Strategy of Innovation

Preliminary Syllabus. Subject to change.

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Time & Location: Tuesday, 8:30 – 12:00, Anthropole/5060
Office Hours: By Appointment

Course Scope and Mission

Innovation increasingly plays a critical role in generating both economic growth and sources of competitive advantage. This course focuses on how firms (both startups and incumbents) can create and capture value from product, process, and service innovations. To do so, this course will introduce students to new tools and frameworks for examining both new and old problems related to innovation and technological change. This course consists of a mix between lectures and case studies, with an emphasis on class discussion and debate. While most of the case studies in class will focus on technology-oriented contexts, many of the insights developed during this course will be highly applicable to firms in non high-tech industries as well. By the end of the course, you will be able to:

- Conceptualize and identify opportunities for creating value through innovation
- Develop an understanding of how to capture the value of innovation through a variety of techniques
- Coherently integrate these principles with competitive and corporate strategies

A mastery of the tools and frameworks developed in this course will be useful to executives, consultants, entrepreneurs, government officials, investors, and any manager responsible for the introduction and implementation of new products or services.

NB: This course is open to PhD students.

Required Materials

1. **Readings:** Will be posted on Moodle (no required text).
2. **Course Packet:** includes business cases (https://hbsp.harvard.edu/import/699530)

Grading Policy

A.	Class participation	20%
B.	Midterm	50%
C.	Team Case Analysis & Presentation	20%
D.	Team Case Critique & Presentation	10%

*In preparing the Case Critique & Presentation, PhD students are required to write a report of 10 pages, referring to the literature discussed in class. Makeups will be discussed with the instructor.

A. CLASS PARTICIPATION (20%)

I expect every student to be prepared to answer questions on every lecture. The readings and the cases typically highlight a particular idea or model. I would like you to both *identify* key issues and problems and to *evaluate* the idea or model(s) presented. From the comparison of different approaches and models, we intend to highlight the comprehensiveness of the presented ideas, their underlying assumptions and their predictive ability. This will highlight the usefulness and limitations of an informed, analytical approach.

In a typical class, I will ask one or more participants to start the class by answering a specific question. Anyone who has thoroughly prepared should be able to handle such a lead-off assignment. After a few minutes of initial analysis, we will open the discussion to the rest of the class. As a group, we will then build a complete analysis of the situation.

Most managers spend very little time reading, and even less time writing reports. Most of their interactions with others are verbal. For this reason, the development of verbal skills is given high priority in this class. The classroom should be considered a laboratory in which you can test your ability to convince your peers of the correctness of your approach to complex problems and of your ability to achieve the desired results through the use of that approach. Things that have an impact on effective class participation include:

- Is the participant a good listener?
- Is the participant willing to interact with other class members?
- Are the points made relevant to the discussion? Are they linked to the comments of others?
- Do the comments add to our understanding of the situation?
- Does the participant distinguish among different kinds of data (i.e., facts, opinions, beliefs, concepts)?
- Is there a willingness to test new ideas, or are all comments "safe" (e.g., repetition of facts without analysis and conclusions)?

B. MIDTERM (50%)

The midterm exam will be in-class, closed-book, and consist multiple-choice questions. The midterm will require integration of all course concepts and frameworks covered to date. The midterm will take place on March 24, 2020. (The organization of make up exams will be disucssed in class)

C. TEAM CASE ANALYSIS & PRESENTATION (20%)

Case analyses should develop a set of strategy recommendations with the focus of the report and presentation being on the analysis used to generate the recommendations. Cases will be graded on the thoroughness of analysis, clarity of presentation, and insightfulness of answers to questions posed during Q&A.

Teams will submit a **5-page case analysis** in *PDF format* via email to me by 6 PM on the assigned submission date. (Page limitations do not take into account appendices, which may include tables, figures, calculations, etc.) In addition, teams will email a copy of their slide presentation to me by 6 PM the day before their presentation and submit a hard copy of their **slides** to me at the beginning of class.

Presentations will last for 25 minutes, followed by a 15-minute critique. The presentation team will then have 15 minutes to respond to the critique. Following this, the presentation group will entertain 25 minutes of general questioning from the class and me. Be sure to fully cite all references. Also, please provide the critique team access to <u>all</u> references used for the analysis.

