Call for Papers–Special Issue of the *Journal of Operations Management*
Operational Excellence for Utilities

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BACKGROUND AND SCOPE

Utilities—the fundamental systems and services that are critical to the security, economic prosperity, and social well-being of a nation (Rinaldi et al., 2001)—are hugely important for society. Without our utilities such as bridges and roads, electricity grids and sewage systems, canals and seaports, and airports and railroads, key public services fail, supply chains stop working, and society comes to a grinding halt. Managing the operations of these utilities (and infrastructure) is therefore key to ensuring the safe, reliable, affordable, and sustainable functioning of the networks through which key services are provided to citizens (Moss Kanter, 2013). Moreover, well-functioning utilities are crucial for meeting the United Nations Sustainable Development Goals, either directly (e.g., clean water and sanitation, affordable and clean energy and infrastructure) or indirectly (e.g., good health, zero hunger, and sustainable cities).

Utilities face the problem of aging assets. Many of the technical assets that allow utilities to function were built in the post-war growth decades and are hence reaching the end of their technical lifetimes. In the US. for example, one in four of the more than 610,000 bridges is more than 65 years old. In their latest report, the American Society of Civil Engineers gave US infrastructure an average grade of "C-," rating it "mostly below standard" (ASCE 2021). At the same time, the workforce that used to take care of them has also aged and retired in great numbers, taking their technical experience with them.

The operations challenges for utilities do not only relate to asset maintenance. While many countries are currently developing plans to revitalize national public infrastructures, the challenges to do so in a timely and cost-effective fashion are substantial. The Dutch Government aims to build over 800 new offshore wind turbines in the North Sea between Europe and the UK by 2030. To date there are some 300 turbines in that area, the oldest dating back to 2007 only. It will be impossible to build and commission these new and complex assets with conventional work methods and historical labor productivity, as these windfarms are too far out on a rough sea, cargo traffic is too busy, and the availability of skilled technicians is again limited. Project failure is particularly relevant not only for the almost certain loss of resources after the failure but also because even large and well-managed projects still frequently fail (Matta and Ashkenas, 2003). Therefore, a significant stream of research in Operations and Supply Chain Management (OSCM) focuses on critical factors that turn projects into success, exploring structural obstacles like equivocality or complexity (e.g., Ramasesh and Browning, 2014; Salvador et al., 2021).

One of the biggest challenges for today's utilities is that they tend not to be managed from a systems perspective. In asset-management practice, the requirements for, say, a new bridge will be made by Department A of the—usually public—asset owner, while procurement of the bridge will be through its Department B. The bridge will be designed by a private engineering company, but often built by a different construction company. After construction, service and maintenance are often outsourced, again by different units to private companies. Even if the entire design-build-finance-maintain-operate cycle would be outsourced to one organization, these activities would be conducted by different types of staff in various units, supported by disconnected pieces of software and applying a multitude of diverging functional and temporary goals. So, operational excellence for utilities implies also *systematic* asset management.

Technology might have the potential to contribute to a systems approach to managing these assets. From Internet of Things-enabled sensors to big data analytics, from virtual and augmented reality to drones, information technology gives us many new techniques to manage technical assets as a system. Digitalization facilitates integration, which improves sustainability, for instance, by making maintenance activities more targeted. Digitalization also poses significant challenges on how to access and meaningfully use data, especially across utilities (Aben et al., 2021; Rijksoverheid, 2020). Digitalization and integration are areas where the field of OSCM has developed useful insights and where it can add value to purely technical asset management (Fransoo et al., 2020). Digitalization offers enormous potential for managing and maintaining utility assets as a system, thereby reducing repair and replacement costs, while extending technical lifetimes and so flattening the huge replacement investment curve.

THE TOPIC'S RELEVANCE TO OM RESEARCHERS AND PRACTITIONERS

Within asset management for utilities, one can distinguish four main phases within the overall life-cycle (Browning and Honour, 2008): planning, acquisition, operations and maintenance, and disposal. While OSCM research would typically consider the planning phase in conjunction with (any of) the subsequent processes, the acquisition phase poses specific operations and supply chain challenges, for instance in contracting strategies for public authorities. One interesting development is that some public authorities are developing new contracting strategies, moving away from a project-by-project approach, in order to deal with the needs for efficiency, speed, and standardization when facing large-scale challenges, such as Amsterdam's crumbling bridges and canal walls (New York Times, 2021).

In the operations and maintenance phase, the role of information technology in supporting information and process integration within and between organizations is well established (Kache and Seuring, 2017; Venkatraman, 1991). In the disposal phase, research on closed-loop supply chains (CLSCs) offers useful insights (e.g. Atasu et al., 2008), although asset management of utilities poses specific challenges with regard to environmental sustainability. For instance, in road and waterways infrastructure, identification and separation of waste and recyclable material streams pose serious challenges because of the extended lifetime these materials have been in service. At the same time, the benefits of improved reuse and recycling would be substantial: Concrete and its main ingredient cement constitute a hugely important resource for public infrastructures but also contribute substantially to CO_2 emissions.

