

SEMINAR SERIES
Department of Quantitative Analysis and Operations Management
College of Business Administration
University of Cincinnati

**Evaluating Transportation, Inventory, and Location Relationships in Supply Chain
Network Design Models**

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214 Lindner Hall

Inventory plays an important role in supply chains of manufacturers and distributors. Often one of the greatest benefits from implementing the supply chain approach is the resulting reduction in inventories. This reduction comes through reducing lead-times, lowering levels of uncertainty at upstream points in the chain, and the elimination of redundant facilities and inventory stock points. It is an interesting paradox, then, that the mathematical programming-based models frequently employed to design supply chain networks generally model inventory issues rather crudely if at all. The purpose of this presentation is to set forth a methodology for more explicitly considering the trade-offs and interactions inherent in transportation, inventory, and location alternatives when using mathematical programming models to determine optimum supply chain networks. We begin with a review of mathematical programming techniques and applications in logistics, and then a discussion of transportation, inventory, and location issues. Following this background, we present the proposed methodology.

Dr. Stenger received his Ph.D. from the University of Minnesota and his MBA and BS (mathematics) degrees from the University of Michigan. Since joining the Penn State faculty in 1972, he has taught courses in supply chain management, logistics systems management, logistics research methods, carrier management, transportation economics and quantitative methods in logistics. He was Graduate Advisor for the Department of Business Logistics for 16 years, and is currently Associate Director of the Center for Logistics Research.

His research interests focus primarily on the organization and management of supply chain and logistical activities in manufacturing and merchandising firms. Another thrust of his research deals with the marketing of transportation services to logistics professionals.

Active in executive education, Stenger is the Faculty Director for Penn State's ten day Program for Logistics and Supply Managers—which is offered yearly—as well as serving as a faculty leader for several public and company-specific supply chain programs through the Center for Logistics Research. He has also conducted a number of management development programs for executives in the Europe, Australia, Southeast Asia, and Latin America.

Dr. Stenger gained applied professional experience at the Dow Chemical Company where he was manager of distribution planning for consumer products, distribution systems specialist, and an operations analyst. Since then he has engaged in a wide range of consulting and management programs with firms such as AT&T, Bell-Atlantic, Conrail, Consolidated Aluminum, Corning Glass Works, Dow Chemical, EDS, GE, GTE, Hoechst-Celanese, HomeCrest, IBM, Johnson & Johnson, Koppers, Merck, Pennsylvania House, Procter & Gamble, and Shell Chemical.

A frequent speaker at professional meetings in the United States and Europe, Stenger participates in several organizations devoted to the advancement of the field. He has been chairman of research for the Warehousing Education and Research Council, served as a member of the Freight Quality Service Committee of the Transportation Research Board, and was a developer of the Logistics Examination in Resource Management for the American Production and Inventory Control Society (APICS). He is a member of APICS, CLM, the Decision Sciences Institute, the International Society for Inventory Research, INFORMS, and NAPM.