

Syllabus

OIDD 236x

Scaling Technology Ventures: Aligning Operations with Strategy

Class Schedule and Room

TBD

Instructor

Gad Allon

Office Hours: TBD

Telephone:

Email: gadallon@wharton.upenn.edu

Teaching Assistant

TBD

Office Hours: TBD

Email: TBD

Course Overview

THE GOAL OF THIS COURSE is to make strategic scaling decisions that are grounded in operational reality. We study how to build and evaluate the “operating system” of the firm to maximize value with the focus on scaling the firm’s operations. This involves tailoring the firm’s operational competencies, assets, and processes to a specific business strategy.

We will approach the challenge of scaling operations and operations strategy by taking a holistic view that incorporates competitive strategy, financial evaluation, and the customer experience. Operations strategy is a plan for developing assets and configuring processes such that the resulting competencies maximize value for stakeholders. We focus on decisions and challenges that many firms that try to scale their operations face: assessing the attractiveness of a firm’s operating system from an investor/external perspective and a management/internal perspective. Then we study building competencies in-house (i.e., investing in a portfolio of assets whose capacity, type, and location define the internal supply chain) or buying them (i.e., developing and implementing a global sourcing strategy and integrating external supply chain partners).

Syllabus

Course Materials

All course materials are either downloadable from study.net

<http://www.study.net/xxxxx>

or will be delivered over ForClass. ForClass is a platform that allows you to read cases and submit responses to basic questions that then will be used to enhance the discussion in the class.

Text and Course Materials

The textbook *Operations Strategy: Principles and Practice* by Gad Allon and J. A. Van Mieghem is **optional**.

Other textbooks that can give complementary viewpoints on operations strategy and scaling operations:

1. *Operations Strategy: Competing in the 21st Century*. S. L. Beckman and D. B. Rosenfield. McGraw-Hill, 2007.
2. *Operations, Strategy, and Technology: Pursuing the competitive edge*. R. Hayes, G. Pisano, D. Upton and S. Wheelwright. Wiley, 2005.
3. *Operations Strategy* by Slack and Lewis. Prentice Hall, 2003.

Other business books that may be of interest to students taking this course:

1. *Supply Chain Management: Strategy, Planning and Operations* by Chopra and Meindl. Prentice Hall.

Clock Speed by Charles H. Fine

Course Requirements and Grading

Course grades will be based on class participation (10%), case write-ups (30%), a midterm exam (25%), and a final exam (40%).

Syllabus

Class Participation

One half of this grade will reflect basic measures of participation. On-time attendance is mandatory. You are expected to do the pre-assigned readings and to be prepared to discuss the readings in class.

The other half reflects my qualitative judgment concerning your effective contribution to class discussions and dynamics. You should be attentive to the class discussion. Your comments should respond to and “push forward” what is happening in class.

Case Write-Ups

There are three case write-ups, which should be done in groups of 4. Each group should hand in a hard copy of its write-up at the start of the associated class.

For each case, I will post on Canvas a set of questions to be answered. Your group may answer the questions one at a time. While there is no need to write up the case as a memo, your answers to case questions should be crisp and complete. I will judge your answers based on the depth, clarity, and care with which you present them.

Answers based on *quantitative analysis* should include summary charts or tables that are sufficient to communicate your findings. They should not describe each analytical step. Rather, for each analysis you should include this type of detail in an appendix.

Qualitative questions are often open-ended. Your analysis here should be thorough in its treatment and succinct in its description or explanation of individual points.

Exam

A closed book midterm will cover the tools and concepts discussed until the midterm. An open-book exam will cover the tools and concepts developed in class. The exam is scheduled for **XXXXX**.

Self-study problems, described below, will give you a good idea of the kind of questions you can expect on the exam.

While you may prepare in groups for the exams, the notes you use during an exam must be your own. Similarly, the work performed on the exam itself must be your own.

Syllabus

Self-Study Exercises

The course includes ungraded self-study exercises that are designed to for you to practice using the course's analytical models to solve problems. I will post sample solutions for the exercises on Canvas.

I suggest you work in pairs on the self-study exercises. Having a partner will help to ensure that you do the work on a timely basis. You are also likely to find that discussing the problem with another person helps you in the learning process.

