Incorporating Revenue Management into Management Accounting Courses

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Revenue management is a multi-disciplinary topic that has yet to find a clear home in any of several possible academic areas. It is a mix of industry-specific techniques, formal modeling, behavioral science, marketing management, and accounting and financial analysis. Despite its obvious importance to business, it is rarely identifiable as a course in business schools. This paper advances the case for incorporating revenue management into the teaching of management accounting, and discusses the author's experiences in that regard.

INTRODUCTION

Revenue management has existed as a well-defined topic for nearly 30 years, but it has yet to find a clear instructional home. One reason may be the subject's multi-disciplinary nature. Many of its early applications were industry-specific. Revenue management makes heavy use of modeling, depends on an understanding of customer behavior, and involves key marketing, pricing and financial decisions. The assessment of revenue management decisions calls for financial analysis and the use of accounting concepts, yet it has made relatively little impact on accounting instruction. It is the natural counterpart to cost management, and as such should be a component of instruction in management accounting.

What is Revenue Management?

Revenue management is the selective use of pricing and other techniques to influence customer demand for a company's products and services. Its goal is to increase both revenues and profits.

American Airlines is usually credited as the originator of revenue management. In the mid-1980's, new competition arose in the form of low-fare, no-frills airlines; People Express was the best known of these new airlines. They posed a major threat to the established airlines of the time. To combat this threat, American Airlines developed a system of offering matching low fares on routes and times where direct competition existed, while retaining their original fares for non-competitive routes and times. Given that many consumers were leery about flying these unproven carriers, they naturally chose the equivalent price from the well-known airline. This strategy was successful; People Express and other upstart airlines soon ceased to exist.

Once the immediate competitive threat was eliminated, airlines realized they could use similar discounting techniques to sell seats that would otherwise go unfilled. Airlines offer a highly perishable product; once a flight takes off, the opportunity to sell empty seats disappears. Moreover, the costs of an airline flight are almost all fixed: the aircraft, ground support, flight personnel, and most of the fuel costs. If empty seats could be sold at a discount, the resulting added revenue was considered to be mostly pure profit.

One problem faced by airlines was how to restrict the availability of discounted rates to new, discretionary travelers. The primary revenue base was considered to be business travelers, and airlines did not want to compromise their full-fare business. Thus, they attempted to build *rate fences* around the discounted rates, imposing conditions that they felt would be tolerable to discretionary, leisure travelers but much less acceptable to business travelers. One *fence* was advance purchase requirements, usually 14 to 21 days ahead of the flight. A second *fence* was that these discount fares were non-refundable. A third, and very significant *fence*, was the requirement of a Saturday-night stayover. These requirements were designed to be unappealing to the business traveler, but more acceptable to the leisure traveler in search of a low fare. These fences worked for a while, but gradually the fences fell, and discount fares began to expand. The inability to offer discount fares to fill empty seats while protecting its full-fare business led to long-term profit issues for many airlines, and to several bankruptcies.

Meanwhile, other industries with characteristics similar to airlines began to adopt revenue management techniques as well. The early literature suggested that five conditions were needed to be ideal candidates: (1) relatively fixed capacity, (2) perishable service capacity, (3) high fixed costs and low variable costs, (4) demand patterns that were uncertain or varied with time, and (5) some ability to forecast demand (Kimes, 2005). Industries such as hotels, golf courses, car rental, restaurants, air cargo, cruise lines, theaters, and concert performances. All of these offered a perishable service product where unsold capacity was a lost revenue opportunity. The auto industry also became a major user of revenue management techniques, in the form of rebates and low-cost financing, even though its products were not as quickly perishable.

Two of the main early users of revenue management techniques – airlines and automobile manufacturers – have had major profitability problems. Both lost sight of a key part of the above definition, namely the *selective* use of these techniques to enhance revenue. In both industries, discounted pricing soon became the norm, and all customers came to expect low prices at all times. In heavy-fixed cost industries, this was a recipe for disaster.

From these early beginnings, applications of revenue management have spread across all types of businesses. Applications are now found in manufacturing, health care, telecommunications, and retailing, among others. An extensive academic and practice literature has developed. Consulting firms have emerged to offer revenue management services, especially in the hospitality industries. The field is now well established, except for its lack of an instructional home.

