

Department of Supply Chain Management

W.P. Carey School of Business Arizona State University

Health Sector & Public Health Supply Chain Capabilities & Competencies

OVERVIEW

In the era of COVID-19, supply chain and logistics management is the key to protecting health care workers and the general population. The shortages of supply of personal protective equipment places those on the front line at great risk. Failures to anticipate need and to build inventories reflects the inattention by policymakers and government to heed projections of demand during a pandemic. This is a time to recognize and mitigate, moving forward the challenges of transitioning from an everyday medical care delivery supply chain to a supply chain that successfully incorporates public health events. Faculty at the Department of Supply Chain Management at ASU are prepared to provide support to provider organizations, public health organizations, government, distributors and group purchasing organizations. This document provides insight into our competencies and capabilities to engage deficiencies in supply chain factors associated with a pandemic including:

- Assessing and modeling supply chain processes, needs, disruptions and demand
- Supporting suppliers/manufacturers in the efforts to meet production demands
- Designing distribution, contracting and purchasing processes to meet local, regional and national requirements
- Advising government, foundations and others in the design and redesign of supply chain
- Modeling short, intermediate and long-term strategies
- Assessing evolving supply shortages and disruption risks as the pandemic evolved
- Employing technologies, including IoT, to improve supply chain performance

We are prepared to consider your needs for research, consultation and education. For more information, please contact:

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WHO WE ARE

ASU's Department of Supply Chain Management (ASU-SCM) has been providing thought leadership in the area of health sector supply chain for over a decade. ASU-SCM is ranked #2 by U.S. News and Review and is distinguished by a large number of faculty who can provide support for advancing health sector supply chain performance in both the private and public sectors and to support the response to supply chain challenges emanating from health supply chain disruptions associated with natural disasters, humanitarian logistics challenges and pandemic related risks and responses.

ASU-SCM provides expertise for addressing key issues in health sector supply chain, namely supply chain strategy, management, procurement, operations and logistics. We have experience in modeling, forecasting and analyzing supply chains from end-to-end. Our faculty research focuses on domestic and global frontiers from Africa to Asia and Australia and from Europe to South America. ASU-SCM health sector supply chain research has had a strong focus on health sector provider organizations, suppliers and their networks, distributors and group purchasing organizations. The attached bibliography provides resources on issues across the health care supply chain and public health supply chain management.

The department employs over twenty-five faculty members who are globally recognized for expertise in supply chain management and logistics. The mix of faculty interests ensure the ability to provide advice to government and industry, design and deliver needed research, support development and deliver educational programs.

PERSPECTIVE

While managing health sector supply chains under stable-time perspectives is highly important for health care system sustainability and clinical performance, managing health sector performance under conditions of disruptions associated with weather/climate as well as epidemics has the additional value of protection to populations and organizations at risk. The World Forum has identified this focus as a key to global safety. (<https://www.weforum.org/our-impact/outsmarting-epidemics>)

Supply chain functions encompasses far more than just shipping, storing and issuing supplies. They also involve policy and governance strategies to meet needs across varying circumstances. Extensive integration of procurement, forecasting, production, inventory and financial planning create a seamless, continuously adjusted, end-to-end system that is the hallmark of the most effective supply chains. Also, for supply chains to operate smoothly each link should be synchronized and be supportive of the operation of the chain as a whole. Responsive supply chains focus more on moving things and less on storing them. Hence, inventory optimization has become the mantra. ASU-SCM has expertise in the full range of areas to achieve an effective and responsive supply chain.

ASU-SCM can play a critical role to government, NGOs, and the private sector by providing technical assistance to improve supply chain management. Our strong capability in developing and delivering customized content through many mediums (example face-to-face Vs. Internet) can strengthen the knowledge-base of the global operators in the global network. This training and assistance can encompass end-to-end supply chain training on issues such as strategic procurement, logistics network analysis, warehouse location and inventory optimization, operational process analysis and variability reduction, quality control and project and risk management.

