024). Essential strategic principles for planning and developing digitally enabled interventions in health and care settings. *BMC Health Services Research*, 24(1), 1399. <https://doi.org/10.1186/s12913-024-11819-x>
- Dadaczynski, K., Okan, O., Messer, M., et al. (2021). Digital health literacy and web-based information-seeking behaviors of university students in Germany during the COVID-19 pandemic: Cross-sectional survey study. *Journal of Medical Internet Research*, 23(1), e24097. <https://doi.org/10.2196/24097>
- Doerr, J. (2018). *Measure what matters: The simple idea that drives 10x growth*. Penguin UK. Portfolio/Penguin.
- Donabedian, A. (1988). The quality of care: how can it be assessed?. *Jama*, 260(12), 1743-1748. doi:10.1001/jama.1988.03410120089033
- EIT Health. (2023). *Driving sustainable healthcare innovation*. <https://eithealth.eu/>
- Etzkowitz, H., & Zhou, C. (2017). *The triple helix: University-industry-government innovation and entrepreneurship*. Routledge. <https://doi.org/10.4324/9781315620183>
- European Commission. (2022). *EU General Data Protection Regulation (GDPR)*. <https://gdpr.eu/>
- European Commission. (2022). *The EU digital health strategy*. <https://digital-strategy.ec.europa.eu/en/policies/ehealth>
- European Commission. (2023). *Artificial Intelligence Act*. <https://artificialintelligenceact.eu/>
- Food and Drug Administration. (2020). *What is digital health?* U.S. Food and Drug Administration. <https://www.fda.gov/medical-devices/digital-health-center-excellence/what-digital-health>
- Fry CV, Cai X, Zhang Y, et al. (2020) Consolidation in a Crisis: Patterns of International Collaboration in COVID-19 Research. SSRN. DOI: 10.2139/ssrn.3595455
- Galazzi, A., Fonda, F., Chiappinotto, S., et al. (2025). Recommendations to promote the digital healthcare transformation in the clinical practice. *BMC Health Services Research*, 25(1), 929. <https://doi.org/10.1186/s12913-025-13079-9>
- Ghassemi, M., Oakden-Rayner, L., & Beam, A. L. (2021). The false hope of current approaches to explainable artificial intelligence in health care. *The lancet digital health*, 3(11), e745-e750. [https://doi.org/10.1016/S2589-7500\(21\)00208-9](https://doi.org/10.1016/S2589-7500(21)00208-9)
- Giebel, G. D., Raszke, P., Nowak, H., et al. (2025). Improving AI-based clinical decision support systems. *JMIR Medical Informatics*, 13, e69688. <https://doi.org/10.2196/69688>
- Islam, S. M. R., Kwak, D., Kabir, M. H., Hossain, M., & Kwak, K. S. (2015). The Internet of Things for health care: A comprehensive survey. *IEEE Access*, 3, 678–708. <https://doi.org/10.1109/ACCESS.2015.2437951>
- ISO/HL7. (2022). *FHIR standard for health data exchange*. <https://hl7.org/fhir/>
- Jat, A. S., & Grønli, T.-M. (2024). Harnessing the digital revolution: A comprehensive review of mHealth applications for remote monitoring in transforming healthcare delivery. *arXiv*. <https://doi.org/10.48550/arXiv.2408.14190>
- Javaid, M., Haleem, A., & Singh, R. P. (2024). Health informatics to enhance the healthcare industry's performance. *Health Informatics Journal*. <https://doi.org/10.1016/j.infoh.2024.05.001>
- Kaiser, L., Conrad, S., Neugebauer, E. A. M., Pietsch, B., & Pieper, D. (2022). Interprofessional collaboration and patient-reported outcomes in inpatient care: A systematic review. *Systematic Reviews*, 11(1), 169. <https://doi.org/10.1186/s13643-022-02027-x>
