

ISSN 2090-3359 (Print)  
ISSN 2090-3367 (Online)



# Advances in Decision Sciences

*Volume 29*  
*Issue 2*  
*June 2025*

Michael McAleer (Editor-in-Chief)

Chia-Lin Chang (Senior Co-Editor-in-Chief)

Alan Wing-Keung Wong (Senior Co-Editor-in-Chief and Managing Editor)

Aviral Kumar Tiwari (Co-Editor-in-Chief)

Montgomery Van Wart (Associate Editor-in-Chief)

Vincent Shin-Hung Pan (Managing Editor)



**亞洲大學**  
ASIA UNIVERSITY



**SCIENTIFIC &  
BUSINESS  
WORLD**

Published by Asia University, Taiwan and Scientific and Business World

# Unlocking the Potential: Electronic Health Records in Primary Care and Achieving the Quadruple Aim of Healthcare

**Ferry Fadzlul Rahman**

Department of Public Health,  
Universitas Muhammadiyah Kalimantan Timur, Indonesia  
Email: [ffr607@umkt.ac.id](mailto:ffr607@umkt.ac.id)

**Purhadi**

School of Nursing, Universitas An Nuur,  
Central Java, Indonesia  
Email: [purhadi@unan.ac.id](mailto:purhadi@unan.ac.id)

**Meity Mulya Susanti**

School of Nursing, Universitas An Nuur,  
Central Java, Indonesia  
Email: [meityms@unan.ac.id](mailto:meityms@unan.ac.id)

**Fahni Haris**

School of Nursing,  
Universitas Muhammadiyah Yogyakarta, Indonesia  
*\*Corresponding Author* Email: [fahni.h@umy.ac.id](mailto:fahni.h@umy.ac.id)

Received: March 29, 2024; First Revision: May 2, 2024;

Last Revision: February 3, 2025; Accepted: March 8, 2025;

**Published: xxxxxxxxxxxxxxxxx**

## **Abstract**

**Purpose:** The purpose of this study is to analyze the factors influencing Quadruple Aim (QA) of healthcare services in primary care, with a focus on the role of electronic medical records (EMRs).

**Design/methodology/approach:** quantitative research was employed by a Cross-Sectional approach and utilizing stratified random sampling. Primary data was collected from 10 primary healthcare facilities in Samarinda City. Spearman's Rank test for bivariate analysis and Multiple Linear Regression were performed for the examined QA.

**Finding:** The bivariate analysis indicated that technology-clinical fit, technology as a control tool, and the duration of EMRs communication had a strong relationship with QA of healthcare services, while interoperability had a very strong relationship with QA of healthcare services. The multivariate analysis revealed that the duration of contact and communication contributed 0.242 times to QA, technology as a control tool contributed 0.129 times to QA, technology-clinical fit contributed 0.142 times to QA, and interoperability contributed 0.521 times to the QA of healthcare services. These findings provide recommendations for enhancing the implementation of EMRs and achieving the QA of healthcare services in primary healthcare.

**Originality:** This study uniquely contributes to decision sciences by empirically quantifying how specific EMRs factors, such as communication duration, technology control, clinical fit, and interoperability, impact the QA. It distinctively highlights interoperability as the key driver for achieving optimal healthcare outcomes in primary care settings.

**Keywords:** Quadruple Aim, EMRs, Healthcare Services, Primary Healthcare, Health Worker

**JEL Classifications:** I18, O33, J44, D81

## References

- Adeniyi, A. O., Arowoogun, J. O., Chidi, R., Okolo, C. A., & Babawarun, O. (2024). The impact of electronic health records on patient care and outcomes: A comprehensive review. *World Journal of Advanced Research and Reviews*, 21(2), 1446-1455. <https://doi.org/10.30574/wjarr.2024.21.2.0592>
- Alami, H., Lehoux, P., Gagnon, M.-P., Fortin, J.-P., Fleet, R., & Ag Ahmed, M. A. (2020). Rethinking the electronic health record through the quadruple aim: time to align its value with the health system. *BMC medical informatics and decision making*, 20(1), 1-5. <https://doi.org/10.1186/s12911-020-1048-9>
- Almotairi, K. H. (2023). Application of internet of things in healthcare domain. *Journal of Umm Al-Qura University for Engineering and Architecture*, 14(1), 1-12. <https://doi.org/10.1007/s43995-022-00008-8>
- Azarm, M., Kuziemy, C. E., & Peyton, L. (2020). A Framework for System-level Health Data Sharing. HEALTHINF. <https://doi.org/10.5220/0008986305140521>
- Bodenheimer, T., & Sinsky, C. (2014). From triple to quadruple aim: care of the patient requires care of the provider. *The Annals of Family Medicine*, 12(6), 573-576. <https://doi.org/10.1370/afm.1713>
- Carifio, J., & Perla, R. (2008). Resolving the 50-year debate around using and misusing Likert scales. *Medical education*, 42(12), 1150-1152. <https://doi.org/10.1111/j.1365-2923.2008.03172.x>
- DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: a ten-year update. *Journal of management information systems*, 19(4), 9-30. <https://doi.org/10.1080/07421222.2003.11045748>
- Finset, A., Bosworth, H., Butow, P., Gulbrandsen, P., Hulsman, R. L., Pieterse, A. H., Street, R., Tschoetschel, R., & van Weert, J. (2020). Effective health communication—a key factor in fighting the COVID-19 pandemic. *Patient education and counseling*, 103(5), 873. <https://doi.org/10.1016/j.pec.2020.03.027>
- Fitzpatrick, B., Bloore, K., & Blake, N. (2019). Joy in work and reducing nurse burnout: From triple aim to quadruple aim. *AACN advanced critical care*, 30(2), 185-188. <https://doi.org/10.4037/aacnacc2019833>
- Haris, F., Irawati, K., & Rahman, F. F. (2021). Adaptation of telemedicine amidst COVID-19 towards Indonesian physicians: benefits, limitations, and burdens. *bmj*, 10(3), 2900. <https://doi.org/https://dx.doi.org/10.15562/bmj.v10i3.2900>
- Holmgren, A. J., Patel, V., & Adler-Milstein, J. (2017). Progress in interoperability: measuring US hospitals' engagement in sharing patient data. *Health Affairs*, 36(10), 1820-1827. <https://doi.org/10.1377/hlthaff.2017.0546>
- Huang, L., Shea, A. L., Qian, H., Masurkar, A., Deng, H., & Liu, D. (2019). Patient clustering improves efficiency of federated machine learning to predict mortality and hospital stay time using distributed electronic medical records. *Journal of biomedical informatics*, 99, 103291. <https://doi.org/10.1016/j.jbi.2019.103291>
- Jacobs, B., McGovern, J., Heinmiller, J., & Drenkard, K. (2018). Engaging employees in well-being: moving from the triple aim to the quadruple aim. *Nursing administration quarterly*, 42(3), 231-245. <https://doi.org/10.1097/NAQ.0000000000000303>
- Kennedy, K. (2023). *The Relationship Between Clinical Integration, Interoperability, and Patient*