ASU-SCM's long history of world-class research in areas such as supply chain networks, supplier collaboration and trust, data integrity issues, optimizing flows of goods and information, managing risks through improving supply chain visibility, improving sustainability practices in procurement, operations and logistics and employment of technologies (e.g., IoT) provide important learnings for those managing in a period of supply chain uncertainty and stress.

UNIQUE COMPETENCIES AND CAPABILITIES

Health Industry Stakeholder Engagement. Health Sector Supply Chain Research Consortium (HSR-ASU). The Health Sector Supply Chain Research Consortium, is an innovative university-based collaborative designed to solve complex cross-cutting problems, is a collaborative effort between ASU-SCM and CAPS Research. The Consortium brings together competing and complimentary organizations to define supply chain research, elevate the standard of management and delineate managerial strategies that optimize cost and clinical effectiveness, safety and sustainability." HSRC-ASU brings a unique capability to engage in public/private efforts to solve complex supply chain problems.

Knowledge creation. ASU-SCM has been the home of the leading journal in health care supply chain, *IIE Transactions on Healthcare Systems Engineering* and the prestigious *Journal of Operations Management* and *Journal of Supply Chain Management*. Our research has supported the performance of public health organizations, hospitals, group purchasing organizations, and distributors. Government recipients of our research include county health departments and USAID.

Supply chain design. ASU-SCM have expertise in the design and assessment of sourcing and purchasing strategies, especially group purchasing /mutualisation models as utilized in both the US and EU. These models are especially important in public health and global supply chain management. The development of value analysis strategies to assess innovative and new products and appropriate procurement strategies as the result of product categorization and segmentation will be critical to procurement operations. ASU-SCM has a strong understanding of the importance of clinician input in product selection and challenges associated with product conversion and adoption of innovative products.

Collaborative purchasing models. We bring to the table our relationship with major health sector group purchasing organizations which have developed models to efficiently carry out

sourcing, procurement and contracting. Faculty have contributed to think-tank work in this area with the Center for Global Development.

Sustainability. ASU-SCM is a national leader in the area of system strengthening and sustainability. Professor Crag Carter and Professor Thomas Choi are considered the leading researchers in the area of network analysis and Professor Craig Carter has been a pioneer in the area of sustainable purchasing. In-Country Logistics: ASU-SCM has experience in working with local and national organizations in humanitarian logistics and related projects. These deal with moving goods and services for the needy. As discussed in greater detail below, we have significant experience in online education at various levels. We have also developed customized executive education materials in strategic procurement, logistics (combining both engineering and management) and quality management. Also, patient flow models have been developed with hospital systems to optimize resources and improve quality of care. Professor Kevin Dooley, co-directs the Sustainability Consortium (<https://www.sustainabilityconsortium.org/what-we-offer/>) an organization of diverse global participants that work collaboratively to build a scientific foundation that drives innovation to improve consumer product sustainability. It develops transparent methodologies, tools, and strategies to drive a new generation of products and supply networks that address environmental, social, and economic imperatives.

Capability building. Through engagement with global organizations such as Chenomics and USAID and Red Cross, ASU-SCM has led projects that have dealt with analytical models for complex large-scale problems such as “location of warehouses and the design of the network” and also involved in capacity building measures such as transfer of skills, knowledge and technology. We provide support to those seeking to create enabling environments. ASU is the lead organization in the U.S. Defense Health Agency’s effort to incorporate supply chain best practices into its evolution into a fully integrated supply chain organization.

Human resource development. ASU-SCM has unique competencies and the capability to enhance human resource development for successfully supply chain performance. ASU-SCM is a nationally recognized leader in education for supply chain management. Educational programs incorporate core business knowledge with the broad expertise of one of the top-ranked supply chain programs in the United States. Our programs integrate all aspects of products and their service life cycles, from design to delivery to disposal. Our goal is to train managers to be strategic thinkers, excellent analysts, effective communicators and team leaders who are focused on cost savings and increasing revenue. We offer undergraduate and graduate degrees in supply chain management as well as an on-line certificate program as well as an undergraduate program in logistics management.

