

**The Wharton School
University of Pennsylvania**

**MKTG 754 (WEMBA-EAST): Pricing Policy
SPRING 2020**

Tentative – Subject to some change

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Course Objectives

This course provides an opportunity for the participants to develop a systematic framework for assessing and formulating pricing strategies. Pricing decisions are affected by economic, marketing, organizational, and psychological factors, and must be made within a prescribed legal framework. Each of these presents an interesting aspect of the pricing problem. The course revolves around understanding how one may go about making effective pricing decisions while keeping in mind these factors. To achieve this objective, we will learn appropriate concepts and methods and explore new approaches for formulating a pricing strategy and setting prices.

The course will use a combination of lectures, case discussions, and exercises. Assignments will be in the form of readings, case preparation for class discussion, problem sets, and case write-ups.

Course Materials

1. Coursepack (hereafter referred to as **CP**; see **study.net link on Canvas**)
2. Nagle and Muller Textbook (Referred to as Nagle). I have listed suggested readings from the book on the course outline. We shall cover topics included in the book in the course but often at a more advanced level. Overall, past students have found the book useful.
3. Raju and Zhang, Smart Pricing, Wharton School Publishing. **Completely optional.**

In addition, a number of problem sets and handouts will be distributed in class. Some readings will also be on Canvas.

Process

Case Discussions

For all case discussions, it will be assumed that each participant has read and is fully prepared to discuss the case in class. The objective is to play the role of the decision maker in the case and use only the data and information available in the case to do the relevant analyses and make recommendations.

Lecture/Discussions

These sessions will allow us to examine principles, models, theories, and their application to pricing decisions. I urge you to share with the class your previous experiences with the application of these principles (both successful and unsuccessful experiences) whenever possible.

GRADING

Class Participation	10%
Problem Sets/Case Write-ups	60%
Final Exam	30%

Class Participation: Effective class participation requires good preparation, listening to other points of view, and sharing your thoughts in class with others in a manner that enhances the overall learning. You cannot participate if you are not present. Therefore, you are expected to attend all classes.

Case Write-ups: The one page case write-ups will require you to focus on a particular aspect of the case. The question to focus on is described in the Course Schedule. The case write-ups are to be done individually and submitted individually. There are four case submissions. Singapore Metals, Tweeter, and Burroughs-Wellcome are 10 points each. Cambridge Software is 20 points.

Problem Sets: Problem sets give you an opportunity to apply some of the concepts and methodologies that will be developed in class lectures and case discussions. I shall hand out solutions to the problem sets in class and on Canvas. There are five problem sets. The purpose of these problem sets is to illustrate various techniques. The students are expected to attempt these problems sets often before the techniques are discussed in class. The purpose of this is to stimulate thinking and learning, and gain a greater appreciation for pricing methods. The evaluation of the problem sets will keep in mind this objective. **The problem sets are to be done individually, and submitted individually.** Problem sets carry different weights towards your grade depending on the level of complexity and work required to complete the problem set.

Submitting Case Write-ups and Problem Sets

1. All case write-ups and problem sets are to be submitted *on Canvas in a Word or PDF format*. (No excel file submissions).
2. Please make sure you have either a printed copy of your work, or access to a soft copy, in class as we discuss problem sets and cases in class, and you may be asked to share how you approached the case/problem set with others.
3. As a general rule, when you present calculated numbers, please show/explain your calculations to get full credit. This also holds for the exam.

Final Exam

The final examination will consist of problems that will test your ability to apply the concepts covered in the course. More details about the examination will be provided in the class.

Honor Code

Students taking the course are required to accept the following rules.

- I shall not share the materials distributed in MKTG754 class with anyone else.
- I shall not use materials obtained from others who have taken this course in the past.
- I agree with the rules set forth regarding case write-ups, problem sets, and the final exam.

