

OM386: Supply Chain Management

Spring 2010: Unique No: 03935

M-W 9:30-11:00 in UTC 1.146

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COURSE DESCRIPTION

Supply Chain Management involves the flows of materials and information among all of the firms that contribute value to a product, from the source of raw materials to end customers. We will integrate issues from finance (investments in productive assets), marketing (channels of distribution), logistics, and operations management to develop a broad understanding of a supply chain. By taking a strategic perspective, we will focus on relatively long term decisions involving the investment in productive resources, configuration of processes, product designs, and development of partnerships with suppliers and channels of distribution.

Although the development of analytical tools is the primary objective of the course, students should be comfortable with quantitative analysis. By the end of the course, you should have enhanced your ability to use analytical tools and conceptual frameworks to make decisions in supply chain contexts as well as a better understanding of the major strategic issues trade-offs that arise in supply chain management.

TEACHING/LEARNING METHODOLOGY

The detailed course outline starting on page 6 lists, for every class session, the reading(s), case(s), assignment(s), and anything else of importance. Please read this outline carefully before every session.

Because class time is our most precious and inelastic resource, **please come to every class prepared.**

Essential preparation includes reading the assigned readings and cases and doing the assignments.

Required Text Book (VM) Van Mieghem, Jan, *Operations Strategy: Principles and Practice*, Dynamic Ideas, Charlestown, MA, 2008.

Optional Reference Chopra, Sunil and Peter Meindl, *Supply Chain Management*, Third Edition, Pearson Education, Inc., Upper Saddle River, NJ, 2006.

Required Course Pack Additional reading materials for the course are contained in a bulk pack that should be available for purchase at the McCombs Copy Center.

Course Notes To support the lectures and case discussions, I will occasionally post notes on the web page. These notes are intended to help you when you are reviewing the material that has been covered in class. They are not intended to be a substitute for attending class.

Teamwork An important element of this class is teamwork. The first two executive summaries will be prepared in groups. In addition, I encourage the formation of study groups to maximize learning.

Class Participation To foster a productive learning environment, it is important that everyone come to class prepared and willing to contribute to discussion. Ideally, you will make concise, insightful, and eloquent comments in every class. However, I also recognize the importance of making smaller contributions, including asking good questions. I believe that the learning environment is best when the discussion is not dominated by a few, but moved along incrementally by all of us. Do not be afraid to make points that you may regard as minor, ask clarifying questions, or otherwise contribute in small ways.

Laptops in Class Unless I specifically state otherwise at the beginning of a particular session, the use of laptop computers during class is prohibited.

Feedback Your informal feedback is very important to me. Please let me know throughout the semester if there is anything I can do to make this class better for you.

PERFORMANCE EVALUATION

The performance criteria are weighted as follows:

Exam	25%
Individual Homework	20%
Executive Summaries	35%
Supply Chain Game	10%
<u>Class Participation</u>	<u>10%</u>
Total	100%

Typically, grades are roughly equally divided among A, A-, B+, B, B-. Very few students receive grades lower than B-, and such grades are typically decided on a case by case basis.

Exam

There will be one exam scheduled outside of regular class hours.

Individual Homework

Individual homework assignments serve one of two purposes. Either they are intended to provide an opportunity to use one of the analytical frameworks from class, or they are intended to help you to prepare for a class discussion of a case. Some credit is always awarded for evidence of effort.

Executive Summaries

For several of the cases, I will assign an executive summary (ES), in which you will be asked to analyze a specific issue and make a recommendation. In general, an ES should accomplish the following:

- Articulate the operational problem in terms of how it affects important measures of the firm's performance.
- Identify and analyze the major alternatives.
- Present a persuasive argument for a particular course of action.

For each ES, I will provide several questions that are intended to guide your analysis / thought process. However, although the ES that you submit should reflect your consideration of the assignment questions, it should not be just of list of answers to these questions. Instead, it should be a logical and persuasive recommendation for action. A brief description of an ES and a couple of examples are provided at the end of this document. Please restrict yourselves to **one page** of text (additional pages may be attached for exhibits).

You may use single-spacing, but please use a reasonable font size, i.e. at least 11 pt. The first two executive summaries will be prepared in groups, but the third (last) one will be done individually.