D. TEAM CASE CRITIQUE & PRESENTATION (10%)

The purpose of this exercise is to critique another team's case analysis (which will be posted on the course website in advance) and offer an alternate set of recommendations. Specifically, the critique team should succinctly articulate: 1) the main strengths of the analysis team's analysis and recommendations, 2) the main weaknesses, and 3) an alternative set of recommendations (with supporting analysis) that offers a "better" strategic plan. Teams are encouraged to be supportive and friendly in their critiques; from an analytic perspective, the traditional allocation of time, page space, and effort to the three topics above are 10%, 20%, and 70%, respectively. Note that although the critique will ultimately question the analysis team's recommendations, the majority of the critique team's work should focus on the analysis team's analysis rather than their final conclusion. Critiques will be graded on their rigor and sophistication in addressing the three topics described above. In addition, critique teams will be graded on the insightfulness of their responses to questions from the class.

Teams will prepare a **5-page critique** and email it *in PDF format* to me by 6 PM on the assigned submission date. (Page limitations do not take into account appendices, which may include tables, figures, calculations, etc.) Critique teams also will email a copy of their presentation to me by 6 PM the day before their presentation and submit a hard copy of their **slides** (3 slides per page) to me at the beginning of the class. Teams will be given 15 minutes to present their critiques. Be sure to fully cite all references.

Team Formation

Please form into teams consisting of three members and have one member **email me** the names of your team members and three rank-ordered case preferences. Cases/team numbers will be assigned on a first come basis.

Academic Honesty

Academic dishonesty is a serious offense.

Examples of academic dishonesty include:

- *Possessing, using or exchanging improperly acquired written or verbal information in the preparation of any essay, laboratory report, examination, or other assignment included in an academic course;*
- *Substitution for, or unauthorized collaboration with, a Student in the commission of academic requirements;*
- *Submission of material that is wholly or substantially identical to that created or published by another person or person, without adequate credit notations indicating authorship (plagiarism);*
- *False claims of performance or work that has been submitted by the claimant;*
- *Alteration or insertion of any academic grade or rating so as to obtain unearned academic credit;*
- *Deliberate falsification of a written or verbal statement of fact to a member of the Faculty so as to obtain unearned academic credit;*
- *Forgery, alteration or misuse of any Institute document relating to the academic status of the Student.*

Schedule of Sessions and Readings

Please note that I reserve the right to change readings and schedule at any time during the course.

Section 1: Introduction	
Class 1 *February 18* Readings:	**Course Introduction** Shilling, M.A. *Strategic Management of Technological Innovation*, McGraw-Hill, 2017. Chapters 1 and 2
Section 2: The Nature of Innovation	
Class 2 *February 25* Readings:	**Evolution of Technological Innovation and The Nature and Evolution of Technology Markets** Gladwell, Malcolm. "Smaller: The Disposable Diaper and the Meaning of Progress." *The New Yorker*, November 16, 2001. Foster, Richard. "The S Curve: A New Forecasting Tool." Chapter 4 in Innovation: The Attacker's Advantage. New York, NY: Summit Books, 1986. Catalini, Christian and Tucker, Catherine. When early adopters don't adopt. *Science*, 2017, vol. 357, no 6347, p. 135-136. Shilling, M.A. Strategic Management of Technological Innovation, McGraw-Hill, 2017. Chapter 3
Class 3 *March 3* Readings:	**Competition and Technological Evolution I and II** Gladwell, Malcolm. "The Televisionary." The New Yorker, May 27, 2002. Christensen, Clayton. *The Innovator's Dilemma*: HBS Press, 2011. Chapter 3. Lepore, Jill. "The Disruption Machine," *The New Yorker,* June 23, 2014 Christensen, Clayton, Michael Raynor and Rory McDonald. "What is Disruptive Innovation?" Harvard Business Review, December 2015 p. 44-53 Gans, Joshua. "The Other Disruption," *Harvard Business Review*, March 2016, pp. 78-84
Case: Case Preparation Questions:	Netflix in 2011 (HBS 615-007) 1. Is Netflix's move to online streaming a disruptive innovation in the movie rental industry? Why? 2. Analyze the first business model of Netflix (DVD per mail/pay per rental) using the Theory of Disruption. Why was it unsuccessful? How did Netflix react?