<https://www.proquest.com/openview/37565d2752ed76c0a9b27be50b352eae/1?pq-origsite=gscholar&cbl=18750&diss=y>

- Laraichi, M. O. (2023). *A Hierarchical Decision Model to Evaluate Healthcare Organization's Readiness to Implement Clinical Decision Support Systems* Portland State University]. <https://www.proquest.com/openview/d53a9ddb6f4f8798fcaae04f94e9e500/1?pq-origsite=gscholar&cbl=18750&diss=y>
- LaVela, S. L., & Gallan, A. (2014). Evaluation and measurement of patient experience. *Patient Experience Journal*, 1(1), 28-36.
- Manary, M. P., Boulding, W., Staelin, R., & Glickman, S. W. (2013). The patient experience and health outcomes. *New England Journal of Medicine*, 368(3), 201-203. <https://doi.org/10.1056/NEJMp1211775>
- Norman, G. (2010). Likert scales, levels of measurement and the "laws" of statistics. *Advances in Health Sciences Education*, 15(5), 625-632. <https://doi.org/https://doi.org/10.1007/s10459-010-9222-y>
- Ohannessian, R., Duong, T. A., & Odone, A. (2020). Global telemedicine implementation and integration within health systems to fight the COVID-19 pandemic: a call to action. *JMIR public health and surveillance*, 6(2), e18810. <https://doi.org/10.2196/18810>
- Rahman, F. F. (2020). *Introduction to Public Health Management, Organization, and Policy*. Deepublish. [https://books.google.co.id/books?id=F9RZEQAAQBAJ&lpg=PP1&ots=r\\_MHeU9FD3&dq=Introduction%20to%20Public%20Health%20Management%2C%20Organization%2C%20and%20Policy.&lr&hl=id&pg=PP1#v=onepage&q=Introduction%20to%20Public%20Health%20Management,%20Organization,%20and%20Policy.&f=false](https://books.google.co.id/books?id=F9RZEQAAQBAJ&lpg=PP1&ots=r_MHeU9FD3&dq=Introduction%20to%20Public%20Health%20Management%2C%20Organization%2C%20and%20Policy.&lr&hl=id&pg=PP1#v=onepage&q=Introduction%20to%20Public%20Health%20Management,%20Organization,%20and%20Policy.&f=false)
- Rahman, F. F., Haris, F., & Irawati, K. (2023). Equate access to primary health care in rural Kalimantan: What basic health services should be available locally? *Journal of Holistic Nursing Science (JHNS)*, 10(2), 96-102. <https://doi.org/10.31603/nursing.v0i0.8460>
- Smith, W. R., Atala, A. J., Terlecki, R. P., Kelly, E. E., & Matthews, C. A. (2020). Implementation guide for rapid integration of an outpatient telemedicine program during the COVID-19 pandemic. *Journal of the American College of Surgeons*, 231(2), 216-222. e212. <https://doi.org/10.1016/j.jamcollsurg.2020.04.030>
- Srivani, M., Murugappan, A., & Mala, T. (2023). Cognitive computing technological trends and future research directions in healthcare—A systematic literature review. *Artificial Intelligence in Medicine*, 138, 102513. <https://doi.org/10.1016/j.artmed.2023.102513>
- Sutha, D. W., Christine, C., Masyfufah, L., Faida, E. W., Wahyuni, T., Novianti, S., & Syalfina, A. D. (2025). The Impact of Use of Electronic Medical Records on The Quality Of Health Services and Patient Safety. *International Journal of Health and Information System*, 3(1), 1-11. <https://doi.org/10.47134/ijhis.v3i1.62>
- Wei, M., Salgado, E., Girard, C. E., Santoro, J. D., & Lepore, N. (2023). Your note, your way: how to write an inpatient progress note accurately and efficiently as an intern. *Postgraduate medical journal*, 99(1171), 492-497. <https://doi.org/10.1136/postgradmedj-2022-141834>
- Woldemariam, M. T., & Jimma, W. (2023). Adoption of electronic health record systems to enhance the quality of healthcare in low-income countries: a systematic review. *BMJ Health & Care*

*Informatics*, 30(1). <https://doi.org/10.1136/bmjhci-2022-100704>