Supply Chain Game: One of the assignments is for you to operate a computer simulation of a supply chain. To play, you will need to log on to the simulation and pay a fee of \$15 with a credit card. Specific instructions for the exercise will be provided. Grades will be based on both your write-up and your performance in the game.

Individual and Group Work

Each student is to prepare his own paper for each individual homework and the last executive summary. My philosophy is that the process of composing the paper is a valuable part of the learning process. (In fact, for the executive summaries, one of the skills that I want for you to develop is that of organizing your thoughts so that you can present a concise, logical analysis that leads to a recommended course of action.) However, I also believe that students can learn a lot from one another. Therefore, I encourage you to discuss the homework and executive summary assignments with one another before you sit down individually to prepare the paper that you will submit. Note that submission of exact copies would not be consistent with this.

Grading

Individual homework and executive summaries will be graded on scales of 0-4 and 0-10 respectively. Please turn in all assignments at the beginning of the class session listed on the schedule. Solutions to the homework assignments will be distributed in class or on the web-page. Please study each solution carefully even if you received full credit on the assignment. For the executive summaries, I will try to provide hard copies of exemplary papers. **I do not accept the submission of written assignments after class on the day that they are due.** However, I do allow students to drop one individual homework grade.

HONOR CODE

The McCombs School of Business has no tolerance for acts of scholastic dishonesty. The responsibilities of both students and faculty with regard to scholastic dishonesty are described in detail in the Policy Statement on Scholastic Dishonesty for the McCombs School of Business. By teaching this course, I have agreed to observe all of the faculty responsibilities described in that document. By enrolling in this class, you have agreed to observe all of the student responsibilities described in that document. If the application of that Policy Statement to this class and its assignments is unclear in any way, it is your responsibility to ask me for clarification. Policy on Scholastic Dishonesty: Students who violate University rules on scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and/or dismissal from the University. Since dishonesty harms the individual, all students, and the integrity of the University, policies on scholastic dishonesty will be strictly enforced. You should refer to the Student Judicial Services website at <http://deanofstudents.utexas.edu/sjs/> or the General Information Catalog to access the official University policies and procedures on scholastic dishonesty as well as further elaboration on what constitutes scholastic dishonesty.

Please do not use any materials (packet of overheads, homeworks, course notes, handouts, exams, homework solutions, case summaries) from previous semesters or from other sections of the course being offered in this semester unless the same has been made available by me to every one of your fellow students in this class. If the application of the Honor System to this class and its assignments is unclear in any way, it is your responsibility to ask me for clarification.

STUDENT PRIVACY

Password-protected class sites will be available for all accredited courses taught at The University. Syllabi, handouts, assignments and other resources are types of information that may be available within these sites. Site

activities could include exchanging e-mail, engaging in class discussions and chats, and exchanging files. In addition, class e-mail rosters will be a component of the sites. Students who do not want their names included in these electronic class rosters must restrict their directory information in the Office of the Registrar, Main Building, Room 1. For information on restricting directory information see:
<http://www.utexas.edu/student/registrar/catalogs/gi02-03/app/appc09.html>.

STUDENTS WITH DISABILITIES

The University of Texas at Austin provides upon request appropriate academic accommodations for qualified students with disabilities. If you have a condition (e.g. learning disability, chronic medical condition, etc.), of holiday that needs accommodation, please see me early in the semester so that we can take appropriate step. For additional information about the University's policies, contact the Office of the Dean of Students at 471-6259 or 471-4641.

The following is a summary of the sessions in the course. A detailed outline follows.