Syllabus

Class Schedule

Below is a summary listing of class topics and the due dates for case write-ups. To prepare for a given session, you should go to Canvas

<https://canvas.upenn.edu/courses/#####>

and follow the appropriate link for instructions for the given class.

Session	Topic	Due
1	Opportunistic to Strategic :Introduction	
2	Aligning Strategy and Operations: Focus	
3	Financial View of Operations	
4	Investor/External perspective	Peapod Case
5	People to Process: Process Measures and Little's Law	
6	Process Flow Analysis. Targeting Improvement	PCS Case
7	Flow Time & Capacity Analysis	
8	Flow Time & Capacity Analysis: Peak Loads	NCC Case
9	House Building Game	
10	Paradigm of Lean Operations	
11	Variability and Quality at the Source	
12	Quality and Voice of the Customer	
13	The Value of 6-Sigma	
14	Midterm	
15	Short to Long Term Asset view: Risk and Capacity Strategy	
16	Managing Assets for growth	Seagate Case
17	Managing timing of investment	
18	Capacity Types and Flexibility	Eli Lilly Case
19	Capacity Types and Flexibility	
20	Local to Global: Optimal Service Level.	

Syllabus

21	Economies of Scale & Cycle Inventory	
22	Uncertainty, Safety Inventory & Pooling	
23	Pooling: Centralization & Postponement	Netflix Case
24	Managing global networks (simulation game)	Mexico China game
25	Managing global networks (Debrief)	
26	Ownership to partnership: Managing suppliers and vendors	
27	Make vs. buy decisions. Learning and innovation in networks	
28	Wrap-Up and Review	

Syllabus

More Detailed Description for the Curriculum Committee

Module 1: From Opportunistic to strategic: Alignment, Value creation and Capabilities

Class 1: [What is operations strategy and what are the key scaling challenges?](#)

Introduce a framework to describe a company's operations strategy. The key premise is that an operations strategy must be evaluated in terms of the performance it delivers. This performance depends on the activity network and the asset bundle that operations puts in place. We will discuss the goal of operations strategy and a framework to think about operations strategy and scaling operations.

Class 2: [Aligning Strategy and Operations: Focus](#). Illustrate to the importance of aligning strategy and operations. Discuss the notion of focused operations, its advantages and challenges.

Class 3: [How to assess an operations strategy as an outsider?](#) Use public information together with personal estimates and projections of key resources and process to assess the attractiveness of an operations strategy. During this process, starting with the Dupont decomposition, we distill key operational metrics that create value, tie them to financial performance, and suggest how to improve profitability over time while scaling the business.

Class 4: Apply the operations forensics concept. We will use the Peapod case as our main discussion vehicle.

Prepare: Prepare the Peapod on ForClass and submit your responses on the platform.

Required Reading: "Peapod Case", Available in *Operations Strategy: Principles and Practice* by Gad Allon and J. A. Van Mieghem. Belmont, MA: Dynamic Ideas, 2015.

Syllabus

Module 2: From People to Process

Class 5: [Process Measures and Little's Law](#). Introduce the fundamental process measures throughput, inventory and flow time, and Little's Law, the key relationship among the three.

Class 6: [Process Flow Analysis](#). [Targeting Improvement](#). Discuss where to target improvement using process flow charts and fundamental process performance measures such as flow time, inventory and throughput.

Prepare: PCS case.

Required Reading: "PCS: Portland Computer Systems", Kellogg Case Number: 5-403-750, 2003.

Class 7: [Flow Time & Capacity Analysis](#)
Discuss the drivers of flow time and capacity.

Prepare: Beleza Case, available on ForClass.

Required Reading: "Beleza Natural", Columbia CaseWorks Case Number: 110206, 2012.

Class 8: [Flow Time & Capacity Analysis: Peak Loads](#). Reinforce and extend the concepts discussed in Classes 3-5 to settings with temporary excess demand and show how to apply them to guide capacity investment decisions.

Prepare: Prepare the NCC case.

Required Reading: "National Cranberry Cooperative", HBS, Case Number: 688-122, 2011.

Class 9: [House Building Game](#). Explore the relationship between process structure and performance (cost, quality and time) through a team-based simulation game.

Syllabus

Class 10: [Paradigm of Lean Operations](#). Introduce, drawing on your house game experience, the paradigm of lean operations with its focus on attaining an ideal process through waste reduction.