We have the competencies and capabilities to assess the presence of supply chain training programs at national and institutional levels and can develop strategies for supply chain management education for practitioners as well as aspirants and develop programs to professionalize the supply chain workforce. ASU-SCM has world class competencies and capabilities in developing distance learning programs – a capability that can be brought to the project. Our students also have access to the latest learning technologies: Gmail for ASU and

other Google apps, dozens of state-of-the art software titles, the university's Facebook application, available exclusively to ASU students, as well as 24/7 research assistance and tech help. ASU currently has over 100 online programs include the online certificate in supply chain.

Governance leadership. ASU-SCM has extensive experience in developing programs related to supply chain governance and leadership. Faculty have extensively scrutinized codes of conduct as they relate to contracting and procurement. To advance the goals of promoting the participation of citizens, civil society and the private sector, we are working to develop metrics that reflect performance/accountability and the contribution of efficient and effective supply chain management. ASU-SCM is the home of the Center for Advanced Purchasing Studies (CAPSresearch.org) which, under the leadership of Professor Thomas Choi, a professor in the Department of Supply Chain Management, carries out benchmarking on the pharmaceutical industry. The Health Sector Supply Chain Research Consortium, under the direction of Professor Schneller, is an Industry/University collaboration with membership by pharmaceutical companies, major suppliers, group purchasing organizations, information technology companies and providers of care.

Collaborating Organizations and Clients. Faculty have had research and advisory engagements to improve supply chain system performance and acquisition of health commodities. We have worked with Chemonics, Defense Health Agency, Center for Global Development, Homeland Security and USAID. Provider organizations with which we have worked include Banner Health, Dignity Health, Catholic Health Initiatives, Mayo Clinic, Honor Health, University of Pittsburgh Medical Center, Mercy Healthcare, Maricopa Consolidated Health System, King Faisal Hospital, the English National Health Service.

FACULTY PUBLICATIONS

Pandemics

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Pandemic Impact

Eddie Davila, Off The Chain - <https://www.youtube.com/watch?v=uUowWfdtDCU>

Eugene Schneller, If We Don't Act Now Supply Chain Shortages Will Continue Long After the Pandemic, <https://www.fastcompany.com/90490010/if-we-dont-act-now-health-care-supply-shortages-will-continue-long-after-coronavirus>

Supply Chain Disruptions

The Power of Social Capital – a focus on disruptions.

<https://wpcareymagazine.com/issue/spring-2020/the-power-of-social-capital/>

Polyviou, M., Croxton, K.L., and Knemeyer, A.M. 2019. Resilience of Medium-Sized Firms to Supply Chain Disruptions: The Role of Internal Social Capital. *International Journal of Operations and Production Management* 40(1): 68–91.

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Polyviou, M., Ramos, G., and Schneller, E. 2019. Special Issues Report: Supply Chain Risk Management & Recall Management. Report presented as ASU-MEDLOG Project, submitted to Defense Health Agency. Under Contract Number: W81XWH-15-9-0001.

Emergency response and Technologies

Ramirez-Nafarrate, A., Araz, O., and Fowler, J., “Decision Assessment Algorithms for Location and Capacity Optimization under Resource Shortages”, *Decision Sciences*, to appear.

Ramirez-Nafarrate, A., Lyon, J., Fowler, J., and Araz, O., “Point-of-Dispensing Location and Capacity Optimization via a Decision Support System”, *Production and Operations Management*, Vol. 24, No. 8, pp. 1311-1328, 2015.

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- Abdulsalam, Yousef, et al. "The impact of physician-hospital integration on hospital supply management." *Journal of Operations Management* 57 (2018): 11-22.

Supply Chain Information Technology

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