

University of Pennsylvania, Wharton School
Department of Operations and Information Management

OPIM 469 - Information Strategy and Economics
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Course Overview

The nearly instantaneous transmission and processing of information is changing the structure of entire industries, altering the profitable opportunities available to many firms. In response, many organizations are forced to make substantial changes in the competitive strategies or internal organization as a result of the opportunities created and threats posed by the increasing availability of information.

This course is devoted to the study of the strategic use of information. While many of the issues we will discuss are relevant to other disciplines like strategic management, economics or finance we will focus specifically on the role of *Information* and the closely related role of *Information Technology*. Within these boundaries, we have three objectives:

- 1) Cover topics in information management that have a potentially high impact but are not (yet) normally covered by your other courses;
- 2) Focus on problems unique to information-intensive businesses that you will soon encounter as a consultant, analyst, technologist, or entrepreneur;
- 3) Encourage you to think about entrepreneurial opportunities in the information economy. While there are plenty of interesting opportunities available, sorting good ideas from bad ideas in the information economy is difficult. One objective of the course is to help you develop informed opinions about what will and will not work, before devoting your attention (your most valuable resource) to pursuing a job or business in this sector.

Technology is a central theme of the course (especially information technology), but the course is not about programming or the technology itself. The only prerequisite is a basic understanding of information technology and the strategic use of technology (equivalent to OPIM210). The course is most useful to students who are considering careers in IT or management consulting, technology-oriented investment banking, and IT-related careers in information-rich industries.

Course Structure and Grading

Preparation and Readings. The course will meet twice a week for lectures, speakers and discussions. Each session will have a Webcafe page with discussion questions, readings and things to explore – the Webcafe will be the primary distribution source for course material so you will need to have online access before every class. Since this is a discussion class exploring cutting-edge material, pre-class preparation and class participation are critical to a productive semester. Class participation is not explicitly assigned a percentage of the course grade, but acts as a grade modifier with a large effect.

Written Assignments (50% of course grade). The course is modular with typically 2-5 sessions and then a related assignment. These assignments are to be done individually or in small groups (1-2 people) and graded from a formal grading key:

- Assignment 1: Information Pricing
- Assignment 2: Search agents and Price Dispersion
- Assignment 3: Knowledge Assets
- Assignment 4: Design a Market

- Class Exercise 1: Value Chain Exercise
- Class Exercise 2: Outsourcing Negotiation

Exam (25% of course grade). This exam serves three purposes: 1) to provide an incentive to stay on top of the class material, and 2) to allow you to use some of the things you have done to explore a new topic, and 3) to provide an objective basis for individual grading given the reliance on group work and the subjective class participation evaluation. Sample exams are available to give you a sense of structure and content.

Project (25% of course grade). This is an opportunity to examine a topic related to information technology strategy or information economics in greater depth either individually or (preferably) as a group. More details will be provided in class. Projects must be formally proposed by mid-semester and completed by the end of the semester. Usually, projects are delivered in the form of a Powerpoint presentation with associated discussion and backup.

Course Schedule

(Note: Each session has a web page with discussion questions and additional online readings. The archive site is available at: <http://opimx69.pbwiki.com>, password “psor”. The major readings are listed below).

Module I: Information Goods

- Session 1: Introduction to Information Strategy
- Motivating examples
 - Basic principles in the economics of information
- Session 2: Pricing Information Goods
- Economic properties of information goods
 - Versioning
- Readings:
- Varian and Shapiro, Information Rules, Ch. 1
 - Varian, Markets for Information Goods (online)
 - Varian, Versioning Information Goods (online)
 - Hitt, Nonlinear Pricing Explained (handout)
 - Additional online links on diesel engines, software and other examples of versioned goods
- Session 3: Bundling and Competition
- Principles of product bundling
 - Bundling low marginal cost goods (pure bundling/customized bundling)
 - Bundling and competition
- Readings:
- Bakos and Brynjolfsson, Aggregation and Disaggregation of Information Goods (Journal of Law and Economics)
 - Hitt and Chen, Customized Bundling... (Management Science)
- Session 4: Network Effects and Information Complements
- One- and two-sided network externalities
 - Information complements
- Readings:
- Parker and VanAlstyne, Information Complements, Substitutes and Strategic Product Design (Management Science)
 - Case: Adobe Systems (HBS)
 - Additional online links on Adobe and information complements mentioned in Parker and VanAlstyne

Session 5: Switching Cost and Customer Retention

- Economics of switching costs
- Switching cost and information goods

Readings

- Chen and Hitt, Information Technology and Switching Costs (Handbook of Information Systems Economics)
- Chen and Hitt, Measuring Switching Costs and their Determinants in Online Businesses (Information Systems Research)
- Reicheld and Schefter, E-Loyalty: Your Secret Weapon on the Web (HBR)
- Online links on the online brokerage industry

Exercise: Information Pricing Exercise

Module II: Information and Consumer Demand

Session 6: Search Theory

- Consumer search processes
- Economic search models

Readings

- Choi, Stahl and Whinston, Economics of Electronic Commerce (Chapter 7, Consumers Search for Information)
- Stiglitz, Imperfect Information in the Product Market (Handbook of Industrial Organization)
- (optional) Chen and Hitt, Price Dispersion and Brand Awareness (working paper, Wharton School/OPIM)

Session 7: Search Agents

- Economics of Price Search Agents
- Price Dispersion

Readings:

- Brynjolfsson and Smith, Frictionless Commerce... (Management Science)
- Excerpt from Baye, Morgan and Scholten, Price Dispersion in the Small and the Large (Journal of Industrial Economics)
- Online links related to search exercise