OM 386	SUPPLY CHAIN MANAGEMENT
Spring 2010	Course Outline
	Gilbert

Session	Day	Date	Topic	Case / Other Info.	Assignments Due
1	W	1/20	Introduction to Supply Chain Management		
2	M	1/25	Managing Strategic Operational Trade-offs		
3	W	1/27	Competitive Cost Analysis	American Connector	IH#1
4	M	2/1	Capacity Sizing		
5	W	2/3	Capacity Sizing		
6	M	2/8	Optimization of the SC	Medical Technologies	IH#2
7	W	2/10	Optimization of the SC	Good Tire	IH#3
8	M	2/15	Optimization of the SC		
9	W	2/17	Optimization of the SC	American Steel	IH#4
10	M	2/22	Coordinating Marketing and Capacity	Cross River	ES#1
11	W	2/24	Capacity Types		
12	M	3/1	Complementary Capacity – Oper. Hedging	Seagate	IH#5
13	W	3/3	Operational and Financial Hedging		
14	M*	3/8	TBA		
15	W*	3/10	TBA		
16	M	3/22	Capacity Location and Logistical Design		
17	W	3/24	Capacity Location and Logistical Design		
18	M	3/29	Capacity Location and Logistical Design	Dollar Tree Logistics	ES #2
19	W	3/31	Capacity Location and Logistical Design	Merloni	IH #6
20	M	4/5	Coordination and Incentives	Johnson Elevator	IH#7
21	W	4/7	Coordination of Channels of Distribution	Video Vault	IH#8
22	M	4/12	Collaborative Planning and Forecasting		
23	W	4/14	EXAM – 6:30-9:30 p.m., GSB 3.106		
24	M	4/19	Social Responsibilities in SCs	Ikea in India	
25	W	4/21	Global Supply Chain Game		SC Game
26	M	4/26	Going Downstream	Interface's Carpet	IH #9
27	W	4/28	The Outsourcing Game		
28	M	5/3	The Outsourcing Game		
29	W	5/5	Final Case	Timbuk2	ES#3

** Global Trip Period

OM 386: DETAILED COURSE OUTLINE

SESSION 1 (W, Jan. 20) Reading	Introduction to Supply Chain & Ops Strategy Van Mieghem (VM): Chapter 1
SESSION 2 (M, Jan. 25) Reading	Managing Strategic Operational Trade-offs Van Mieghem (VM): Chapter 2
SESSION 3 (W, Jan. 27) Case Homework Submitted	Competitive Cost Analysis American Connector IH#1
SESSION 4 (M, Feb. 1) Reading	Capacity Sizing VM Chapter 3, Appendix B: Newsvendor Review (as necessary)
SESSION 5 (W, Feb. 3) Reading	Capacity Sizing VM Chapter 3, Appendix B: Newsvendor Review (as necessary)
SESSION 6 (M, Feb. 8) Reading: Homework Submitted	Optimization of the Supply Chain Medical Technologies Fundamentals of Optimization Models: Linear Programming (Read pp. 63 – 84, the remainder of the chapter is beyond the scope of this course but may be of interest to some students.) IH#2
SESSION 7 (W, Feb. 10) Reading: Homework Submitted	Optimization of the Supply Chain Good Tire IH#3
SESSION 8 (M, Feb. 15)	Optimization of the Supply Chain
SESSION 9 (W, Feb. 17) Reading: Homework Submitted	Optimization of the Supply Chain American Steel IH#4
SESSION 10 (M, Feb. 22) Reading: Group ES Submitted	Sales and Operations Planning Cross River Products ES #1
SESSION 11 (W, Feb. 24) Reading	Capacity Types VM, Chapter 5 Principles on the Benefits of Manufacturing Process Flexibility
SESSION 12 (M, Mar. 1) Case: Homework Submitted	Complementary Capacity – Operational Hedging Seagate, found in VM, pages 405-414 IH#5
SESSION 13 (W, Mar. 3) Reading	Operational and Financial Hedging VM, Chapter 9

