Application of Game Theory in Managing Decision Making
BIND 2035

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Office
210 Mervis Hall
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Office Hours
Monday, 9:00 - 11:00 am
or by appointment

Secretary
Billie Bergman
648-1541

The course demonstrates how insights of game theory can be utilized by managers to address important decisions confronting the firm. The interaction of a business firm with its competitors, customers and suppliers can be formalized as a game situation. The task of the manager is to identify what are the rules that govern the game, whether he/she can modify those rules to the company’s advantage, what are the optimal reactions of the company to the expected behavior of competitors, and how is the behavior of competitors, suppliers or consumers determined. The primary focus of the analysis is on understanding how other players form their strategies and expectations in order to identify one’s own best response strategy.

We will utilize game theoretic reasoning to analyze issues related to entry into new markets or exit from established businesses, investment in research and development, the extent of product differentiation and proliferation that is implied by competition, and strategies aimed at alleviating price competition among firms.

Required Readings: Harvard Business School Cases

Reference Books on Reserve in Library:


Students’ Evaluation: Evaluation will be based upon written cases.

Prerequisites:
BENC 2401 - Economic Analysis and Managerial Decision - Firms and Markets
List of Topics and Harvard Business School Cases

Week 1  
Review of Basic Concepts in Game Theory
Cases: 1) Games of Strategy: An Introduction  
2) Reaction Functions and Equilibrium  
3) Repeated Games: An Introduction  
4) The Right Game: Use Game Theory to Shape Strategy

Week 2  
Entry Barriers and Entry and Exit Decisions (A&N Chapters 2, 3, 6; B&N Chapters 3, 5)
Cases: 1) Entry Barriers (A): Deep Pockets  
2) Entry Barriers (B): Advertising  
3) Judo and the Art of Entry  
4) Exit from Declining Industries

Week 3  
Investment in Research and Development (B&N Chapters 4, 5)
Cases: 1) The Photolithography Industry  
2) Leaders and Challengers (A), (B)

Week 4  
Choice of Product Mix (B&N Chapters 4, 5)
Cases: 1) Competition and Product Variety  
2) Product Proliferation and Preemption - The Breakfast Cereal Industry: The 1972 Antitrust Complaint  
3) Competition and Compatibility: Mix and Match

Week 5  
Special Issues in Pricing (A&N Chapters 4, 6, 9; B&N Chapter 6)
Cases: 1) The Free-rider Problem: Airline Frequent-flyer Programs  
2) Delivered Pricing and Most-Favored-Nation Clauses) FTC vs. Ethyl Corporation, DuPont, and Others.  
3) Pricing Durable Goods) Xerox and Leasing in the Copier Industry  
4) Bundling) The Polaroid-TWA Proposition

Week 6  
Changing Perceptions of Competitors (B&N Chapter 7)
Cases: 1) Bitter Competition: The Holland Sweetener Company versus Nutrasweet (A)  
2) The Fog of Business  
3) Signaling Costs
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Entry and Exit Decisions  
Assignment Number 1

Entry Barriers (A): Deep Pockets
1. As a potential entrant into the industry how do you assess the possible reaction of the incumbent firm to your entry? Do you expect to be accommodated?

Entry Barriers (B): Advertising
1. In the absence of a law limiting the use of advertising, how many firms do you expect to see in the market and how much will they spend on advertising?
2. Suppose there is currently a sole incumbent firm in the industry. Should it lobby for the proposed law limiting the use of advertising?

Judo Economics
1. Suppose that: (a) each buyer has a willingness-to-pay of $200 for one unit of either the incumbent’s or the entrant’s product; and (b) both incumbent and entrant have a $100 unit cost of serving buyers. Formulate a strategy for the entrant. How much money can the entrant make?
2. Now suppose that: (a) each buyer has a willingness-to-pay of $200 for one unit of the incumbent’s product and $160 for one unit of the entrant’s product; and (b) the incumbent has a $100 unit cost and the entrant a $120 unit cost. Formulate a new strategy for the entrant. How much money can the entrant now make?
3. Finally, suppose that: (a) each buyer has a willingness-to-pay of $200 for one unit of either the incumbent’s or the entrant’s product; and (b) the incumbent has a $120 unit cost and the entrant an $80 unit cost. Formulate a new strategy for the entrant. How much money can the entrant make this time?

Exit from Declining Industries
1. Which firm seems to be in a strategically stronger position to survive? Why?
2. Would one of the firms wish to buy out the other? Which one and at what price?
3. How would your answers to questions 1 and 2 change if firms were subject to tighter financial constraints?
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