

Syllabus

OIDD 236x

Scaling Technology Ventures: Aligning Operations with Strategy

Class Schedule and Room

JMHH 255, Tuesdays and Thursday 9:00am-10:30am

Instructor

Gad Allon

Office Hours: Wednesday 1-2:30pm, Monday 1-2:30pm

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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).

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Course Materials

All course materials are either downloadable from Canvas 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%), Groups case write studies (35%), a midterm exam (20%), and a final exam (35%).

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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 5 case write-ups (Peapod, PCS, EverWear, PharmaFlex and Mexico China), which should be done in groups of 4, and two mini cases (Seagate and SolarBacks) which should be done individually.

For each case, I will post on ForClass 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.

Exams

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**.

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.

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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 (Group)
5	People to Process: Process Measures and Little's Law	
6	Process Flow Analysis. Targeting Improvement	PCS Case (Group)
7	Flow Time & Capacity Analysis	
8	Flow Time & Capacity Analysis: Peak Loads	EverWear Case (Group)
9	House Building Game	
10	Paradigm of Lean Operations	
11	Paradigm of Lean Operations: continuous improvement	
12	Quality and Voice of the Customer	Quality Wireless (Read and Prep)
13	Statistical Process Control	
14	The Value of 6-Sigma	
15	Midterm	

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Session	Topic	Due
16	Short to Long Term Asset view: Risk and Capacity Strategy	
17	Managing Assets for growth	Seagate Case (Individual)
18	Managing timing of investment	
19	Capacity Types and Flexibility	PharmaFlex Case (Group)
20	Capacity Types and Flexibility	
21	Local to Global: Economies of Scale & Cycle Inventory	
22	Uncertainty, Safety Inventory & Pooling	
23	Pooling: Centralization & Postponement	Netflix Case (Read and Prep)
24	Managing global networks (simulation game)	Mexico China game (Group)
25	Managing global networks (Debrief)	
26	Ownership to partnership: Managing suppliers and vendors	SolarBacks (Individual)
27	Make vs. buy decisions. Learning and innovation in networks	
28	Wrap-Up and Review	

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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. This is a group submission.

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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: Prepare the PCS case on ForClass and submit your responses on the platform. This is a group submission.

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

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 EverWear case on ForClass and submit your responses on the platform. This is a group submission.

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

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: [Paradigm of Lean Operations: Continuous improvement](#). Continue discussing lean operations with emphasis on continuous improvement.

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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. We discuss these within the context of call center management

Prepare: Prepare the Quality Wireless case on ForClass and submit your responses on the platform. This is a “read and prep” assignment.

Class 13: [Statistical Process Control](#). A manager needs mechanisms to verify that the process continues to provide improved performance. In this context we introduce statistical process control.

Class 14: [The Value of 6-Sigma](#). Discuss the benefits from continuous process improvement and variability reduction.

Class 15: [Midterm](#)

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Module 3: From Short to Long Term Asset view

Class 16: [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 17: [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.

Class 18: [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 19, 20: [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 PharmaFlex case on ForClass and submit your responses on the platform. This is a group submission.

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Module 4: From Local to Global

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 on ForClass and submit your responses on the platform. This is a “read and prep” assignment.

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.

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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.

Prepare: Read the SolarBacks mini-case on ForClass and answer the questions. This is an individual mini-case.

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.

Module 6: Closing the Loop

Class 28: Summary and wrap up