SESSION 14 (M, Mar. 8)	Global Trip
SESSION 15 (M, Mar. 10)	Global Trip
SESSION 16 (M, Mar. 22) Reading	Capacity Location and Logistical Design VM, Chapter 6
SESSION 17 (W, Mar. 24) Reading	Capacity Location and Logistical Design Note on Logistics in the Information Age
SESSION 18 (M, Mar. 29) Case Group ES Submitted	Capacity Location and Logistical Design Dollar Tree Logistics ES #2
SESSION 19 (W, Mar. 31) Case: Homework Submitted	Logistical Design Merloni Elettrodomestici SpA: The Transit Point Experiment IH #6
SESSION 20 (M, Apr. 5) Case Homework Submitted	Coordination and Incentives Johnson Elevator IH#7
SESSION 21 (W, Apr. 7) Reading Homework Submitted	Coordination of Channels of Distribution Video Vault IH#8
SESSION 22 (M, April 12)	Collaborative Planning and Forecasting
SESSION 23 (W, April 14)	Exam: 6:30-9:30 p.m. in GSB 3.106
SESSION 24 (M, April 19) Case:	Social Responsibility in Supplier Management Ikea's Global Sourcing Challenge
SESSION 25 (W, April 21) Submit	Global Supply Chain Game De-brief Write-up for Global Supply Chain Game
SESSION 26 (M, April 26) Case Homework Submitted	Differentiating a Product through Service Interface's Evergreen Service Agreement IH #9
SESSION 27 (W, April 28) Read	The Outsourcing Game Pre-read: Decision Making in an Outsourced Supply Chain
SESSION 28 (M, May 3)	The Outsourcing Game
Session 29 (W, May 5) Case Individual ES Submitted	Final Case Timbuk2 ES #3

THE EXECUTIVE SUMMARY

Typically, an executive summary is a short synopsis of a longer report. However, for the purposes of this course, your *entire* report will be a single-paged executive summary, the objective of which is to describe and justify a specific course of action as concisely as possible. My intention, in limiting you to a single page of text, is to force you to focus on the most compelling arguments for the course of action that you are advocating. Although you are restricted to a single page of text to present your recommendation, you may attach additional pages as exhibits. For example, it would be appropriate to include details of any quantitative or financial analysis as an exhibit. However, you should make sure that any exhibits are well documented, and you should certainly not include an exhibit that does not merit specific reference in the text of your executive summary.

STRUCTURE

Although executive summaries can be written in different forms, it is important that you open with a statement that sets the tone and context for the recommendation that you will be presenting. Although you do not want to devote much time to summarizing case facts, it can be a good idea to open with a statement that captures the strategic relevance of the problem at hand. (See the example on the following page.)

Following the opening statement, there are two main approaches that can be adopted. The first is to lead off with the recommendation, and then provide the rationale for it. Alternatively, one can adopt a more linear approach by presenting the analysis that leads logically to the recommendation. Depending upon the situation, either of these two approaches can be effective.

As you write your executive summary, you may want to consider the following:

- The recommendation should be sufficiently operationally specific that it can be acted upon. Avoid wishy-washy phrases like, “They should consider...”; “They might want to...”; etc.
- Explain why you have rejected any reasonable alternatives to the course of action that you are advocating.
- Recognize any significant risks that might be associated with the course of action that you are recommending and suggest how they might be mitigated.
- To the extent that it is possible, quantify the benefits / costs associated with your recommendation. Details of any quantitative analysis can be attached (and appropriately referenced) as exhibits.

When writing an executive summary it is important to focus on important data, conclusions, and recommendations. Avoid including excessive background and detail. One approach developing your executive summary is to imagine that you need to present your recommendation to the CEO of your company while you are with her on an elevator. You need to capture the significance of the issue and make a logical, compelling case for your recommendation in a very short amount of time. Therefore, you cannot afford to waste time on minor points or on summarizing information that is not directly relevant for justifying your recommendation.

Example

EXECUTIVE SUMMARY

Introduction: BMW and other luxury car manufacturers face a threat from the Japanese entry into the high end segment of the automobile market. Although BMW's share has not yet been affected, the threat is real, especially due to the lower prices, better quality and shorter lead times for new product introductions by the Japanese. Although it takes BMW six years to launch a new product, the Japanese can do it in four. This difference is due to the fact that the Japanese introduce incremental changes frequently, while BMW made big changes infrequently. However, because the Japanese manufacturers have to commit to the final design of a car much further in advance, they lose the flexibility to make last minute design changes. It has been proposed that BMW adopt a prototyping system more like that of the Japanese, by requiring design decisions to be locked in 12 months prior to each prototype in order to allow pre-production grade tooling to be used in the construction of each set of prototypes.

Analysis: The major advantage of BMW's current prototyping approach is that it affords maximum flexibility in the design process. The iterative process enables learning from one cycle to be incorporated into the next. This means that BMW can make changes relatively late in the design cycle. Not only does this allow them to respond to the changing tastes of the market, it also allows them to incorporate technological breakthroughs into their products, enhancing their reputation as a technological leader.