Overall, operations and asset management for utilities has not gathered substantial research interest in terms of empirical studies from an OSCM perspective. For instance, one study found only 4% of the industry-specific studies in OM covering the energy sector (Joglekar et al., 2016). There are several related literature streams, many of which focus on the scheduling and delivery of services using these utility assets (and other resources), for instance in public transport services (Dollevoet et al., 2015) and healthcare (Johnston et al., 2019). Studies of asset management, including utility assets, are traditionally more prevalent in the fields of (civil) engineering and public policy. We believe that studying asset management for utilities from an operations perspective, applying empirical research methods, could bring several benefits. Empirical studies could help us to move beyond a prescriptive review of the technical possibilities to the analysis of implementation challenges and benefits with respect to the acquisition, operations and maintenance, and disposal of utility assets.

EXAMPLES OF SUB-TOPICS WITHIN THE SCOPE OF THE SPECIAL ISSUE

Studying the setting of public infrastructures provides a great opportunity to expand the scope of OM and test and improve our theories and methods. Furthermore, there is a strong societal need for the OM discipline to add value to the operations and management of public

utilities, a crucial part of our society, yet relatively understudied. This special issue invites and integrates research that studies:

- The impact of operations and management of utilities and infrastructure on sustainability and the United Nations Sustainable Development Goals
- The specific challenges that utilities provide in terms of disposal and closed-loop supply chains
- Aligning utility asset management and performance and societal value
- Utility asset acquisition strategies: how public clients and private vendors collaborate within and across projects
- The impact of policy and governmental regulations on the ability of organizations to leverage the potential that digitalization offers
- Utility asset governance for preparedness for disruptive impacts
- Technology adoption and integration in infrastructure operations
- How AI and big data are used for smart operations, management, and maintenance of public utilities
- The impact of digitalization on the roles and performance of public utilities operations staff

We are *not* aiming to attract submissions that deal with (scheduling, designing, delivering) services that (partly) draw on these utility assets, such as healthcare services, public transportation services, and energy 'prosumption'. This special issue is open to any methodological approach that fits the scope of *JOM* (see Browning and de Treville, 2018), including, but not limited to, case studies, surveys, (international) cross-sectoral studies, field and laboratory experiments, simulation-based studies, design science, and intervention-based research. Developing or extending OM theory is a key requirement: Studies that merely discuss the application or implementation of new processes and technologies in public infrastructures without offering clear theoretical insights will not be considered. Similarly, modelling papers should meet the journal's criteria for empirically grounded analytics (Browning and de Treville, 2018). Papers exploring best practices through case studies with primary or secondary data are welcome.

SPECIAL ISSUE GUEST EDITORS:

Henk Akkermans is a Full Professor of Supply chain Management at Tilburg University, the Netherlands. His research addresses the issue of how interorganizational supply chains and networks, where no single party exerts full control, can nevertheless effectively coordinate their behavior. His focus is on technology- and innovation-driven sectors. Henk is also the Director of the World Class Maintenance Foundation in the Netherlands, an industry association that promotes open innovation and education in innovative service, maintenance and asset management. He has published his research in a variety of management journals, such as *JOM*, *Academy of Management Journal*, *Information Systems Journal*, *International Journal of Operations and Production Management*, *International Journal of Production Research*, *Journal of Production Innovation Management*, and *Journal of Supply Chain Management*. Henk is a member of the Editorial Review Board at *JOM*.

Wendy van der Valk is the Nevi Chair in Purchasing & Supply Chain Management at Tilburg University, the Netherlands. Her research focuses on the effective governance of inter-organizational relationships, specifically the contracting of business-critical services, in relation to contemporary transitions in business and society, such as digital transformation and circularity. Recent research projects have focused on the use of performance-based contracts for outsourced infrastructural maintenance at Dutch Water Authorities, and organizational

impediments to data-driven decision-making and innovation by Dutch public infrastructures. She has published in journals such as *International Journal of Operations and Production Management*, *Journal of Purchasing and Supply Management*, and *Journal of Supply Chain Management* and serves on the Editorial Review Boards of *Journal of Purchasing & Supply Management* and the *Journal of Supply Chain Management*.

Finn Wynstra is a Full Professor of Purchasing and Supply Management at Rotterdam School of Management, Erasmus University (Netherlands) and a fellow of the Erasmus Research Institute of Management (ERIM). His research focuses on purchasing and supply management, in particular the interplay of supply and innovation processes, and buyer-supplier relations in business service contexts. His work has appeared in journals spanning different disciplines, with an emphasis on the OM domain, including *JOM*, *Journal of Supply Chain Management*, and *Journal of Purchasing and Supply Management*. He serves as an Associate Editor for *JOM* and on the Editorial Boards of the *Journal of Purchasing and Supply Management* and the *Journal Supply Chain Management*, and is a past Editor of the *Journal of Purchasing and Supply Management*.