Course Schedule

- Feb 28:**
1. Course Overview/ Role of Costs and Margins in Pricing Decisions
 2. Pricing a Radically New Product

Prepare: Singapore Metals Case [HBS Case: 9-709-434] in [CP]

Case Write-up Question: What price would you charge for the Singapore Metals Pad and why? Please focus only on the 30 cm pad.

DUE: Problem Set 1 [in Course Outline and on Canvas]

Supplementary Readings:

- Nagle Chapter 2 and Chapter 9
- See other supplementary readings on Canvas

- Feb 29:**
1. Measuring Elasticity
 2. Principles of Price Engineering

DUE: Problem Set 2 [in Course Outline and on Canvas]

Supplementary Readings:

- Nagle Chapter 8 and Chapter 3
- See other supplementary readings on Canvas

- March 27:**
1. Product Line Pricing
 2. Measuring Maximum Willingness to Pay

Prepare: Cambridge Software Corporation [HBS Case 9-197-072] in [CP]

Case Write-up Questions:

- If Cambridge Software Corporation were to offer only one version of Modeler, which version should it offer? At what price?
- How many different versions of the Modeler should CSC offer? At what prices?

DUE: Problem Set 3 [in Course Outline and on Canvas]

Readings:

- Raju/Sajeesh: "Estimation of Consumer Reservation Price" [required reading; see Canvas]
- See other supplementary readings on Canvas

- April 11:**
1. Temporal Pricing and Temporary Price Discounts
 2. Competitive Pricing

Prepare: Tweeter [HBS Case 9-597-028] in [CP]

Case Write-up Question: Should Tweeter continue to offer the price matching guarantee? Please justify your recommendation.

DUE: Problem Set 4 [on Canvas]

Supplementary Readings:

- Nagle Chapter 7
- **Showrooming at Best Buy [HBS Case: 9-515-019] in [CP]**
- **See other supplementary readings on canvas**

April 18:

- 1. Psychological Aspects of Pricing**
- 2. Freemium Pricing**

Prepare: Freemium Pricing at Dropbox [HBS Case 9-514-053 in CP]:

Good News: There is no one page submission for the case. The question to think about in this case is can a company like Dropbox survive when companies such as Microsoft and Google are also offering a similar service. What role has Freemium pricing played in their journey and is it something that should continue. We shall discuss these and other issues in the class.

Supplementary Readings:

- Nagle Chapter 3
- **See other supplementary readings on Canvas**

Due: Problem Set 5

May 1: 1. Legal and Ethical Aspects of Pricing

2. Course Summary

Prepare: Burroughs Wellcome and AZT (A) [HBS Case 9-792-004] in [CP]

Case Write-up Question: Take on the role of Mr. Shepperd and prepare a one page (250 words maximum) opening statement for a press conference outlining Burroughs Wellcome's response to ACT UP's most recent demonstrations.

Please be prepared to present your opening statements to the class. This presentation should be no more than 3-4 minutes. At the end of the presentation, the presenter will take questions from the audience who will take on the roles of shareholders, the press, AIDS activists and others.

Supplementary Readings:

- Nagle Chapter 12
- **See other supplementary readings on Canvas**

PROBLEM SET 1

As a pricing analyst for the VALUE SUPREME grocery chain, you are asked to prepare an analysis of a proposal to price frying chickens low in order to attract shoppers to VALUE SUPREME stores. The current price for whole fryers is 89¢ per pound. The proposal is to set a promotional price of 59¢ per pound. The wholesale cost of the fryers, prepackaged and ready for sale, is 55¢ per pound.

By tracking past changes in sales of chicken with changes in sales of other grocery products, you discover that each one pound change in the sales of whole fryers is associated with the following changes in the sales of other products:

Product	Dollar Change	% Margin
Fruits and Vegetables	+ \$0.154	50%
Packaged Groceries	+ \$0.692	20%
Frozen Foods	+ \$0.114	33%
Other meat including Chicken parts	– \$0.250	40%

[Explanation of the table: A one pound increase in sales of whole fryers results in an increase in sales of Fruits and Vegetables of 15.4 cents and the store makes a 50% margin on Fruits and Vegetables]

1. If this past relationship between sales of the whole fryers and increased sales of other goods holds, by how much must chicken sales increase in order to make this price promotion profitable?
2. Can you think of any reason why the historical relationship between changes in the sales of chicken and other products might not hold?
3. Could this store have profitably promoted whole fryers at 49¢ per pound? If so, what increase in chicken sales is required? Remember, 49¢ is below wholesale cost!

