

The Wharton School
UNIVERSITY OF PENNSYLVANIA
Department of Operations and Information Management
Syllabus for OIDD 613

Information and Business Transformation

AKA

Online Innovation: New Patterns of Power and Profit

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Class Sessions: M, W 10:30-12 and 12-1:30

Office Hours: **M, W** 2-2:30 | **T** 11-11:45 and 1:30-3:00 | and by appointment

Teaching Assistants

TBD— [xxx](#)

TBD — [xxx](#)

Lab Assistant

TBD— [xxx](#)

OIDD 613 is intended as a complement to the algorithmic aspects of MBA education. It focuses on developing model-based intuition for the creation and implementation of strategy. It seeks to promote understanding the most innovative uses of information and information-based strategy. Students will achieve a personal competitive advantage, *managerial judgment in the age of machines who think*. Ideally, this will protect your career by making you *automation-proof*.

The course has three missions, which can be seen as unifying themes.

1. Understanding intuitive, non-quantitative decision making. The most important aspects of executives' roles are neither entirely data-driven nor entirely algorithmic. If they were, CEOs would be robots, not highly paid people.
2. Understanding how *information changes everything* and creates *new patterns* and *new business models*. Recognizing these new business models helps an executive's decision making, especially when analyzing potential new business opportunities before data are available.
3. New business models are either based on *value creation*, or on *value harvesting*. Each presents different business opportunities. Each creates different social stresses, and each is now subject to different regulatory scrutiny and to different potential new regulatory restrictions.

OIDD 613 focuses on the impact of *information on management*, rather than the *management of information* or the *management of information technology*. The course prepares students to master information as a strategic asset, and combines theory, models, and case studies drawn from the instructor's professional experience. It is not a course on big data analytics or on the management of data, but rather is a course on diagnosing and solving ambiguous and poorly structured strategic problems posed by changes in information availability. Consequently, the course is targeted at students interested in a career in strategic consulting or marketing strategy, and at students who need a solid command of valuation of online business models in order to pursue a career in private equity.

Information has changed the operations, strategy, and structure of firms in all industries. Of course this is most visible in firms like Google and Facebook, with business operations that are entirely online and in support of activities that are largely online. But it is visible in a host of more traditional businesses, including those that historically had relied on massive investments in physical assets. These range from banking (*"What's in your wallet?"*) and retailing (*Using Alexa to order beer from Amazon with two-hour delivery*) to transportation (*Using Uber instead of a taxi*).

Interestingly, many spectacularly successful online business models are not as innovative as they initially appear, and many turn out to be simply reworking of an earlier model whose success has been proven and whose value is clear. Understanding the prior uses of information-based business models greatly facilitates understanding new opportunities and evaluating new companies.

- Sometimes a great new business may be created from a reuse of an existing model for information-based strategy. Capital One exploited a newly vulnerable market and found a way to attract its competitors most profitable customers. It transformed the credit card industry and other banks either adapted or were forced out of the credit card business. While Uber and Capital One initially appear as different from each other as two companies can be, Uber also exploited a newly vulnerable market and is crushing traditional taxi companies around the world.
- Sometimes a new business may represent the combination of two patterns observed previously. Google's business model is a combination of controlling a gateway (like the airlines' reservations systems from the 1980s) and a platform envelopment strategy (like AT&T in the 1930s and Microsoft in the 1990s).

This course will focus on problem diagnosis based on historical understanding of a small set of important business models. Few problems in business come fully labelled with their root cause or with their appropriate solution technique. Life is not *syllabusized* the way MBA education is, and life's problems are more ambiguous than any problem set. And yet there really is only a small set of business problems that one needs to recognize and needs to be able to solve. This course will therefore address one of the most critical skills a leader can possess, the ability to encounter an unfamiliar situation and rapidly transform it into one that the leader has solved before.

This course does not require any background or training in technology or computer science. It does assume familiarity with strategy and with marketing.

