

Instructors	<b>Professor Vasant Dhar</b>
Classroom	KMC 5-140
Class times	Wednesdays 6:00 to 9:00 pm
Office Hours	Preferred communication: Email and telephone; After class and by appointment
Internet	Email: <a href="mailto:vdhar@stern.nyu.edu">vdhar@stern.nyu.edu</a> URL: <a href="http://www.stern.nyu.edu/~vdhar">www.stern.nyu.edu/~vdhar</a>
Numbers	Office (212) 998-0816

### Summary and Objectives

We are at the early stages of an information revolution where information technologies are redefining business models, transforming industries, creating new markets, and generating a whole new “space” where new human communities, behaviors, norms, and regulation are just beginning to emerge. Information technologies are an increasing part of developing new products and services, of integrating business functions, and of managing customer relationships. IT-driven disruptions in business models are frequent.

In such a business environment, decisions about information technologies are increasingly central to business success. In more stable, “industrial age” industries, business models were relatively stable, and the central basis for success with IT investments involved aligning them with complementary organizational and process changes. However, when IT transforms an industry, it realigns the industry’s structure and boundaries, and changes the fundamental business models that work.

The course is case oriented. The cases have been chosen to cover a range of industries and transformations of business models over the last ten years, and span search advertising, financial intermediation, retailing, digital music, telecommunications, the IT industry, entertainment and gaming, and social networking. (Sample cases and questions are listed in Appendix 1.) Since the emphasis of the course is on information technologies in business, the course includes a module on the impacts of emerging technologies to force us to think through issues of industry and business transformation induced by currently emerging technologies. The objective here is to end up with a framework that you will find useful in generalizing to other information technologies.

This course will not make you an IS technical specialist; its emphasis is on industry and managerial issues. However, through an overview of the technologies, activities, and applications of IS, this course will help you to acquire an appreciation for the possibilities created by IT in tomorrow’s markets, organizations and society. We personally believe that every future executive needs to learn how to think about how IT transforms business, so recommend it to you independent of your planned career path.

Upon completion of this course you should have:

- An understanding of the major information technology enabled business models that have emerged over the past decade.
- An understanding of how information technologies change business models and how to anticipate these changes.
- An understanding of how information technologies transform industries, and a framework for thinking about how to predict whether IT will transform yours.
- A perspective on how information technology can create new markets and social structures.
- An appreciation of the many organizational consequences resulting from alignment (or lack thereof) of IT strategy and business models.

### Expectations

Students are expected to be properly prepared for the class and to have thoroughly read the assigned readings and cases. Students are expected to participate actively in class discussion.

### Course requirements

There are three requirements in this course:

1. **In-class case analyses:** Students will be broken into their teams in class and will prepare answers to several questions handed out in class. Each team should be prepared to present their analyses and answers to the whole class. Student groups will hand in their materials for each case analysis which will be graded. The class will be given only 30 minutes to prepare answers to the questions so make sure you have carefully read each case in advance.
2. **Group project:** Your project will involve analyzing how IT has transformed and will transform a specific industry sector in the S&P 500. It will involve industry analysis, evaluating how business models have been changed by IT, analyzing how this changes valuation, and creating a sector-specific index fund of companies from the S&P 500. We will provide further guidance on the first day of class along with a list of industries to choose from. Each group will spend about 45 minutes presenting its findings in class.
3. **Post-class analysis:** You will abstract and summarize crisply the main themes, insights and intellectual takeaways from the course, perhaps in order of significance to you personally.

### Course Pack Contents

1. "IT Doesn't Matter" by Carr, Nicholas G. In *Harvard Business Review*, Case No. R0305B. Published 05/01/2003, Harvard Business School Publishing, (8 pages).
2. "PayPal" by Mendelson, Haim. p 1-26. Case No. EC-27. Published August, 2002. **Stanford University Graduate School of Business**, (26 pages).
3. "Amazon.com: Marching to Profitability" by Mendelson, Haim. p 1-28. Published August 2004. **Stanford University Graduate School of Business**, (28 pages).
4. "Chapter 1: IT and Strategy." by Applegate, Lynda; Austin, Robert; McFarlan, Warren. In *Corporate Information Strategy and Management: Text and Cases*. 7<sup>th</sup>. p 25-55. McGraw Hill, 2005, (31 pages).
5. "Apple Computers, Inc.: iPods and iTunes" by Crossan M; Mark K. Case No. 9B05M046. Published 07/20/2005, **Richard Ivey School of Business, University of Western Ontario** (16 pages).