PROBLEM SET 2 (2 Questions)

Q1. Preference ranking data were obtained from 20 respondents for three brands of dishwashers: X, Y, and Z. Y and Z are existing brands selling for \$225 and \$175 respectively, while X is a proposed new brand. Table 1 provides the preference ranking data for 3 of the 20 respondents, (i.e., all 3 provided the identical preference ranking indicated in Table 1), Table 2 gives the data for 5 respondents, Table 3 for 4 respondents, and Tables 4 and 5 for 6 and 2 respondents respectively. A rank of 1 indicates the most- preferred product, while 15 indicates the least-preferred product.

1. Compute the proportion of first-place votes for brand X as a function of price when brands Y and Z are at their current prices. (First place is meant in a relative, not absolute sense.)
2. What proportion of first place votes will X receive if its price is \$200 while brands Y and Z lower their prices to \$200 and \$150 respectively?
3. Which brand (Y or Z) suffers the greatest loss in first-place votes with the entry of brand X at \$200? Assume for part (c) that brands Y and Z are selling at their regular price, i.e., \$225 and \$175 respectively.

	Table 1			Table 2			Table 3			Table 4			Table 5		
	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z
\$150	2	1	5	4	1	6	4	2	1	1	3	6	2	1	3
\$175	4	3	8	5	2	9	6	5	3	2	4	9	5	6	4
\$200	7	6	11	8	3	12	9	8	7	5	7	10	9	8	7
\$225	10	9	14	11	7	14	12	11	10	8	12	13	10	11	12
\$250	13	12	15	13	10	15	15	14	13	11	14	15	15	13	14

- Q2. Sales and prices of a new package delivery service offered by a logistics company for the first 29 weeks are given below. Estimate the appropriate demand function for sales using regression analysis to obtain an estimate of price elasticity. The data file (ProblemSet2-Data.xls – Package delivery sheet) can be downloaded from the Canvas. What recommendation would you make to the company based on your estimation?

Package Delivery Service

Week	Unit Sales	Price
1	140	5.00
2	195	5.00
3	268	5.00
4	481	5.00
5	411	5.00
6	481	5.00
7	525	8.50
8	527	8.50
9	547	8.50
10	502	8.50
11	511	8.50
12	534	8.50
13	559	10.00
14	575	10.00
15	592	10.00
16	661	10.00
17	764	10.00
18	794	10.00
19	805	11.50
20	745	11.50
21	859	11.50
22	982	11.50
23	987	11.50
24	1034	11.50
25	1090	11.50
26	1156	11.50
27	1194	12.50
28	1370	12.50
29	1304	12.50

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PROBLEM SET 3

Xeroks Corporation (a hypothetical company) faces the following pricing problem for its copying machines. There are two segments of potential users: large users - whose copying needs are 20,000 copies per year - and small user - whose copying needs are 2,000 copies per year.

Xeroks found that a large user would be willing to pay as much as \$25,800 for a machine, whereas a small user would be willing to pay only \$6,700 maximum. These reservation prices accounted for the expected life of a machine (5 years), its resale value at the end of that period (\$0), and the cost of supplies. In other words, a large user would be willing to pay \$25,800 to buy a Xeroks machine provided the supplies from Xeroks were free of charge over the life of the machine. Similarly, a small user would be willing to buy a Xeroks machine for \$6,700 as long as Xeroks provides free supplies. Assume that these supplies are available only from Xeroks.

