IL 6451 Demand and Revenue Management

Various Applications of Revenue Management

Anton J. Kleywegt

Due: November 21, 2003

Readings:

1. Bell, P.C., "Revenue Management: That's the Ticket", *OR/MS Today*, volume 25, number 2, p. 28, April 1998.

2. Boyd, E.A. and Abbott, K., "Case Studies in Contract Management: Improved Revenues Through Stratified Rate Structures", PROS R&D Report CS-H11, June 2000.

3. Cross, R., *Revenue Management*, Chapter 5, pp. 131–157.

4. Robert A. Garda and Michael V. Marn, "Price Wars", *The McKinsey Quarterly*, 1993, number 3, pp. 87-100, `<http://www.mckinseyquarterly.com/article_page.asp?tk=268249:23:16&ar=23&L2=16&L3=19>`.

5. Gray, D.A., "Under Fire: Lessons From the Front", *OR/MS Today*, volume 21, number 5, pp. 18–23, October 1994.

6. Lodish, L. M., "Applied Dynamic Pricing and Production Models with Specific Application to Broadcast Spot Pricing", *Journal of Marketing Research*, volume 17, pp. 203–211, 1980.

7. McKinley, J., "For the Asking, a $480 Seat", *The New York Times*, Friday, October 26, 2001.

8. Pogrebin, R. and McKinley, J., "Mixed Notices For the $480 Ticket", *The New York Times*, Saturday, October 27, 2001.

9. Secomandi, N., Abbott, K., Atan, T., and Boyd, E.A., "From Revenue Management Concepts to Software Systems", *Interfaces*, volume 32, number 2, pp. 1–11, March/April 2002, <http://www.interfaces.smeal.psu.edu/>.

10. Smith, R., "Revenue Management: Hotels, airlines, opera houses hope this tool will help them maximize sales and profits", *San Francisco Chronicle*, Tuesday, May 25, 1999, <http://www.sfgate.com/cgi-bin/article.cgi?file=/chronicle/archive/1999/05/25/BU88902.DTL>.

Questions:
Revenue Management: That's the Ticket:

1. What does the author predict will attract more attention of senior executives than cost reduction in the next 50 years?

2. Which recent development further enhances revenue management?

3. Which types of specialists and companies will be increasingly sought after?

Hospital Contract Case Study:

1. Figure 1 shows the distribution of the length of stay of patients in the Intensive Care Unit. Would it have been sufficient for the subsequent analysis to use only the average length of stay of patients in the Intensive Care Unit? Why or why not?

2. Observe that the standard deviation of the amount charged per patient admission to the Intensive Care Unit is lower for the two stratified per diem rates than for the fixed per diem rate. Is this beneficial to the hospital? Why or why not?
   Is this beneficial to the insurance company? Why or why not?

3. In the case study the authors give an example of the consequences of letting the per diem rate depend on the length of stay of a patient in the Intensive Care Unit. Which other factors could they let the per diem rate depend on, with the objective to improve their revenue?

Revenue Management, Chapter 5:

1. Revenue management provides an intelligent and flexible way of dealing with the many uncertainties facing a business. According to the author, uncertainty should be converted to ……
   How can that be accomplished?

2. What are the seven uncertainties discussed by the author?

3. What are the main uncertainties to be addressed for your company to implement revenue management?

Price Wars:

1. When a new product is introduced in the market, the sellers have to decide on the initial prices for the new product. Often the initial prices are set low "to discourage potential competition from introducing competing products". Does this strategy make good sense? Why or why not? (Hint: potential competition is not concerned with current prices.)

2. Give examples of companies that have introduced new products at low prices to discourage potential competition. Identify the particular products involved, and the introductory prices. Give examples of companies that have introduced new products at high prices. Also identify the particular products involved, and the introductory prices.

3. Describe some causes of price wars.

4. Describe steps that can be taken to reduce the chances of a price war.

5. Describe steps that can be taken to get out of a price war.

6. Describe the events that lead to a particular price war not mentioned in the article, how the price war unfolded, and the outcome of the price war.

Under Fire: Lessons From the Front:

1. In many articles about revenue management the authors state that revenue management can be used to guide the pricing and inventory management of perishable commodities. Consider a company that manufactures nonperishable products. Can such a company use revenue management? Why or why not?

2. Now consider a retailer that sells nonperishable products, such as automobiles. How can such a company use revenue management?

3. What are some of the differences between airlines and manufacturing companies that affect the way revenue management is done?
4. After deregulation, the airlines faced unprecedented stiff competition. Some of them used RM to survive the competition. Is the same true for other companies in the modern economy? What contributes to the increasingly stiff competition? Can they use RM to cope?
5. The article emphasizes the importance of information and knowledge, and states that "revenue-based capacity management systems rely heavily on a technology infrastructure". What are the two major components of this "technology infrastructure"?

Broadcast Spot Pricing:

1. What is the product to be sold in the application described in this article?
2. What type of model was used in the study?
3. What inputs did the model require?
4. What were the decisions in the model?
5. How were the demand probabilities estimated?

A $480 Theater Ticket:

1. Why were the ticket scalpers able to charge exorbitant prices?
2. How are the $480 tickets differentiated from other tickets?

Opera Houses Article:

1. In the San Francisco Chronicle article it is stated that "Any business that has a fixed capacity and a perishable product or service is a candidate for revenue management." Does having a fixed capacity necessarily imply having a perishable product or service? Why or why not?
2. In the San Francisco Chronicle article, David Swierenga, chief economist for the Air Transport Association, is quoted as saying "The real beneficiary of revenue management has been the consumer." It is further stated that "from 1984 to 1998, the cost of air travel declined by 36 percent, although the savings have not been shared evenly." Clearly, customers for which revenue management has decreased the cost of air travel, have benefitted from revenue management. Could customers for which revenue management has increased the cost of air travel, also have benefitted from revenue management? How?
3. Which factors can the opera houses let their ticket prices depend on?
4. Many opera houses and theatres offer tickets at a discount just before the performance starts, if there are still seats available. The airlines used to offer tickets at a discount to standby passengers, if there were still seats available just before departure time. Why would they do that?
   What is the disadvantage of this pricing strategy?

General:

1. Make a list of 10 industries that can use revenue management, and for each of the industries, list the factors according to which prices can vary.