6. "Chapter 7: Networks and Positive Feedback" by Varian, Hal; Shapiro, Carl. In *Information Rules: A Strategic Guide to the Network Economy*. p 173-225. **Harvard Business School Press**, 1998. (53 pages).
7. "Facebook" by Barnett, William P.; Leslie, Mark; Harkey, Mike. Case No. E220. Published 05/03/2006. **Graduate School of Business Stanford University**, (23 pages).
8. "Harrah's Entertainment Inc" by Lal, Rajiv. **Harvard Business School**. Case 9-502-011. Revised June 14, 2004. (27 pages).
9. "The ITC eChoupal Initiative" by Upton, David; Fuller, Virginia. Case No. 9-604-016. Published 10/28/2003, revised 1/15/2004. **Harvard Business School Publishing**, (20 pages).
10. "Finding Robust and Usable Models with Data Mining: Examples from Finance" by Dhar, Vasant; Stein, Roger. In *PC AI Magazine*, Vol. 12, Issue 5. p 17-20, 26. Published September/October 1998. (5 pages).
11. "Chapter 10: Delivering Rules from Data: Machine Learning Algorithms" by Dhar, Vasant; Stein, Roger. In *Seven Methods for Transforming Corporate Data into Business Intelligence*. p 167-189. **Prentice Hall/Pearson Education** (Upper Saddle River, NJ), 1997. (23 pages).
12. "Generating Premium Returns on Your IT Investments" by Aral, Sinan; Weill, Peter. Reprint 47211. In *MIT Sloan Management Review*, Volume 47, Issue 2. Winter 2006. p 39-48. (10 pages).

## **Appendix: Group Project**

### **Instructions and guidelines**

For your course project, you will study the impact of IT on a specific industry sector, analyze how it changes business models and industry structure, and based on this analysis, construct an S&P500 index portfolio for the industry.

Read through what is required before choosing your industry. When you indicate your choice (more on this later), we will assume you understand the kind of analysis you need to perform.

### **Deliverables**

Make your in-class presentation, lasting 45 minutes. These presentations will be in the last few sessions.

Email your slides and your report, with any revisions that you feel like making after your presentation, by midnight on the day of your presentation. Name your file groupX\_project.ppt

### **Industries**

Each group will choose one of the following 12 industry sectors. We are using the S&P500 Global Industry Classification Standard (GISC), and the number which precedes the industry's name is its GISC code.

- (a) 201010: Aerospace and Defense
- (b) 254010: Media
- (c) 301010: Food and Staples Retailing
- (d) 351020: Health Care Providers and Services
- (e) 352010: Biotechnology
- (f) 352020: Pharmaceuticals
- (g) 401010: Diversified Banks\*
- (h) 402030: Capital Markets
- (i) 403010: Insurance
- (j) 451020: IT Services
- (k) 451030: Software
- (l) 453010: Semiconductors and Semiconductor Equipment

The best way to get a feel for what the scope of each industry is would be to look at the S&P500 companies that have the corresponding industry classification. A spreadsheet containing this classification will be available on Blackboard, and the S&P web site may have further information. You are responsible for making sure you have "drawn the boundary" around your industry appropriately.

### **Presentation and report**

Your presentation and report (your report can either be an independent Word document of no more than 10 pages, or can be detailed additional slides in PowerPoint that you do not use during your class presentation) should cover the following.