Course Objectives

At the conclusion of the course, students will have mastered the following:

- **Developing model-based intuition for dealing with strategic ambiguity.** Much of senior management is not about algorithmic decision-making, but on understanding the nature of strategic ambiguity and determining which forms of analysis are most appropriate. This is the principal focus of this course.
- **Transforming and reframing questions as the basis of problem solving:** Most strategic problems originally appear in ways that are difficult to recognize and difficult to understand. Transforming questions into a different format often makes these strategic problems tractable. Learning to solve difficult problems is a fundamental objective of this course.
- **Using the Power of Information:** Students will understand the opportunities to launch innovative online businesses and modify the information-based strategy of existing businesses.
- **Valuing Businesses in the Presence of Uncertainty:** Most innovative information-based businesses involve a significant level of uncertainty, for entrepreneurs, for early round capital and for investors. Students will understand the most powerful techniques for assessing and managing risk.
- **Using history to predict the future:** There is a small number of new models for information-based strategies, and these are deployed, often in combination, by most new businesses no matter how original they may appear. Mastering these new models is a powerful predictor for entrepreneurs, for early round capital and for investors.
- **Bounding uncertainty with scenario analysis:** Some changes really are so disruptive that historical data have little predictive power. Scenario analysis still permits bounding the set of possible alternative future outcomes, even if it cannot identify a single future outcome as inevitable.

Required Text

The primary text for the course is *New Patterns of Power and Profit: A Strategist's Guide to Competitive Advantage in the Age of Digital Transformation*. The text is less expensive if you order the Kindle edition. A few additional readings will be provided, primarily from a text that contains supplemental chapters with more detail and more mathematics than present in *New Patterns of Power and Profit*. These readings are from *Oh, Yeah, Now I Get It: Learning to solve really complicated problems in business, in society, and in life*.

Assignments and Grading

There will be short written “check point” submissions required before most classes. These will be graded **NC / P / +**. These will be due before 12:30 AM the day of each class. **Please Note: The submissions listed in the syllabus draft dated 24 June 2019 will be changed before the start of the course!**

Grading will be based **40%** on class participation (*including 5%* based on short submissions) and **60%** on the final exam. The short submissions are extremely important because they are used to guide which students are selected for cold calling during the class. Not surprisingly, a high grade in class participation will require class attendance. More importantly, a high grade in participation will require active engagement in classroom discussions, high-quality responses to cold calls, and high-quality interactions when the student volunteers rather than waiting to be called.

The final exam will be administered during the normal MBA exam week.

There will be several in-class discussions of cases or of analytical problem sets during the semester. Classes where we will discuss mathematical analyses are highlighted in **RED** in the online course syllabus, both in the session-by-session course outline and at the top of each day’s page in the syllabus. This is significant because we will be discussing the analyses in class, and students will need to work through the analyses before class to prepare for class discussions. Sessions where case discussions will not involve overheads, or where discussions will go well beyond the overheads, are highlighted in **BLUE**.

Since class participation is essential in this course it will be assessed four ways. (1) Students will be cold called during class. Cold calls are often *warm calls*, meaning they will be directed to students who wrote the most interesting and insightful short submissions before the class. (2) Students with insights and strategic epiphanies can volunteer information even if they are not cold called or warm called. (3) A short half-page submission is required before most of the sessions of the course. As noted, these will count for 5% of your grade. These are highlighted in **YELLOW** in the syllabus. (4) Students who are uncomfortable speaking in class can submit the written answers to questions in the sessions highlighted in **RED** to improve their class participation grades; obviously, written answers must be submitted before the start of the day’s class discussion! These questions are often posted to the website and not included in the syllabus itself.

The final exam is highlighted in **GREEN**. Because of unfortunate incidents with students in the past, the MBA Program Office requires that students take the exam in person in the exam room, on the day it is officially administered. I am no longer permitted to make exceptions for any students, for any reasons. The MBA Program Office will review individual requests from students on a case-by-case basis.

OIDD 613
Online Innovation: New Patterns of Power and Profit
Suggestions for Preparing for Class Discussion

In this course class discussion is not intended to repeat the readings, but to build on them. I want you to understand how new patterns in information-based strategy are developed and tested and how new mental models are developed; I don't just want you to memorize the patterns. I want you to understand how to apply these mental models in new ways, to solve unfamiliar problems, using history and analogies.