Luk van Wassenhove is emeritus professor of technology and operations management and the Henry Ford Chaired Professor of Manufacturing, Emeritus at INSEAD. He currently focuses on aligning business models and new technologies with the UN Sustainable Development Goals—e.g., closed-loop supply chains, circular economy, and disaster and health logistics. He recently co-edited special issues on humanitarian operations for *JOM*, *Production and Operations Management*, and *European Journal of Operational Research*. In the past, he conducted ground-breaking work on learning and the evolution of best practices in manufacturing and operational excellence and on managing reverse supply chains, and he is a former Department Editor for *JOM*.

TIMELINE:

Manuscript submissions:	October 31, 2022
First round review:	January 31, 2023
Second round revision submission:	April 30, 2023
Final round review and decisions:	July 31, 2023

We welcome manuscripts on an earlier schedule where possible. We are planning to host special tracks/sessions at relevant conference, where submissions can be presented and discussed (EurOMA 2022, POM International 2022 and ISNGI 2022).
Manuscripts should conform to the instructions given in the Guide for Authors for *JOM*.

REFERENCES

Aben, T.A.E., Van der Valk, W., Roehrich, J.K., & Selviaridis, K., (2021). Managing information asymmetry in public-private relationships undergoing digital transformation: The role of contractual and relational governance. *International Journal of Operations & Production Management*, Accepted/ in press.

ASCE (2021). *Report card for America's Infrastructure*. Accessed on March 10, 2021 at https://infrastructurereportcard.org/cat-item/bridges/

Atasu, A., Guide, V. D., & Van Wassenhove, L.N. (2008). Product reuse economics in closed-loop supply chain research. *Production and Operations Management*. 17(5): 483-496.

Browning, T.R. & Honour, E.C. (2008). Measuring the Life-cycle Value of Enduring Systems. *Systems Engineering*, 11(3): 187-202.

Browning, T.R. & de Treville, S., (2018). Editorial: New Developments at the *Journal of Operations Management*. *Journal of Operations Management* 64, 1-6

Fransoo, J., Angelopoulos, S., Bendoly, E., Ou, C., Hoberg, K., & Tenhiälä, A., (2020). Operations Management in the Age of Digital Transformation. Call for Papers Special Issue of the *Journal of Operations*

Management. Available at: https://onlinelibrary.wiley.com/pb-assets/assets/18731317/JOM%20CFP%20-%20Digital%20Transformation-1592928554477.pdf

Holmström, J., Holweg, M., Lawson, B., Pil, F.K.,& Wagner, S.M., (2019). The Digitalization of Operations and Supply Chain Management: Theoretical and Methodological Implications. *Journal of Operations Management* 65, 728-734

Joglekar, N.R., Davies, J., & Anderson, E.G. (2016). The role of industry studies and public policies in production and operations management. *Production and Operations Management* 25, 1977-2001

Johnston, D, Diamant, A, & Quereshy, F. (2019). Why do surgeons schedule their own surgeries? *Journal of Operations Management*, 65: 262–281. https://doi-org.eur.idm.oclc.org/10.1002/joom.1012

Lanzolla, G., Lorenz, A., Miron-Spektor, E., Schilling, M., Solinas, G., & Tucci, C., (2018). Digital transformation: What is new if anything? *Academy of Management Discoveries* 4, 378-387

Matta, N.F., Ashkenas, R.N., 2003. Why good projects fail anyway. *Harvard Business Review* 81 (9), 109-116

Moss Kanter, R., (2015). *Move. How to rebuild and reinvent America's infrastructure.* Norton & Co, New York.

New York Times, (2021). Sinkholes, Collapsing Canal Walls, Rickety Bridges: Amsterdam Is Crumbling, 5 June 2021, https://www-nytimes-com.eur.idm.oclc.org/2021/06/05/world/europe/amsterdam-crumbling-infrastructure-canals.html#click=https://t.co/Hb8tERS4PQ

Ramasesh, R.V., Browning, T.R., 2014. A conceptual framework for tackling knowable unknown unknowns in project management. *Journal of Operations Management* 32 (4), 190-204

Rijksoverheid, (2020). Dutch Digitalisation Strategy: Dutch vision on data sharing between businesses. Ministry of Economic Affairs and Climate Policy, The Hague, the Netherlands

Rinaldi, S.M., Peereboom, J.P., & Kelly, T.K., (2001). Identifying, understanding, and analyzing critical infrastructure interdependencies. *IEEE Control Systems Magazine* 21, 11-25.

Salvador, F., Alba, C., Madiedo, J.P., Tenhiälä, A., Bendoly, E., 2021. Project managers' breadth of experience, project complexity, and project performance. *Journal of Operations Management* (early view)