- (1) Overview: This should include a brief overview of the industry (its purpose, value proposition and scope, key players, market size and other numbers that are relevant), and a brief analysis of competitiveness in the industry. Use Porter's framework as a required starting point, but feel free to go beyond it (We do not have a specific direction in mind here, but some people believe that the "five forces" are somewhat narrow).
- (2) How IT changes business models and industry structure: The mix of how retrospective and how forward looking this analysis is would depend on the industry you choose. This analysis should include (a) identifying the most significant sources of IT-driven change, and (b) relating this IT to changes in

business models for companies in the industry, to the creation of new markets in or related to the industry, and to changes in industry competitiveness relative to the benchmark in (1).

(3) What this analysis suggests for companies in the industry: The final output of this analysis will be a portfolio comprising the S&P500 companies in the industry, with a higher portfolio fraction indicating a belief on your part that the transformation by IT described in (2) suggests brighter business prospects for the company. For instance, you could briefly analyze the business model of each S&P500 company in the industry, qualitatively assess how transformation by IT might affect its revenue/cost/asset models, and base your allocations on this assessment. Or you could use an alternative approach of your choice. I don't expect you to do a detailed valuation for each company, of course, but you could include a brief (less than half a page) summary of the highlights of your analysis for each company in an appendix.

## **Appendix: Post-Class "Themes" Paper**

### **Instructions and guidelines**

Write a paper that summarizes what you see as the main ideas, insights and intellectual themes from the course. There are many different ways in which you could approach this. One way might be to build on the discussion following "IT Doesn't Matter" which we ended the course with, reflect on the technological constants (the representation of things as information, the sustained increase in processing power/bandwidth and the modular nature of software) and their consequences, relate these to the cases, frameworks and discussions of the course, and articulate the themes you end up with. Another way might be to start with the 8 questions we began the course with (and which are available on Blackboard), pick a subset of them, relate them to the cases, frameworks and discussions of the course, and structure your paper as a set of answers to the questions. A third way might simply be to think about what you have learnt and describe it crisply.

You are free to choose an alternative approach. Whichever way you approach it:

- Articulate your ideas concisely and crisply. There's no need to repeat your cases analyses, summarize Porter's forces, or draw out your analysis into many pages because you want it to be substantive. Two to three pages (reasonably-sized font and spacing) is fine. It can be longer if you'd like, but remember that we're looking for the themes, not the details.
- Take a personal perspective. You don't need to try and include everything we might have covered. Each of you might have a slightly different take on the course, and what each of us retains is influenced in part by our backgrounds and interests. Besides, some of the eventual learning from the course will manifest itself over time in the future, as you face situations that force you to think about or make a decision about IT and its consequences. In a nutshell, there are no one set of "correct answers" that need to be in your paper.
- Think about what you've learnt that you might find useful to you a few years down the road. This might be a good way of separating the details from the themes.

### **Deliverable**

Paper as a Word file one week after the last class session.

## Appendix: Cases and Discussion Questions

### Harrah's Entertainment

Read through the case "Harrah's Entertainment, Inc." and prepare a brief (1-page) write-up responding to the following questions.

1. What kinds of data does Harrah's collect about its customers?
2. What kinds of questions can Harrah's address about its customers from the data it collects?
3. Why is customer retention (or capturing larger share of wallet) so important to Harrah's?

After we form groups at the beginning of the first session, you will spend 30 minutes during this session on further analysis of the case, based on an additional set of questions we will distribute in class.

### WiMAX and Industry Transformation

(B) Using the Web (and any other information sources of your choosing), prepare a brief (1-page) write-up responding to the following questions.

1. What is VOIP (voice-over-IP)?
2. What is WiMAX? In your opinion, what are its most relevant differences from WiFi?
3. Is WiMAX service available in the United States today? Are any incumbent mobile service providers building out WiMAX networks?

(B) Review and be prepared to apply Porter's competitive forces framework for the analysis of industry profitability (the "five forces" framework that was covered in your core Strategy course). You will spend 30 minutes during this session analyzing how the widespread (future) adoption of WiMAX could transform the structure and profitability of the mobile telephony industry, based on an additional set of questions we will distribute on Sunday.