In some ways this class is a throwback to an earlier style of case discussion. My experience and the readings are just a starting point. Your personal experience is relevant, of course. So is almost anything you may have read that can help you interpret the case, based on historical precedents from previous courses, previous business experience, or readings from previous decades or even from previous centuries. Google has implemented a platform envelopment strategy by bundling so many capabilities into its Android devices, just as Microsoft did when it bundled so much functionality into Windows. Putin has decided to keep Russia and as much of the former Soviet Union together as he can, whether it wants to be kept together or not, just as Abe Lincoln kept the Union together whether it wanted to be kept together or not. This does not equate Google and Microsoft, any more than it equates Putin and Lincoln; it does suggest that history can provide insights and enable predictions about what might happen next, even when the parallels are not exact.

But how do you prepare for a class where discussions can rely on anything and everything?

- First and foremost, you can't build on the readings if you haven't done them. It really is essential to do the readings before each class.
- Next, look at the questions for the day. Every class has a list of discussion questions associated with it. These do *not* tell you what we are going to discuss that day. They *do* tell you what to think about in order to get ready for class discussion.
- Think about the examples in the reading. When have you seen patterns similar to the ones covered in the readings? When have you encountered problems similar to those in the readings? What did you do that was similar to the solutions suggested in the readings? What did you do differently?
- Finally, most importantly, do the short write-ups required for each class. It is ok to do them after discussion with classmates. They should only take a couple of minutes. They are intended to be short mental check-lists, not long written homework assignments. They are intended to start you thinking about what you read, and to get you ready for class discussions.

Unfamiliar situations are often stressful, and I want to create unfamiliar situations in the safe environment of the classroom, to prepare you for dealing with the stress of these unfamiliar situations when your responses really matter to your career and to your

company. None of you will be familiar with all of the examples used; that's not an accident; that's an essential design feature of the course.

And remember, *everyone* will find some point in class in which they don't know the answer to a question. The key thing is to figure the answer out; it's not that you don't know, but that you don't know *yet*.

Course Outline and Readings¹

- Session 1 W 28-Aug **Introduction and Course Overview²**
Introduction to the changing role of information in business. Changing information endowment changes everything, from human behavior to corporate strategy. Discussion of grading and course mechanics.
Read: *New Patterns of Power* (Prolog / Chapter 0)
Due: Short Submission on Course Intent and the Future of Management and the MBA Degree
- Session 2 W 4-Sept **Learning from the Experience of Others – The Power of Pattern Recognition**
Review of the science of business and the science of strategy formulation in the presence of discontinuous change, based on patterns observed over the past twenty years.
Read: *New Patterns of Power* (Chapter 1, Sections 1-3)
Due: Submit bios to website
- Session 3 M 9-Sept **Information Asymmetry: Signaling, Screening, Versioning, and the Market for Information Goods**
Introduction to individual types and individual willingness to pay. Introduction to information asymmetry. Introduction to versioning contracts to maximize producer surplus (the economists' fancy term for profits).
Read: *New Patterns of Power* (Chapter 2)
Due: Short Submission on Signaling and Screening

¹ All readings can be found at the course Canvas website, under the tab readings, at <https://canvas.upenn.edu/courses/1386765/files/folder/Readings>. Listings are alphabetical.

² Slides and notes for individual classes can be found at the course Canvas website, under the tabs Notes and Slides. Once again, listings are alphabetical. Not all class sessions will have notes posted.

Session 4 W 11-Sept **The Theory of Newly Vulnerable Markets**

Newly Vulnerable Markets are markets that appear mature; they have nearly full participation. Incumbents appear to have strong sources of competitive advantage, like market share and economies of scale or brand recognition. And yet new entrants often enjoy unanticipated sources of their own competitive advantage. We introduce a Goldsim model and explain the use of simulation to test strategy. We then test the theory with a simple Goldsim model to see what happens when each of the factors that essential to a Newly Vulnerable Market are absent.