Exercise: Price Dispersion Exercise

- Session 8: Reputation and Recommender Systems
- Economics of product search behavior
 - Role of recommender and recommendation systems
 - Information access and consumer demand
- Readings:
- Varian and Resnick, Recommender Systems (Communications of the ACM)
 - Dellarocas, Digitization of Word of Mouth (Management Science)
 - Dellarocas, Impact of Online Opinion Forums (working paper, University of Maryland Smith School)

Module III: Knowledge Assets

- Session 9: Knowledge Management
- Economics of internal knowledge management
 - Knowledge Management and Organizational Design
 - Exercise: Knowledge Management Case
- Readings:
- Eccles and Nohria, What's Your Strategy for Managing Knowledge (HBR)
 - Case: McKinsey and Company: Managing Knowledge and Learning (HBS)
 - Case: KPMG: One Giant Brain (HBS)

- Session 10: Knowledge Markets
- Markets for expertise
 - Auctioning services
- Readings:
- Malone and Laubacher, The Dawn of the E-Lance Economy (HBR)
 - Snir and Hitt, The Emerging Knowledge Economy: Exchange in Internet Markets for IT Services (Management Science)
 - Online links to major knowledge markets

- Session 11: The Attention Economy
- Attention as an economic asset
 - Economics of online advertising
- Readings:
- Goldhaber, The Attention Economy and the Internet (First Monday)
 - Zhang, Finding Edgeworth Cycles in Online Auctions (Working paper, MIT Sloan School of Management)
 - Weber and Zheng, A Model of Search Intermediaries and Paid Referrals (Stanford MSIE Working Paper)
 - Online links on search agent optimization and online advertising intermediaries

- Session 12: Intellectual Property and Open Source
- Production and protection of knowledge assets
 - Economics of open source
 - Extracting value from open source products

Readings

- Lerner and Tirole, Simple Economics of Open Source (Journal of Industrial Economics)
- Businessweek, Microsoft CEO Takes Aim at Open Source Vendors Over Patents
- Online links to Microsoft “Halloween Documents” on Open Source Strategy
- Online links to sourceforge, wikipedia and other articles about IP enforcement

Exercise: Knowledge Assets Exercise

Session 13 Mid-Semester Exam

Session 14: Generating Interesting Project Ideas

- Discussion of project ideas
- Unstructured problem solving

Readings:

- Davis, That’s Interesting!... (Philosophy of Social Sciences)
- Polya, How to Solve It! (“Look at the Unknown”, “Signs of Progress”)

Module IV: Designing New Markets (especially Electronic Markets)

Session 15: Market Fundamentals

- Principles of designing new markets
- Extracting value from markets
- Examples of market design alternatives

Readings:

- Lee and Clarke, Impacts of the Electronic Marketplace... (International Journal of Electronic Commerce)
- Web page with links and readings relating market examples including Nasdaq, NYSE, National Intern Matching Program, eBay, DeBeers, and others

- Session 16: Extracting Value from a Market: Aucnet
- Analysis of the cost and benefits of a market
 - Pricing market services
- Readings:
- HBS Case: Aucnet
 - (optional) Morita, Aucnet 1998 (Koie Business School Case)
 - (optional) Lee, Westland and Hong, The Impact of the Electronic Marketplace on Product Prices: An Empirical Study of AUCNET (International Journal of Electronic Commerce)

- Session 17: Transforming Financial Markets: OpenIPO
- Application of auctions in non-standard settings
 - Adverse selection and role of intermediaries in the IPO process
- Readings:
- Lerner, A Note on the IPO Process (HBS Case)
 - Examination of the W.R. Hambrecht OpenIPO process (online)
 - Supplementary online material about the Google IPO (SEC registration statement, market commentary)

Exercise: Design a Market

Module V: Intermediation

- Session 18: Intermediation
- Role of intermediaries
 - Prospects for disintermediation
- Readings
- Hagel and Singer, Net Worth (Chapter 1)
 - Negroponte, Reintermediation (Wired Magazine)
 - (optional) Croson, A New Role for Middlemen (working paper, Harvard Business School)

- Session 19: Value Chain Exercise (Class Exercise 1)
- Competition among value chain segments
 - Analysis of digital music market
- Readings
- Large web page of links on the online music industry
 - Case: BMG Entertainment (HBS) (industry statistics)

Module VI: Insourcing and Outsourcing

- Session 20: Insourcing: Software Project Risks
- Introduction to software engineering
- Software project estimation and management
Readings:
 - Brooks, No Silver Bullet (IEEE Computer)
 - McConnell, Case Study in Classic Mistakes (online, excerpt from Rapid Development)
 - Additional readings (online) on software cost estimation
- Session 21: Outsourcing: Caselets in Outsourcing Risks
- Relationship risks in outsourcing
- Transactions cost economics
Readings:
 - Clemons and Hitt, Poaching and the Misappropriation of Information (Journal of MIS, excerpt)
 - Hitt, Caselets in Outsourcing Risks (handout)
- Session 22: Outsourcing Negotiation (Class Exercise 2)
- Review of basic concepts in negotiation
- Practice in outsourcing negotiation
- Negotiation conducted during class time
Readings
 - Croson and Hitt, Inpower vs. Outcorp (Case)
- Session 23 Outsourcing Negotiation Debrief and Discussion
- Discussion of negotiation outcome
- Session 24 (optional) Information Security
- Understanding information security risks
- Economics of information security
Readings:
 - Anderson, Why Information Security is Hard (working paper, online)
 - Farmer, Improving the Security of Your Site by Breaking into It (online)
 - Howard, An Analysis of Security Incidents on the Internet (doctoral dissertation). Chapter 6.4: A Taxonomy of Computer Security
 - Other online links and readings on information security
- Session 25/26 Project Meetings, Presentations, Course Conclusion