Chapter 9

COORDINATION OF PRICING AND INVENTORY DECISIONS:
A Survey and Classification

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1. Introduction
1.1 Motivation

Recent years have seen scores of retail and manufacturing companies exploring innovative pricing strategies in an effort to improve their operations and
ultimately the bottom line. Firms are employing such varied tools as dynamic pricing over time, target pricing to different classes of customers, or pricing to learn about customer demand. The benefits can be significant, including not only potential increases in profit, but also improvements such as reduction in demand or production variability, resulting in more efficient supply chains.

Pricing strategies such as dynamically changing the pricing of products are an important revolution in retail and manufacturing industries driven in large part by the Internet and the Direct-to-Customer (DTC) model. This business model, used by industry giants such as Dell Computers and Amazon.com, allows companies to quickly and easily change prices based on parameters such as demand variation, inventory levels, or production schedules. Further, the model enables manufacturers to collect demand data more easily and accurately [142].

Employing a DTC model over the Internet means that price changes are easy to implement, and the cost to make changes is very low without catalogs or price stickers to produce. Further, the Internet offers an unprecedented source of information about customer preferences and demand. Many examples of dynamic and target pricing can be found on the Internet; for example, online auctions allow buyers to bid on everything from spare parts to final goods or companies use questionnaires to determine market segmentation for product prices and offerings.

Initially, many firms and researchers focus on pricing alone as a tool to improve profits. However for manufacturing industries, the coordination of price decisions with other aspects of the supply chain such as production and distribution is not only useful, but is essential. The coordination of these decisions mean an approach that optimizes the system rather than individual elements, improving both the efficiency of the supply chain and of the firm. This integration of pricing, production and distribution decisions in retail or manufacturing environments is still in its early stages in many companies, but it has the potential to radically improve supply chain efficiencies in much the same way as revenue management has changed airline, hotel and car rental companies. Thus we are motivated in this paper to consider strategies which integrate pricing decisions with other aspects of the supply chain, particularly those related to production or inventory.

1.2 Scope

Pricing is a significant and important topic, and there are many aspects of it that offer challenges to companies and researchers alike. In this chapter, we will focus on one aspect of pricing—when it is integrated with inventory and production decisions. We review research in this area because it is an important