

Call for papers: Special Issue on *Emerging Technologies in Healthcare*

Background

In recent years, emerging technologies have seen explosive, and arguably unprecedented, growth in many industries. Healthcare has been no exception (Dai and Tayur, 2020). We are at a point where close consideration of the operational implications of emergent technologies in healthcare is both observable and fully warranted. Emerging technologies such as advanced social platforms, the internet of things (IoT), genetic technologies, and 3D printing as well as advanced analytical applications (e.g., artificial intelligence [AI] and other big data-driven decision support systems) are driving rapid growth and transformation in this industry (Gardner et al., 2015; Ganju et al., 2020; Xu and Ghose, 2021; Adjerid et al., 2022; Rajpurkar et al., 2022). What is now needed are insights to help identify new opportunities and operational issues arising from the advancement and adoption of these technologies.

Consider some of the current opportunities. Emerging technologies are empowering physicians and improving patient care in multiple ways (Ferrand et al., 2018; Mukherjee and Sinha, 2020). For example, COVID-19 has caused a massive adoption of telehealth technologies involving electronic information and telecommunication. Additionally, AI can perform a wide range of functions, such as aiding in diagnosis generation and therapy selection, performing risk prediction and disease stratification, reducing medical errors, and increasing productivity (Kalis et al., 2018). Moreover, 3D printing technology is being used to produce various personalized medical devices and implants that are improving the lives of many people around the world.

Emerging technologies are also changing the way healthcare is delivered (Bavafa et al., 2018). For example, social technologies have created new possibilities, such as online consultations and live medical streaming, through which patients can get health support virtually. Advanced wearables bring forth additional implications for such engagement. In short, emerging technologies not only enhance the performance of healthcare systems and create innovative healthcare models, they also revolutionize the way healthcare works in terms of care delivery, patient routing, allocation of healthcare resources, and organizational design of healthcare systems (Dai and Tayur, 2020).

Apart from opportunities, we also need to identify and evaluate challenges of emerging technologies before they can be implemented on a large scale, widely adopted, and regularly maintained (Heim et al., 2021). Emerging technologies often raise legal and ethical issues, particularly in healthcare, such as liability issues for the application of new technologies in clinical settings and ethical issues for compliance with healthcare regulatory frameworks (Rajpurkar et al., 2022). Further, the successful implementation of new technologies in healthcare operations requires consideration of various factors such as system development, utilization

behavior, and financial investment (Stevens and van Schaik, 2022). On one hand, organizations with insufficient data and research and development resources and capabilities will have difficulty benefiting from emerging technologies. On the other hand, the acceptance and effective adoption of these technologies by physicians and patients are directly related to the effectiveness of implementation (Jussupow et al., 2021).

Physicians may also resist the large-scale implementation of new technologies in healthcare due to the fear of being diminished or replaced, while patients may feel uncomfortable receiving advice provided by AI. Challenges may also arise with the implementation and adoption of emerging technologies in healthcare, such as the potential financial burden of using and maintaining emerging technologies and privacy concerns about patient data that may be collected by the IoT or electronic medical records.

Special Issue (SI) Focus

This SI is designed to attract submissions of rigorous and creative scholarly work related to emerging technologies in healthcare. We are particularly interested in those that can help understand these novel technologies and provide guidance for leveraging them to significantly improve healthcare business operations.

Some possible topics for this SI include, but are not limited to:

- The role of telemedicine and big data in healthcare and medical decision making
- AI transparency and accountability in healthcare
- Use of AI algorithms to predict people's risk of health conditions and provide personalized care
- Leveraging big data to create value in healthcare operations
- The impact of social technologies, such as live streaming and healthcare platforms, on healthcare operations and outcomes
- Integration and coordination of health systems that incorporate multiple emerging technologies
- Integrating multiple wearable devices (such as activity trackers) into a healthcare system
- The use of virtual reality technology in clinical medicine, such as for surgical training, pain management, and therapeutic treatment of mental illness
- The use of emerging technologies in healthcare, such as digital twins, genomics, and proteomics in predictive, preventive, and personalized medicine
- Blockchain technology offers secure and transparent storage and sharing of healthcare data, with specific operational improvements in drug traceability
- The use of robotic systems in various healthcare applications, such as rehabilitation, and elderly care

Given the core mission of the *Journal of Operations Management*, it should go without saying that papers touching on any of the above topics must carry a message for the operations management (OM) community. As per recent department editorials (see Heim et al. 2021), this can be accomplished through a meaningful consideration of operational levers, with implications for a broad set of outcomes, or a meaningful consideration of how core operational outcomes are

impacted by any number of healthcare and technology drivers. In short, take-aways from submitted papers should highlight opportunities or propose-useful options for operations managers, or anyone managing organizational processes regardless of title, in particular.

Further, while this SI clearly sits at the intersection of Healthcare and Technology Management in OM, papers submitted to this issue must demonstrate coherent integration across these domains. Author teams are encouraged to include scholars well versed in technology management, as well as those cognizant of the healthcare operations literature. Papers will similarly be assessed by review teams composed of scholars in both areas, with the intention of ensuring that contributions are made to both domains. This represents a bar distinct from the domain-focused contribution criteria of either the Healthcare or Technology Management departments alone.

These associated, joint expectations are tempered by the SI's openness to papers that have a heavier case-to-data orientation. That is, while authors are encouraged to leverage all opportunities to draw on data sets to statistically examine hypotheses, given the challenge of acquiring large-scale data sets on emerging healthcare technology, papers that have a large case study component, if done well, will be closely considered. In some instances, again given the challenge of large data access at this particular intersection, the SI may also allow for the submission of shorter "Discussions" (approximately 10K words), with much larger than typical online supplemental Appendices for additional rich content (more of a 1:2 rather than a 3:1 paper-to-appendix ratio).

Regardless of the nature of the submission, topic, or methods, in all cases we remind researchers to adhere to the high standards of *JOM* by following the [author guidelines](#).

Timeline

Submissions must be received by March 31, 2024, with first-round decisions targeted by three months after manuscript reception. We will begin to process submissions as they come in, so earlier submissions are welcome. We plan to host special tracks/sessions at relevant conferences, where submissions can be presented and discussed.

Guest Editors

Questions may be sent to any, or all, of the SI guest editors, at any time:

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Jeff Smith (jsmith74@vcu.edu) is a Professor of Supply Chain Management and the Chair of the Supply Chain Management & Analytics (SCMA) Department at Virginia Commonwealth University. His research has appeared in *POM*, *Decision Sciences*, *Journal of the Academy of Marketing Science*, *Journal of Retailing*, and *International Journal of Production Economics*, among others. He is a Department Editor at *JOM* for Healthcare, where he has also served as Guest Editor on a prior SI on healthcare operations. He also serves on multiple editorial boards for journals associated with both marketing and OM.

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