Chapter 1

Introduction

A central premise in economics is that prices adjust to match supply with demand: if there is excess demand, prices rise; if there is excess supply, prices fall. But while an economist may find comfort with this theory, managers in practice often do not. To them excess demand means lost revenue and excess supply means wasted resources. They fully understand that matching supply with demand is extremely difficult and requires more tools than just price adjustments.

Consider the following examples:

- In 2006, Nintendo launched the Wii game console with much success—so much success that the company could not make enough units to keep up with demand. Some entrepreneurs would wait in long lines to purchase scarce units only to turn around and sell them online for several hundred dollars over the retail price.
- In 2007, Dell lost its worldwide market share leadership to HP. Trying to regain momentum, Dell offered laptop computers to consumers in various colors. Unfortunately, problems with dust contamination in the painting process prevented Dell from ramping up production, causing long delays, which in turn caused some customers to cancel their order.
- At 4 p.m. on weekdays, it is hard to find a taxi in Manhattan because that is when taxis tend to change between shifts. Consequently, customers wait longer for a cab.
- In March 2011, a massive earthquake hit Japan, followed by devastating tsunamis. Supplies for some key automobile and electronic components were unavailable or scarce for months, disrupting production around the globe.
- In 2008, Boeing was unable to deliver on time its new 777s to Emirates Airlines because growth in demand caught its supplier of kitchen galleys off guard and short on capacity.
- In early 2002, a victim of a car crash in Germany died in a rescue helicopter after the medical team together with their dispatcher had unsuccessfully attempted to find a slot in an operating room at eight different hospitals. In the United States, every day there are thousands of patients requiring emergency care who cannot be transported to the nearest emergency room and/or have to wait considerable time before receiving care.
- The average customer to Disney World experiences only nine rides per day, in part because of long queues. To give customers a better experience (read, "more rides"), Disney developed several mechanisms to encourage customers to find rides with short or no queues.

All of these cases have in common that they suffer from a mismatch between demand and supply, with respect either to their timing or to their quantities.

This book is about how firms can design their operations to better match supply with demand. Our motivation is simply stated: By better matching supply with demand, a firm gains a significant competitive advantage over its rivals. A firm can achieve this better