Advantages of proposed approach:

- Improved product quality at launch.
- Using actual materials bought from actual suppliers will lead to a more accurate prototype testing.
- Use of pre-production tools enables BMW to discover tooling or parts' problems earlier in the product development cycle. Also by procuring parts from suppliers at the prototype stage, any incompatibility issues with parts can be identified earlier.
- Using plant workers for the final prototype more closely approximates the actual assembly line operations.
- The new approach would speed up the ramp-up and pilot processes due to production problems being identified earlier, and it will allow them time for fine tuning.
- Lower warranty expenses due to improved quality of products at launch.

Disadvantages of proposed approach

- Higher tooling costs
- Loss of flexibility in design commitment for each prototype build cycle.

Recommendations: In adopting the new prototyping approach BMW will have to trade off flexibility and vehicle quality. While the ability to make design changes later is important to keep up with changing consumer demands, the higher quality levels of the Japanese vehicles are a bigger threat. BMW can balance both these issues by:

- For now, use the new approach for the cockpit design. Since the cockpit seems to be the area where design and manufacturing quality matter the most, it would benefit from the new approach. They should use this opportunity to evaluate the costs and benefit of the new approach.
- However, in general they should adopt this approach only in the last one or two batches of the prototype development cycle rather than adopting it from the first batch of prototypes. This would minimize the investment needed in pre-production tools and still offer us enough opportunities to identify problems before the pilot stage.
- They should assess each of the 30 major subsystems regarding the relative importance of design flexibility versus conformance quality at launch. The new approach should be used only for those subsystems in which conformance quality is judged to be more important than design flexibility.

Although there is incremental investment required for the new prototyping approach, the overall savings from all 3 stages (Prototyping, Pilot and Ramp-up) will more than justify these investments.

Reading List for OM 386
Supply Chain Management, Unique No 03935
Professor Stephen M. Gilbert
Spring 2010

- 1) “American Connector Company (A), HBS case 9-693-035.
- 2) Mathur, K. and D. Solow, “Medical Technologies”, pp. 355-360 in *Management Science; The Art of Decision Making*, Prentice Hall, 1994.
- 3) Shapiro, Jeremy, “Chapter 3: Fundamentals of Optimization Models: Linear Programming,” pp. 63-114 in *Modeling the Supply Chain*, Duxbury Press, 2001.
- 4) Mathur, K. and D. Solow, “The Warehouse Location Problem of Good Tire, Inc.”, pp. 421-423 in *Management Science; The Art of Decision Making*, Prentice Hall, 1994.
- 5) Mathur, K. and D. Solow, “American Steel Company Case”, pp. 86-88 in *Management Science; The Art of Decision Making*, Prentice Hall, 1994.
- 6) “Cross River Products”, HBS case 9-676-086.
- 7) Jordan, W. and S. Graves, “Principles on the Benefits of Manufacturing Process Flexibility,” *Management Science*, V. 41, N. 4, April 1995, pp. 577-594.
- 8) Kopczak, Laura, Hau Lee, and Jin Whang, “Note on Logistics in the Information Age”, Case Study GS19, Stanford University, distributed via HBS Publishing.
- 9) “Dollar Tree Logistics,” Darden Business Publishing, University of Virginia, UVA-OM-1180.
- 10) “Merloni Elettrodomestici SpA: The Transit Point Experiment,” HBS Case 9-690-003.
- 11) Gilbert, Stephen M., “Johnson Elevators,” Case Study, The University of Texas at Austin.
- 12) “Video Vault”, HBS case 9-102-070.
- 13) “IKEA’s Global Sourcing Challenge: Indian Rugs and Child Labor” (A), HBS case 9-906-414.

- 14) “Interface’s Evergreen Services Agreement,” HBS case 9-603-112.
- 15) “Pre-Read: Decision-Making in an Outsourced Supply Chain,” Emeraldwise, LLC.
jason@emeraldwise.com.
- 16) “Where in the World is Timbuk2? Outsourcing, Offshoring, and Mass Customization,” available through Epodia.com.