### PayPal

Read through the case "PayPal" and prepare a brief (1-page) write-up responding to the following questions.

1. What characteristics do consumers value in a payment system? How did PayPal score on these?
2. What innovations did PayPal adopt to address risk?
3. What characteristics of the Internet did PayPal exploit?
4. Who were the major players prior to PayPal in the payments industry and who were their customers?

You will spend 30 minutes during this session on further analysis of the case based on an additional set of questions we will distribute in class.

### The iTunes Platform

Read through the case "Apple Computer, Inc.: iPods and iTunes" and prepare a brief (1-page) write-up responding to the following questions.

1. What is digital rights management (DRM)? What choices has Apple made towards managing digital rights? (an example of a digital right is 'the right to render a song as many times as the user wants').
2. Who are iTunes' major competitors, and how do their technological/DRM differ from those of Apple?
3. Can music downloaded from iTunes be played on digital music players other than the iPod? Can the iPod play music purchased from other online music stores? Can it play music downloaded illegally? Can it play music purchased legally on CD's?

(B) Review the material in the chapter "Networks and Positive Feedback" (chapter 7 from *Information Rules* by Carl Shapiro and Hal Varian, through page 650) and prepare to apply its ideas to analyze Apple's choices. You will spend 30 minutes during this session analyzing these choices, based on an additional set of questions we will distribute in class.

### **Amazon.com**

Read through the case "Amazon's March to Profitability" and prepare a brief (1-page) write-up responding to the following questions.

1. Briefly describe the evolution of Amazon's business over the last 11 years. In addition to the case, you might find this recent BusinessWeek slide show useful:

[http://images.businessweek.com/ss/06/11/1102\\_amazon/index\\_01.htm](http://images.businessweek.com/ss/06/11/1102_amazon/index_01.htm)

2. Why did Amazon succeed as an online retailer, despite numerous other dotcom-era retailers failing in the late 1990's?

(B) Review the book chapter "IT and Strategy", which is part of your reading packet, and which you may find useful for the in-class case analysis, based on an additional set of questions we will distribute on Sunday.

### **ITC's eChoupal**

(A) Read through the case "The ITC eChoupal Initiative" and prepare a brief (1-page) write-up responding to the following questions.

1. What are the sources of value creation from ITC's eChoupal platform?
2. What principles did ITC employ as it implemented its newly fashioned IT-enabled supply chain? Which of these do you think were central to its successful implementation?

### **Google**

Read through the book chapter "A Billion Dollars, One Nickel at a Time" (from the book *The Search* by John Battelle, distributed in class the weekend of 01/21/07) and prepare a brief (1-page) write-up responding to the following questions.

1. What are the three "magic elements" that Battelle identifies as being central to success in creating the search economy? In your opinion, which of these three explains Google's market dominance?
2. In the last two years, what acquisitions has Google made, and what new services (like Gmail) has it rolled out? Which of these is most likely to influence its future success?

You will spend 30 minutes during this session on further analysis of the case based on an additional set of questions we will distribute in class.

### **Facebook**

(A) Read through the case “Facebook” and prepare a brief (1-page) write-up responding to the following questions.

1. What is the central difference between Facebook and MySpace?
2. What are Facebook’s sources of competitive advantage? Are they sustainable?

You will spend 20 minutes during this session on further analysis of the case based on an additional discussion question we will distribute in class.

### **IT Portfolios**

(A) Read through the article “Generating Premium Returns on Your IT Investments” (distributed in class) and prepare a brief (1-page) write-up responding to the following question.

1. What does your organization’s IT portfolio look like? Does it seem sensible?

### **AOL and Data Governance**

Read through the articles “A Face is Exposed for AOL Searcher 4417749” and “AOL’s disturbing glimpse into users’ lives”. There is no pre-class deliverable.

### **IT Investments**

Read through the article “IT Doesn’t Matter”. Prepare to support and critique Carr’s argument, perhaps informed by what we have covered in the course thus far. There is no pre-class deliverable.