Read: *New Patterns of Power* (Chapter 1 Section 4, Chapter 2 Review Section 3)

Discussion: Using Simulation to Test a Theory

Due: Short Submission on Simulation and testing the Theory of Newly Vulnerable Markets

Session 5 M 16-Sept **Strategies for Dealing with Newly Vulnerable Markets – Use of Information Asymmetry by Attackers, and the Difficulties of Creating a Successful Defense.**

Gaining competitive advantage through systems for market micro-segmentation and differential pricing; attempting to sustain advantage. The launch of Capital One, and extensions into other industries. Attempting to respond.

Read: *New Patterns of Power* (Chapter 1 Section 4, Chapter 2 Review Section 3)

Discussion: Screening and Competitive Advantage for Attacker and the Difficulty of Finding a Successful Response

Due: Short Submission on Newly Vulnerable Markets

Session 6 W 18-Sept **The Power of Framing and Reframing**

Problems can be made much easier by proper reframing. Conversely, problems can be made much more difficult, or even impossible to solve, by an incorrect framing.

Read: *New Patterns of Power* (Chapter 3)

Discussion: Examples of Reframing in Life and in Business

Due: Short Submission on Reframing

Session 7 M 23-Sept **The Power of Certainty – Resonance Marketing**

The role of increased information in the changing balance between cost-based strategies and value-based strategies, the changing advantage of incumbents, and the changing nature of competition.

Read: *New Patterns of Power* (Chapters 4 and 5)

Discussion: The Logic of Resonance Marketing

Due: Short Submission on Resonance Marketing

- Session 8 W 25-Sept **Hustle at a Discontinuity and Platform Envelopment**
What do we know about platform extensions and resource-based competitive advantage? What does this tell us about Microsoft? What does this tell us about Google? What does this tell us about Amazon? What does it tell us about the competitive advantage of existing companies in a net-based economy?
Read: *New Patterns of Power* (Chapter 6)
Discussion: Platform Envelopment
Due: Short Submission on Platform Envelopment
- Session 9 M 30-Sept **Third Party Payer Business Models., Online Gateways, and the Future of Competition – What do you need to know about information-based strategies in the future?**
Third Party Payer business models appear to be a special case of what are now commonly called two sided markets. Online gateways are emerging as one of the most powerful business models on the net. What is the source of their power? When are they dangerous to competition and to consumers? When might third party payer business models require new forms of regulation and why? What is the sharing economy? What are the externalities associated with Airbnb and Uber? When might regulation be appropriate?
Read: *New Patterns of Power* (Chapters 7-9, 11)
Due: Short Submission on Fairness, Privacy and Anonymity, and Online Responsibility
Note: This class is held on Rosh Hashanah. Class will be recorded. And students who miss class for the Jewish holiday can submit assignments until 6 AM Wednesday.
- Session 10 W 2-Oct **Quantitative Analysis of Resonance Marketing Examples**
The ideas of resonance marketing can be used to quantify the impact of online content and community-generated reviews on new product launches.
Read: *Now I Get It*, (Unit 8: all Chapters plus Appendix 8.A2)
HW1: (Formerly Written Analysis) – Prepare for Discussion/ Quantitative Analysis of Resonance Strategies
- Session 11 M 7-Oct **Valuation of Information-Based Strategies**
In some ways information technology investments are similar to other large capital investments with long lead times and resulting uncertainty; in other ways they have unique problems all their own.
Read: *Now I Get It*, (Read Unit 11: Chapters 1 and 2. Read Chapters 4 through 6 if you are not familiar with statistical decision making and decision trees. Read Chapters 7 and 9.)
HW2: (Formerly Written Analysis) – Prepare for Discussion /Computational exercise on business valuation
- Session 12 W 9-Oct **The View from the EU or Why is Competition Commissioner**

Margrethe Vestager so Excited Right Now?

The EU's new privacy regulations (GDPR) would essentially invalidate the business models of Facebook and Google. A recent ruling against Google in the Foundem case sees antitrust violations in vertical integration. A more recent ruling against Google for its abuse of Android's power sees antitrust violations in platform envelopment. These seem to be innovative interpretations of existing European antimonopoly law. Why is the EU so active here? Why is the US so passive?