Section 3: Creating Value Through Innovation

Class 4a — **Innovation as Process**
March 10

Readings: Fleming, Lee. "Breakthroughs and the Long Tail of Innovation." MIT Sloan Management Review 49, no.1 (2007), pgs. 69-74.

Case: What's the Big Idea? (HBS: 9-602-105)

Case Preparation Questions:

1. How proprietary or defensible is BIG's system? Could one of the major toy companies replicate it? Why or why not?
2. Why does BIG seem better able to identify and bring to market innovative toy concepts, whereas the major toy companies feel they are in a period of a "lack of innovation" (p.3)?
3. Can BIG replicate its system in other industries?

Class 4b — **Innovation and Experimentation**
March 10

Readings: Thomke, Stefan and Jim Manzi. "The Discipline of Business Experimentation." *Harvard Business Review* December 1 2014 Vol. 92 Issue 12, p70-79

Case: Team New Zealand (A) (HBS: 9-697-040)

Case Preparation Questions:

1. How would you evaluate Team New Zealand's use of simulation in the design process? What are its advantages and disadvantages? How did their approach to simulation differ from that used by other syndicates?
2. Which yacht construction strategy should Team New Zealand follow? Why? How much improvement would you expect from each?

Class 5 — **Lead User Analysis**
March 17

Readings: Urban, Glen L., and Eric von Hippel. "Lead User Analyses for the Development of New Industrial Products." *Management Science* 34 (5), 1998, pgs. 569-582.

Hippel, Eric Von., Ogawa, Susumu S., et De Jong, Jeroen. "The Age of the Consumer-Innovator." MIT Sloan Management Review: MIT's journal of management research and ideas, 2011, vol. 53, no 1, p. 27-35.

Case: Innovation at 3M Corp. (HBS: 9-699-012)

Case Preparation Questions:

1. How has 3M's innovation process evolved since the company was founded? Why, if at all, does 3M, known as a "hothouse" of innovation, need to regain its historic closeness to the customer?
2. How does the Lead User research process differ from and complement other traditional market research methods?
3. What should the Medical-Surgical Lead User team recommend to Dunlop: the three new product concepts or a new business strategy? What are the risks to the new Lead User process at 3M? What are the risks to the Medical-Surgical business unit?

Section 4: Capturing Value Through Innovation

Class 6a — **Organizing Teams for Innovation**
March 31

Readings: Clark, Kim, and Steven Wheelwright. "Organizing and Leading Project Teams." Chapter 8 in *Revolutionizing Product Development*. Free Press, 1992.

Case: Gladwell, Malcolm. "The Bakeoff: Project Delta Aims to Create the Perfect Cookie." *The New Yorker*, September 5, 2005.

Case Preparation Questions:

1. How does team organization impact the innovation process?
2. How did the groups in the Bakeoff differ their approach to innovation and development?
3. Under what circumstances would you prefer each type of team?
4. How do the different modes of organizing innovation map to Wheelwright and Clark's typology for project teams? When are their teams more likely to be effective?

Class 6b — **Organization and Incentives for Internal Innovators**
March 31

Readings: Goffee, Rob, and Gareth Jones. "Leading Clever People." *Harvard Business Review* 85 no. 3 (2007), pgs 72-79.

Genetic Engineering Will Change Everything Forever – CRISPR, Kurzgesagt. https://www.youtube.com/watch?v=jAhjPd4uNFY (16 min)

Case: Glaxo-Smith Kline: Reorganizing Drug Discovery (HBS: 9-605-074, A).

Case Preparation Questions:

1. What is your assessment of Yamada's proposal for the Centers of Excellence in Drug Discovery (CEDD)? What are its strengths and weaknesses relative to other potential organizational structures for R&D?
2. Do you agree with Yamada's goal of providing researchers at GSK with incentives similar to those facing researchers by small biotechnology companies? If yes, to what extent will the CEDDs allow GSK to achieve this goal? If no, how, if at all, would you change the incentives provided in the CEDD model?
3. What are the key challenges that you think Yamada will face in implementing the CEDDs?