Relationship to Management Accounting

Current instruction in management accounting is primarily linked to *cost* management. Indeed, courses in management accounting and cost accounting are sometimes barely distinguishable from each other. While good cost management is certainly essential to business success, so too is good revenue management. After all, revenues and costs are the two determinants of profit. While we often associate the revenue side with the field of marketing, revenue decisions are more than just marketing decisions – they are important *financial* decisions as well. The tools of management accounting can be brought to bear on the analysis of revenue decisions just as they are on the analysis of cost decisions.

Yet a typical management accounting course gives little attention to revenue decisions. One topic commonly found is special order pricing, as an application of marginal analysis. The common scenario is an order, independent of normal business, at a price below full cost. The focus of the analysis is on the proper determination of marginal cost. The analysis suggests that the order makes a positive contribution to profit if revenues exceed marginal costs. While this may hold in the limited situation described, this should be a springboard for discussion of the kinds of pricing decisions cited above by the airline, automobile, and other decisions. Marginal cost pricing on a large scale generally did not enhance profits in these industries.

Marginal analysis has a short-term focus, yet many pricing decisions have longer-term implications. Long-term revenue can be impacted by competitor reactions, changes in customer behavior, revised customer expectations about future price concessions, and other factors. While many early applications were short-term and ignored costs, many (most) current applications have longer-term impacts on both variable and fixed costs.

THEMES IN TEACHING REVENUE MANAGEMENT

Topics that might be part of instruction in revenue management include:

1. Methods of setting prices, and motivations for different approaches to pricing: cost-based, market-based, and value-based; list prices, negotiated prices, and auction-based prices; customer-based prices.
2. Various techniques available to management to adjust prices in the hope of increasing revenues and profits: discounts, markdowns, unlimited-use pricing, overbooking, bundling vs. unbundling, customer reward programs, "free" as a price.
3. Customer reactions to different pricing techniques.
4. Is marginal analysis satisfactory for evaluating revenue management decisions?
5. The relationship of revenue management to capacity analysis and the Theory of Constraints.
6. The concept of customer value and its relation to revenue management.
7. Assessing the profitability of customers, and managing unprofitable customers.

These topics could be incorporated at various points in a management accounting course, or could be the subject of a short, stand-alone course. Coverage of such topics emphasizes to students the importance of analyzing and managing *both* the revenue function and the cost function.

Incorporation into a Management Accounting Course

The above themes can be selectively inserted into a managerial accounting course. Following are some suggestions.

1. **Introduction to pricing and revenue management techniques.** One would need to set the stage by adding a component on pricing and on the techniques used by companies to try to increase revenue by various price concessions and other techniques. (Huefner, 2014)
2. **Marginal analysis.** This is a standard topic in managerial accounting that offers an opportunity for expanded discussion of the longer-term effects of price concessions. There are many industry examples that can be brought to bear.
3. **Activity-based costing.** Customer profitability analysis can be introduced as one application of activity-based costing.
4. **Capacity analysis.** If the CAM-I capacity analysis model is covered, its role in revenue planning can be considered. (Huefner, 2011)
5. **Theory of Constraints.** If TOC is covered, revenue management applications can be a part of the discussion of throughput.
6. **Behavioral implications.** Behavioral applications are often considered in topics such as budgeting and performance measurement. Customer reactions to pricing decisions are a further application of behavioral considerations.

OUTLINE OF A STAND-ALONE COURSE

The author recently taught a one-credit (15 contact-hours) stand-alone MBA course in revenue management during an intersession term. The course covered the following topics, each comprising about an hour to an hour and a half.

1. **Revenue Management:** What and Why? Definition of revenue management; relevance to management accounting; natural approach to business downturn is cost-cutting; limitations of cost-cutting; research results on preferability of revenue growth over cost-cutting; numerous examples.

