

Supply Chain Flexibility and Performance under Uncertainty in Indian Automotive Industry

Parveen Farooque

Department of Mechanical Engineering
Aligarh Muslim University
Aligarh (India)
parveenfarooque@yahoo.com

Abstract

An extensive literature review by Simangunsong et al. (2012) identifies as many as fourteen sources of supply chain uncertainty. Christopher and Lee (2004) find it difficult for supply chains to be efficient if they are highly exposed to risk and uncertainty. The authors further argue that risks reduce the confidence of managers in supply chains and hence increase the expected loss of performance. Supply chain flexibility is the ability of the partners in the chain to respond to disruptions efficiently with minimum loss of performance. The majority of academic work on manufacturing and supply chain flexibility describes flexibility as a response to, or a means to cope with, uncertainty (Upton, 1995; Bertrand, 2003; Sheffi and Rice, 2005). Literature also establishes a positive linkage between flexibility and performance.

The present paper, a portion of a larger study conducted by the author, investigates the role of supply chain flexibility in reducing the impact of uncertainties on performance in the automotive supply chains in India. Automotive supply chains are among the most complicated chains to manage because of the involvement of enormous number of suppliers and the associated uncertainties. In the recent past, automotive industry in India and in other parts of the world has experienced loss in performance due to disruptions from within and outside the chains. The Indian auto industry has a share of around 5-6 per cent in the country's GDP, which is further expected to go up to 10 per cent in the year 2016 (AMA, 2006).

Manufacturers of auto components operating at tier 1 and tier 2 levels of various supply chains in the industry are considered as the primary unit of analysis. A structured questionnaire was administered to manufacturers of auto components using convenience sampling method. The relationship between flexibility and performance in the presence of uncertainty has been examined using correlation and regression methods. The study confirms the negative impact of uncertainty on performance and also that flexibility and uncertainty co-varies but in different directions. This implies that flexibility reduces the impact of uncertainty. However, performance is found to be positively linked with flexibility.

Keywords

Supply chain flexibility, Supply chain uncertainty, Supply chain performance and automotive industry

Biography

Parveen Farooque is an Associate Professor of Industrial and Production Engineering in the Department of Mechanical Engineering at Aligarh Muslim University (AMU), Aligarh, India. She joined the Department in 1994. She did her graduation in Mechanical Engineering followed by masters in Industrial and Production Engineering from AMU. Her areas of interest for teaching and research include Industrial Engineering, Engineering Economy and Management, Probability and Statistics, and Quality Engineering. She has recently submitted her doctoral thesis

on Uncertainty Considerations in Supply Chains. She has contributed to conferences and journals on the subjects related to Industrial Engineering and Management.