Class 7 — **Incentives and the Organization of External Innovators**
April 7

Readings: Huston, Larry, and Nabil Sakkab. "Connect and Develop: Inside Proctor & Gamble's New Model for Innovation." *Harvard Business Review* 84 no. 3 (2006), pgs 58-67.

Video: Quantum Computers Explained – Limits of Human Technology, Kurzgesagt: https://www.youtube.com/watch?v=JhHMJCUmq28

Case: D-Wave Systems (HBS: 9-604-073)

Case Preparation Questions:

1. Evaluate D-Wave's progress as a venture.
2. What are the strengths and weaknesses of D-Wave's Research Collaboration Network? Why do scientists collaborate with D-Wave? What do they get in return?
3. Should D-Wave centralize its R&D activities? If not, when should they do this, if ever?

Class 8
April 14
Readings:

Value from Intellectual Property: Patents & Beyond

Rivette, Kevin G. and Kline, David. "Discovering New Value in Intellectual Property." *Harvard Business Review*, January/February 2000.

Video: Intellectual Property, Durham University:
https://www.youtube.com/watch?v=EQsZf2G4Sdc

Michael Blanding "Why South Korea's Samsung Built the Only Outdoor Skating Rink in Texas" HBS Research Brief, 11.06.2018: https://hbswk.hbs.edu/item/why-south-korea-s-samsung-built-the-only-outdoor-skating-rink-in-texas

Case:

Intellectual Ventures (HBS: 9-710-423)

Case Preparation Questions:

1. Why is the market for IP so illiquid and inefficient today?
2. Does Intellectual Ventures have the right strategy to solve the IP market inefficiencies? Why or why not? How does it compare with the alternative IP intermediation models, in particular patent trolls and online IP platforms?

Class 9a
April 21
Readings:

Geography and Innovation

Lucas JR, Robert E. "On the mechanics of economic development". Journal of Monetary Economics, 1988, vol. 22, no 1, pp. 35-39. (Part 6; Cities and growth)

Glaeser, Edward. "Engines of innovation". Scientific American, 2011, vol. 305, no 3, p. 50-55. (incl. Bettencourt, West "article")

Catalini, Christian. "Microgeography and the direction of inventive activity". Management Science, 2017, vol. 64, no 9, pp. 4348-4364.

Class 9b
April 21
Readings:

Drivers of Commercialization Strategy

Teece, David. "Profiting from Technological Innovation: Implications for integration, collaboration, licensing and public policy." *Research Policy*, Vol. 15, Issue 6, 1986, pgs. 285-305. (Only read pages 287-297.)

Gans, Joshua and Scott Stern. "The Product Market and the Market for Ideas: Commercialization Strategies for Technology Entrepreneurs." *Research Policy*, Vol. 32, Issue 2, 2003, pgs. 333-350.

Gilette, Felix and Gerry Smith. "All Over But The Streaming." *Bloomberg Businessweek,* August 5th 2019, pgs. 10-13

Section 5: Innovation Platforms

Class 10 — **Setting a Standard and Network Effects**
April 28

Readings: Shilling, M.A. Strategic Management of Technological Innovation, McGraw-Hill, 2017. Chapter 4

Case: Fasten: Challenging Uber and Lyft with a New Business Model (HBS: 9-616-062)

Case Preparation Questions:

1. What explains the rapid growth of ridesharing companies such as Uber and Lyft?
2. What explains Fasten's successful entry into the Boston market?
3. Is Uber's valuation too high or too low?
4. Is the rideshare market winner takes all?
5. How will the self-driving vehicle technology affect the industry?

Section 7: Presentations

Class	***Presentation Date***	***Case***	***Analysis Team***	***Analysis Submission Date***	***Critique Team***	***Critique Submission Date***
11	May 5	Nivea (A)	1	April 28	4	May 4
11	May 5	3D Systems	2	April 28	5	May 4
12	May 12	Mahindra & Mahindra	3	May 5	6	May 11
12	May 12	GE, and the Industrial Internet	4	May 5	1	May 11
13	May 19	Google Car	5	May 12	2	May 18
13	May 19	Samsung Electronics	6	May 12	3	May 18