Class 11: [Variability and Quality at the Source](#). Study the major components of the Toyota Production System and critically assess the costs and benefits.

Class 12: [Quality and Voice of the Customer](#). Discuss the different connotations of “quality”. The first step in strategic quality management is to map “the voice of the customer” into design and operational specifications. The second step in strategic quality management is to determine the current process capability and plans for improvement. Once the plans are implemented, a manager needs to “check” that improvement has actually taken place. Finally, a manager needs mechanisms to verify that the process continues to provide improved performance. In this context we introduce statistical process control.

Class 13: [Class 12: The Value of 6-Sigma](#). Discuss the benefits from continuous process improvement.

Class 14: [Midterm](#)

Syllabus

Module 3: From Short to Long Term Asset view

Class 15: [Risk and Capacity Strategy](#) How can we structure resources and processes to mitigate the firm's risk exposure? We approach risk management as a process with focus on operational risks and methods to mitigate that risk as we scale our operations.

Class 16: [Operational hedging](#). Analyze and optimize the impact of each asset's capacity on the overall value and risk of the processing network.

Prepare: Read the Seagate case on ForClass and answer the questions. This is an individual case.

Required Reading: "Seagate Technologies: Operational Hedging" case study, Available in *Operations Strategy: Principles and Practice* by Gad Allon and J. A. Van Mieghem. Belmont, MA: Dynamic Ideas, 2015.

Class 17: [Capacity expansion and timing](#). When and how should we change capacity? Which strategies can a company use to decide when to expand or contract capacity? What are the key drivers influencing that decision?

Class 18, 19: [Should we invest in specialized or flexible capacity?](#) Once a company decides it needs to build new capacity, it must decide on what type of capacity. This involves deciding on the type of technology and facility. This class will discuss when and why product-dedicated or product-flexible technology is more appropriate. We also will explore what flexibility means and the various approaches to achieve it and be better positioned to respond to changes in demand, supply or processing.

Prepare: Prepare the Eli Lilly case

Required Reading: "Eli Lilly: the Flexible Facility Decision (1993)", HBS case # 9-694-074. With Kellogg Addendum.

Syllabus

Module 4: From Local to Global

Class 20: [Optimal Service Level](#). Discuss the “newsvendor” model, an important methodology for determining the optimal order quantity and level of product availability, in the context of short-life cycle products, e.g., fashion goods, whose value quickly decay over time.

Class 21: [Economies of Scale & Cycle Inventory](#). Discuss how to manage cycle inventories to exploit economies of scale.

Class 22: [Uncertainty, Safety Inventory & Pooling](#). Discuss forecasting characteristics and how to manage safety inventory to protect against uncertainty in demand and/or supply lead times. Discuss the concept of inventory “pooling” and its role in supply chain design.

Class 23: [Pooling: Centralization & Postponement](#). Discuss different pooling methods, particularly centralization and postponement, their pros and cons, and implications for supply chain design.

Prepare: prepare the Netflix case.

Required Reading: “Movie Rental Business: Blockbuster, Netflix, and Redbox” Kellogg Case Number: 5-310-507, 2010,

Class 24: [How to best utilize the asset portfolio you just built?](#) Which factors should be considered when designing a global operational network? How can the concept of *total landed cost* help making such decisions? We will play an in-class simulation game. The objective is that each group identifies how to best manage a global network and the key challenges faced in such setting.

Prepare: The assignment for the in-class simulation game will be discussed and handed out in the previous class.

Class 25: Mexico China game debrief.

Syllabus

Module 5: From Ownership to partnership

Class 26: [How do we choose and manage an appropriate supplier portfolio?](#)

Deciding on which suppliers to use for particular goods or services and on how to manage the supplier relationship over time is called strategic sourcing.

Class 27: Every organization must build capabilities for future growth. Such capabilities include processes for new product and process development. We review the learning curve concept to predict process improvement. We discuss “learning by doing” through lean operations and compare to “learning before doing” in operations. The ITT case is our vehicle to discuss how organizations use their total process skills in bringing products to market strategically.

Required Reading: *“ITT Automotive: Global Manufacturing Strategy”, HBS case # 9-695-002, 1996.*

Module 6: Closing the Loop

Class 28: Summary and wrap up