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International Journal of Production Economics

Special Issue

Flexible and Robust Supply Chain Forecasting Systems

Special Issue Guest Editors

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Introduction

The financial tsunami triggered by sub-prime mortgages in the US has spread all over the world. The speed and severity of the current financial crisis have created a tremendous adverse impact on business and industry, especially the manufacturing sector. In situations like this, academic researchers and industrial practitioners have to tackle head-on the challenges of dealing with the *bullwhip effect*. As we know, the bullwhip effect means that distortions in data cascade or amplify through a company's supply chain. Thus, it is very important that business and manufacturing firms build flexible and robust supply chain forecasting systems that allow them to react quickly to mitigate the negative impacts of the bullwhip effect.

The manufacturing industry is rife with many inherent management challenges, such as volatile demand, customized products, and short product life cycle. In the traditional supply chain forecasting and planning system, the processes of determining production levels, raw-material purchases, shipping capacity, and other key decisions largely rely on the examination of historical demand patterns. The flexibility and robustness of such a system is very limited, rendering it unable to respond to the

rapidly and constantly changing environment. For example, a sharp increase in the ratio of inventory to sales caused by an unexpected drop in demand can wreak havoc on a company. Therefore, there is an urgent need to develop flexible and robust supply chain forecasting systems that enable firms to make quick response to market changes.

The sustainability of a business relies critically on the effectiveness of its supply chain forecasting system. The challenge of forecasting is particularly acute in many upstream industrial settings because these upstream partners in the supply chain appear to be decoupled from downstream consumption. There is a need to rebuild and strengthen this link with a more flexible and robust supply chain forecasting system.

This special issue of the *International Journal of Production Economics* is devoted to publishing new and significant results on developing flexible and robust supply chain forecasting systems under dynamic market demands. In view of the recent advances and breakthroughs in Computational Intelligence, various techniques such as Neural Networks, Fuzzy Theory, and Evolutionary Algorithms can be deployed to make more reliable and accurate demand forecasts. New tools, techniques or models that can be applied in the development of flexible and robust supply chain forecasting systems are all welcomed. Potential topics (but not limited to) include:

- Factor selection for effective forecasting
- Data mining for demand forecasting
- Computational intelligence applied in demand forecasting systems
- New tools or techniques for demand forecasting
- Supply chain forecasting systems
- Demand forecasting and inventory planning
- Performance model for supply chain management
- Efficient evaluation of performance indices for supply chain management

Manuscripts will be considered for publication that focus on theory development, methodological advances, or new forecasting models using Computational Intelligence tools, or new performance indices or evaluation models that make a significant contribution to the field or demonstrate successful application of flexible and robust supply chain forecasting systems in practice. Papers within the following scopes are particularly encouraged:

- (i) applying new tools or models in supply chain forecasting to deal with forecasting and inventory management issues,

- (ii) developing performance indices or models for evaluating the bullwhip effect in supply chain operations,
- (iii) Studying existing industrial practices and devising effective strategies and new models to react to dynamic market demands for a robust and flexible supply chain forecasting system.

Manuscript Preparation and Submission

To prepare their manuscripts, authors are asked to closely follow the “Instructions to Authors” that is presented at the back of any recent issue of the *International Journal of Production Economics*. Authors should submit their papers via the EES <http://www.ees.elsevier.com/ijpe/> and select “Special Issue: Flexible and Robust Supply Chain Forecasting Systems” when asked to indicate the “Article Type” in the submission process. Submitted papers should not have been previously published nor be currently under consideration for publication elsewhere. Manuscripts will be refereed according to the standards of *IJPE*.

Publication Schedule

INFORMATION	DEADLINE
Manuscript submission	31 December 2009
Reviewer reports	31 March 2010
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