Outline of

CHAPTER 18: COLLABORATIVE FORECASTING AND ITS IMPACT ON SUPPLY CHAIN PERFORMANCE

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1. INTRODUCTION

- Collaborative commerce – the industrial perspective.
  - Main streams of collaboration (brief)
    - Collaborative design
    - Collaborative forecasting
    - etc.
  - Collaborative Planning, Forecasting and Replenishment
    - Definition.
    - What does it promise?
    - Challenges, etc. (brief).
- Objectives of this chapter:
  - Survey of relevant literature.
  - Present several stylized models – insights, building blocks for decision support systems, etc.

2. MODELS FOR FORECAST EVOLUTION – LITERATURE REVIEW

- A single-location setting
- Bayesian models
  - Characterization of optimal policies
- Unknown demand characteristics
  - Naïve forecasting techniques
    - Impact on variability propagation
- Linear state space models
  - Martingale models for forecast evolution
3. A General Model for Collaborative Forecasting

- A linear state space model for settings with decentralized information structures
  - Forecasting and Inventory Replenishment
  - Modeling collaboration
- CF in supply chains facing stationary demand processes
  - Models and insights
- CF in settings with auto-correlated demand
  - Motivation, models, and insights
- Settings with imperfect knowledge of demand characteristics

4. Cost Analysis

- Models for cost assessment.
  - Decoupled supply chains
  - Coordinated supply chains

5. The Benefits of Demand Information Sharing in the Supply Chain – Potential Applications

- Sharing values of demand realizations – previous models
  - The ARIMA model (Graves’ 1999, M&SOM)
  - The AR(1) model (Lee et al. 2001, Management Science)
- Potential applications
  - Multi-retailer settings
  - Further illustrations

6. Other Research Paths on the Topic of Collaborative Forecasting

- The relationship between pricing and forecast sharing in the supply chain
- Collaborative inventory management -- capacity and flexibility considerations

7. Summary

- Directions for future research.