

## **Supply Chain Quality Management: A Simulation Study**

*Chu-hua Kuei*  
Pace University  
U. S. A.

*Christian N. Madu*  
Pace University  
U. S. A.

*Janice K. Winch*  
Pace University  
U. S. A.

### **Abstract**

This paper demonstrates the application of a sequential experimentation and simulation metamodeling to supply chain quality modeling. The supply chain simulation model examines the effectiveness of supply chain operations, demand uncertainty, supply chain speed, and quality and distribution issues. The effects of critical supply chain factors on quality and speed of a supply chain network are investigated. Our results show that demand and supply uncertainties do not determine the viability of the supply chain networks. Rather, the viability of supply chain networks is primarily determined by supply chain quality (SCQ). The approach presented in this paper can be extended to all areas of supply chain quality management and development. This study is based on the use of statistical experimental design methods and simulation metamodeling.

*Keywords:* Simulation, Supply Chain Quality Management, Taguchi Design.