Assume that there are equal numbers of large and small users. Xeroks' marginal cost of producing each of these machines was estimated to be \$1,900. Its marginal cost of supplies was \$0.03 per copy. Xeroks used a 10% discount rate, i.e., if it generates an income of \$1 each year for five years, then its present value of that income stream is $(1/1.10 + 1/1.10^2 + \dots + 1/1.10^5) = \3.79 .

1. What should be the selling price of these machines (bundled with supplies)? (Only one price can be charged, i.e., everyone who buys must pay the same price, and the buyer must pay immediately.)
2. Xeroks wonders if it can make more money leasing the machines instead of selling them. The leasing policy will involve a yearly rental charge (payable at the end of each year) and a charge per copy made (monitored via a metering device on the machines) cumulated over each year and payable at the end of the year. Only one leasing plan - i.e., a single rental charge and a single per copy charge - is being contemplated. What should be Xeroks' leasing policy? (Assume that each user also uses a 10% discount rate.)
3. Explain why the leasing plan does better than the selling option.
4. Would the advantage of leasing over selling increase or decrease if the relative proportion of small to large users increased from 1:1 to 2:1? Why?

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PROBLEM SET 4

Suppose you are a *manufacturer* facing a market which has changed in its composition since the last time you set prices. There are two market segments: H and L, with reservation prices \$20 and \$10, respectively, for a unit of your product. The purchase frequency is 1 unit every quarter. Your variable costs are \$2/unit. You sell through a large *retailer* whose fixed costs of doing business with you are \$25/quarter.

Until last month your market consisted of 50 people with the \$20 reservation price and 50 people with the \$10 reservation price, and your price to the retailer was \$19.50. But now you realize that there are only 20 potential consumers with the \$20 reservation price, the other 80 having a reservation price of \$10.

There are three possible options you can pursue at this point: (a) offer a trade discount to the retailer (with the amount of the discount to be determined); (b) don't change the wholesale price from its original value, but offer a coupon to consumers as a free-standing insert in the local newspaper (the coupon value is to be determined; the coupon will have a limited expiry date and it will cost segment H – and only segment H – \$4 to redeem; *the coupon redemption cost isn't revenue for the manufacturer nor the retailer*); (c) offer a coupon to consumers and offer a trade promotion to the retailer (both the coupon value and the trade deal will have to be determined). Which option should the manufacturer pursue? Please explain why and show your analysis.

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PROBLEM SET 5

RET faces the following pricing problem in its international long-distance market. Essentially it has two products for calls: day calls (8 a.m. to 5 p.m.) and night calls (5 p.m. to 8 a.m.). All customers prefer day calls to night calls, i.e., everyone is willing to pay more for day calls than night calls. But people differ in their relative valuations of day and night calls. RET has found that there are two major segments: business calls (i.e., calls made for business reasons) and personal calls (i.e., calls made for personal reasons). Business callers would much prefer to make day calls over night calls – because 8 a.m. to 5 p.m. is when business is conducted – but they can make night calls if they wish to (by getting to work a little early or working late). 40% of all international phone calls are made for personal reasons. RET's marginal cost of a phone call is zero regardless of when the call is made.

Assume (1) that RET faces no competition in the international long-distance market, (2) that it has enough capacity to handle any reasonable demands at any time, (3) that both business and personal callers are maximizing their consumer surplus when choosing a time to call, and (4) that the length of a phone call is unaffected by when the call is placed or for what purpose the call is placed.

1. Suppose RET finds that business callers are willing to pay up to \$1 a minute for day calls, but only 50 cents a minute for night calls and personal callers are willing to pay 85 cents a minute for day calls, but only 60 cents a minute for night calls. Develop a profit-maximizing pricing policy for RET. (Assume that quantity discounts are not being considered.)
2. Consider the following change to part (1). Business callers are now willing to pay up to \$1.20 a minute for day calls. (Everything else remains the same.) What is the profit maximizing policy now?
3. Consider the problem as in part (2), but now assume that business callers are willing to pay up to 65 cents for night calls. (Everything else remains the same). What is the profit-maximizing policy now?