2. **Setting Prices:** An Overview of Pricing. Review of cost concepts (fixed, variable, marginal, average); types of prices (list, negotiated); basis for pricing (cost, market, value); life-cycle pricing; auction-based pricing and competitive bidding; customer-based pricing; numerous examples.
3. **Revenue Management Techniques:** Sales or promotional pricing (discounting); markdowns; unlimited-use pricing; overbooking; bundling and unbundling of products and services; *free* as a price; customer-reward programs.
4. **How Customers React:** Research on customer reaction to pricing decisions; fairness as a criterion; considerations in presentation of prices; how are customer-based prices received?
5. **Marginal Analysis:** A Common, but Dangerous, Technique. Definition and discussion of marginal analysis; case example; limitations of marginal analysis; research on applicability of marginal analysis.
6. **Additional Tools of Analysis:** Opportunity costs; sunk costs; willingness to pay; consumer surplus; elasticity of demand.
7. **Revenue Management and Capacity Analysis:** Relevance of capacity management to revenue management; the CAM-I capacity model; discussion of idle, non-productive, and productive capacity; the Four-P's of capacity (physical, personnel, purchase, processes); using capacity analysis to identify revenue opportunities; examples.
8. **Revenue Management and the Theory of Constraints:** Description and discussion of Theory of Constraints; *throughput* as a relevant metric; examples and cases relating Theory of Constraints to both revenue management and capacity management.
9. **Providing Customer Value:** Definition of customer value; elements of customer value for consumers and business customers; types of buyers; history of the *discount culture*; techniques for adding customer value; customer relationship management; research on customer value.
10. **Are Your Customers Profitable?** Good and bad customers; the *profit cliff*; analyzing the costs of serving customers; migrating customers to higher profitability; on-line retailing examples.
11. **Emerging Topics:** The growing role of *free*; business models built on free; growing role of rentals, sharing, and mobile facilities; *luxury basics*; examples of various new trends impacting revenues.

As noted earlier, elements of these topics could be blended into a management accounting course. The stand-alone course has the advantage of focusing the students' attention on the revenue side of the business. Either way, there is need for more revenue management coverage than is typical in management accounting instruction.

Course Materials

A short book on revenue management suitable as a supplemental text, or as a stand-alone text for a short course, is ***Revenue Management: A Path to Increased Profits*** (Huefner, 2015). It covers the above topics in about 150 pages; there are no end-of-chapter assignment materials. Heavier-duty text material, suitable for a more extensive, graduate-level course, is found in books by Phillips (2005) and Telluri and Van Ryzin (2004). The latter has a heavy dose of modeling content.

The main journal in revenue management is the ***Journal of Revenue and Pricing Management***, published by Palgrave-Macmillan. In existence since 2002, there are about four issues annually. Contents include research articles (suitable mostly for graduate-level courses), practice articles (less technical, generally suitable for undergraduates), and shorter pieces on future trends and other topics. Though these papers generally do not have an accounting focus, they do provide a broad exposure to the field of revenue management and a great variety of applications.

A case book, ***Revenue Management and Pricing: Case Studies and Applications***, edited by Yeoman and McMahon-Beattie (2004) contains 16 moderate-length cases, along with solution notes.

There exist also many trade books on various topics relevant to instruction in revenue management. Cross (1997) wrote one of the early general works introducing revenue management to managers. Treacy

(2003) reports how various companies have achieved outstanding revenue growth. Holden and Burton (2008) is one of many books on pricing techniques. Shell (2009) has written an interesting work on the spread of the "discount culture." Anderson (2010) explores the growing use of "free" as a viable pricing strategy. These, and others, give the instructor a broad-based background in many of the practices, techniques, and issues that underlie pricing and revenue management, and set the stage for richer and better-informed instruction.

Student Reactions

Students encounter and observe pricing decisions to a much greater extent that they encounter/observe cost decisions. Following my course, many students commented that they now saw the impact of revenue management decisions as they saw ads, price promotions, and the like, and observed pricing decisions within their places of employment. Thus students relate well to this material, and it gives a new appreciation for management accounting analysis.

My course, which was given to part-time MBAs, concluded with a paper assignment to identify and discuss revenue management practice, either within an organization with which they were familiar (as an employee or a customer), or from articles in the business press. I received a good variety of interesting papers, some of which contained ideas for new examples for my next offering of the course.

I also had occasion to give a "guest lecture" in junior-level cost accounting class and in an MBA advanced managerial accounting class. These one-session presentations focused on the techniques of revenue management and on the relation of revenue management to capacity analysis. The instructor reported that the sessions were well-received, and she plans to add more such material in future offerings.

Adding revenue management topics to the management accounting course(s) brings interesting new material to the students, and provides new opportunities to illustrate the value and importance of management accounting analysis.

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