- Kasoju, N., Remya, N. S., Sasi, R., et al. (2023). Digital health: Trends, opportunities and challenges in medical devices, pharma and biotechnology. *Computer Science and Information Technology*, 11(1), 11–30. <https://doi.org/10.1007/s40012-023-00380-3>
- Kuhn, E. (2024). Interdisciplinary perspectives on digital technologies for global health. *PLOS Global Public Health*, 4(3), e0002867. <https://doi.org/10.1371/journal.pgph.0002867>
- Liu, M., Ning, Y., Teixayavong, S., et al. (2023). A translational perspective towards clinical AI fairness. *npj Digital Medicine*, 6(1), 172. <https://doi.org/10.1038/s41746-023-00918-4>
- Long, L. A., Pariyo, G., & Kallander, K. (2018). Digital technologies for health workforce develop-

- ment in low-and middle-income countries: a scoping review. *Global Health: Science and Practice*, 6(Supplement 1), S41-S48. <https://doi.org/10.9745/GHSP-D-18-00167>
- Macha, K. B. (2025). Integrating AI, ML, and RPA for end-to-end digital transformation in healthcare. *World Journal of Advanced Research and Reviews*, 25(1), 2116–2129. <https://doi.org/10.30574/wjarr.2025.25.1.0264>
- Mankins, J. C. (2009). Technology readiness assessments: A retrospective. *Acta Astronautica*, 65(9–10), 1216–1223. <https://doi.org/10.1016/j.actaastro.2009.03.058>
- Martin, A. K., Green, T. L., McCarthy, A. L., et al. (2023). Allied health transdisciplinary models of care in hospital settings: A scoping review. *Journal of Interprofessional Care*, 37(1), 118–130. <https://doi.org/10.1080/13561820.2022.2038552>
- McGuier, E. A., Kolko, D. J., Aarons, G. A., et al. (2024). Teamwork and implementation of innovations in healthcare and human service settings: A systematic review. *Implementation Science*, 19(1), 49. <https://doi.org/10.1186/s13012-024-01381-9>
- Mesko, B., & Györfy, Z. (2019). The rise of the empowered physician in the digital health era: Viewpoint. *Journal of Medical Internet Research*, 21(3), e12490. <https://doi.org/10.2196/17423>
- Mezzalana, E., Longhini, J., Ambrosi, E., et al. (2025). The experience of an innovative interdisciplinary model of primary care delivery. *Primary Health Care Research & Development*, 26, e25. <https://doi.org/10.1017/s1463423625000210>
- Murray, E., Hekler, E. B., Andersson, G., et al. (2016). Evaluating digital health interventions: Key questions and approaches. *American Journal of Preventive Medicine*, 51(5), 843–851. <https://doi.org/10.1016/j.amepre.2016.06.008>
- National Academy of Medicine. (2025). *The promise of digital health: Then, now and the future*. NAM Perspectives. <https://nam.edu/perspectives/the-promise-of-digital-health-then-now-and-the-future/>
- Norman, C. D., & Skinner, H. A. (2006). eHealth literacy: Essential skills for consumer health in a networked world. *Journal of Medical Internet Research*, 8(2), e9. <https://doi.org/10.2196/jmir.8.2.e9>
- Nygren, J. M., Lundgren, L., Bäckström, I., & Svedberg, P. (2023). Strengthening digital transformation and innovation in the health care system: Protocol for the design and implementation of a multidisciplinary national health innovation research school. *JMIR Research Protocols*, 12, e46595. <https://doi.org/10.2196/46595>
- OECD. (2021). *Public-private partnerships for innovation*. OECD Publishing. https://www.oecd.org/en/publications/public-private-partnerships-for-agricultural-innovation_5jm55j9p9rmx-en.html
- Parmenter, D. (2015). *Key performance indicators: Developing, implementing, and using winning KPIs* (3rd ed.). Wiley.