Read: *New Patterns of Power* (Chapters 12 and 13)

Analysis and Discussion – The ever-increasing power and influence of global mega-corporations and the future of world order

Due: Short Submission on The EU and Technology Mega-Corporations, Plus the Growing Influence of the Corporations

Note: This class is held on Yom Kippur. Class will be recorded. And students who miss class for the Jewish holiday can submit assignments until 6 AM Thursday.

- M 14-Oct **Extended Office Hours (12-2 PM)**
- W 16-Oct **Extended Office Hours (12-2 PM)**
- F 18 Oct **Final Exam Friday, 18 October, at Noon During Regularly Scheduled Exam Week**

Instructions for attending the in-class exam will be posted on Canvas.

OIDD 613

Online Innovation and Information-Based Strategy

The Changing Role of Information in Business and Strategy

Session 1 – 28 August 2019

Questions for Class Discussion

1. Why do we have an MBA course on *information*? Why is this course about information and *not* information technology? Why is this course about *information-based strategy* rather than about information technology?
2. What is the role of uncertainty in creating a strategy? What is the role of hostile intent when creating a strategy? Do you actually *need* a strategy if neither uncertainty nor hostile intent is present?
3. Do big data and the emergence of real-time advanced analytics eliminate the need for strategy? Can you use machine learning, rapid adaption, and controlled testing to eliminate the need for advanced strategic planning?

Required Submission

Forty years ago all business schools envied Harvard their expertise in case-based instruction and we all used HBS cases; HBS profits from sales of cases exceeded Wharton's revenue from tuition. In the 1990s HBS was beginning to envy Wharton, Stanford, and Chicago Business Schools for their ability to teach algorithmic-based management. Perhaps the pendulum has swung back at least partially. (1) Why might big data and advanced real-time analytics increase the importance of training your judgment and intuition? (2) When is big data analytics of limited value to executives in strategic planning? (3) If strategic planning could be performed by algorithms, what is the value of an MBA? (4) Comment on the picture on the next page.



OIDD 613
Online Innovation and Information-Based Strategy
Learning from the Experience of Others – The
Power of Pattern Recognition

Session 2 – 4 September 2019

Questions for Class Discussion

1. What makes a theory useful? Descriptive power? Predictive power? Falsifiability? What do we think about the theory that human behavior is leading to climate change?
2. How would we judge a theory that says Amazon did well because it branched out boldly, and J&J failed because it merely tried to sell what it had always sold but in a new online channel? What does this boldness theory of eCommerce success tell us to expect from very safe and traditional online grocery sales at Tesco or bold and innovative online sporting goods sales at Buy.com? Would you expect the success of online sales at Tesco and Ford to differ based on this theory, or do you not have enough information even to test the theory here?
3. What are the principal differences between strategic *uncertainty* or *ambiguity* and *strategic risk*? Why are the mechanisms for managing risk better understood than the mechanisms for managing uncertainty and ambiguity?
4. Can managers be taught a set of paradigms to permit rapid diagnosis of problems and rapid recognition of solutions? Are new paradigms really needed for management education as a result of changes in business that have been driven by the internet?
5. Is problem diagnosis really a critical skill for managers?

Required Submission

Please submit a word file containing a short biographical sketch, not a full resume, via Canvas. This will be very helpful to me in guiding class discussions. Please title your file **613F19_I_NAME.doc**, where **I** is your first initial, and **NAME** is your last name. Please provide the following information:

- Your expected major at Wharton
- Your experiences relevant to the topics of this course
- Your reasons for taking this course and what you hope to get out of it

Submitting the bio on time, or when you add the course, is an easy signal for you to send.

Additionally, indicate that you have read the syllabus and that you understand the importance of class participation in determining your final grade. Finally, indicate that you have read the syllabus and that you understand that this is not an algorithm-based course, but a course focused on enhancing your ability to deal with poorly structured but

critical problems, often not solvable with algorithms, and for which you often do not have sufficient data.