- Periáñez, Á., Fernández del Río, A., Nazarov, I., et al. (2024). The digital transformation in health: How AI can improve the performance of health systems. *arXiv*. <https://doi.org/10.48550/arXiv.2409.16098>
- Porter, M. E. (2010). What is value in health care?. *New England Journal of Medicine*, 363(26), 2477–2481. DOI: 10.1056/NEJMp1011024
- Raghupathi, W., & Raghupathi, V. (2014). Big data analytics in healthcare: Promise and potential. *Health Information Science and Systems*, 2(1), 3. <https://doi.org/10.1186/2047-2501-2-3>
- Reddy, S., Allan, S., Coghlan, S., & Cooper, P. (2020). A governance model for the application of AI in health care. *Journal of the American medical informatics association*, 27(3), 491–497. <https://doi.org/10.1093/jamia/ocz192>
- Robinson, L., Schulz, J., Khilnani, A., Ono, H., Cotten, S., McClain, N., ... & Tolentino, N. (2020). Digital inequalities in time of pandemic: COVID-19 exposure risk profiles and new forms of vulnerability. *First monday*, 25(7). <https://dx.doi.org/10.5210/fm.v25i7.10845>
- Ronquillo, Y., Meyers, A., & Korvek, S. J. (2017). Digital health. *Journal of Innovation in Health Informatics*, 24(2), 1–9.

- Shaik, T., Tao, X., Higgins, N., Li, L., Gururajan, R., Zhou, X., & Acharya, U. R. (2023). Remote patient monitoring using artificial intelligence: Current state, applications, and challenges. *arXiv*. <https://doi.org/10.48550/arXiv.2301.10009>
- Shaw, J., Agarwal, P., & Bhattacharyya, O. (2018). Beyond “implementation”: Digital health innovation and service design. *npj Digital Medicine*, 1(1), 48. <https://doi.org/10.1038/s41746-018-0059-8>
- Steel, P. A., Wardi, G., Harrington, R. A., & Longhurst, C. A. (2025). Learning health system strategies in the AI era. *Nature Digital Medicine*, 2(1), 21. <https://doi.org/10.1038/s44401-025-00029-0>
- Topol, E. J. (2019). *Deep medicine: How artificial intelligence can make healthcare human again*. Basic Books.
- Tun, H. M., Rahman, H. A., Naing, L., & Malik, O. A. (2025). Trust in artificial intelligence-based clinical decision support systems among health care workers: Systematic review. *Journal of Medical Internet Research*, 27, e69678. <https://doi.org/10.2196/69678>
- TÜBİTAK. (2023). *Research and development support programs*. <https://tubitak.gov.tr/en/funds/academic/national-support-programs>
- Uzzi, B., Mukherjee, S., Stringer, M., & Jones, B. (2013). Atypical combinations and scientific impact. *Science*, 342(6157), 468–472. <https://doi.org/10.1126/science.1240474>
- Vicente-Saez, R., & Martinez-Fuentes, C. (2018). Open Science now: A systematic literature review for an integrated definition. *Journal of business research*, 88, 428–436. <https://doi.org/10.1016/j.jbusres.2017.12.043>
- Wang, Y., Song, Y., Ma, Z., & Han, X. (2023). Multidisciplinary considerations of fairness in medical AI: A scoping review. *International Journal of Medical Informatics*, 178, 105175. <https://doi.org/10.1038/s41746-023-00918-4>
- Wikipedia contributors. (2025a). *mHealth*. In *Wikipedia*. <https://en.wikipedia.org/wiki/MHealth>
- Wikipedia contributors. (2025b). *Health information technology*. In *Wikipedia*. https://en.wikipedia.org/wiki/Health_information_technology
- Wikipedia contributors. (2025c). *Digital health interventions*. In *Wikipedia*. https://en.wikipedia.org/wiki/Digital_health_interventions
- World Health Organization (WHO), (2021). *Global strategy on digital health 2020–2025*. <https://www.who.int/health-topics/digital-health>
- Zhang, L. (2025). Digital health innovations to catalyze the transition to value-based health care. *JMIR Medical Informatics*, 13(1), e57385. <https://doi.org/10.2196/57385>