Global MBA, Departamento de Ingenieria Industrial

Operations Management
Prof. Marcelo Olivares
Spring 2014

Course Summary

#	Date	Topics	Readings	Review (Fri)	Assignment Due
1	27-Aug	Introduction Process analysis	Case: Beleza Natural	Start Littlefield	
2	3-Sep	Process analysis with a product mix Managing variability and waiting time	Case: National Cranberry	Process Analysis	NCC analysis
3	8-Sep (Mon)	Debrief Littlefield Managing waiting time in service operations	Variability and its Impact on Process Performance (*) Case: Manzana Insurance	Queuing models	Littlefield report (group) Manzana analysis
	17-Sep	HOLIDAY			
4	26-Sep (Fri)	Quality management Statistical Process Control	Improving Customer Engagement		
5	1-Oct	Process capability, 6-sigma Introduction to supply chain management	Case: Ritz Carlton Hotel Betting on Uncertain Demand (*)	Statistical Proc. Control Newsvendor	Ritz Carlton (group)
6	8-Oct	Managing reactive capacity Lean operations	Case: Sport Obermeyer Listen to NPR documentary		Sport Ob. analysis Problem set
7	15-Oct	Course summary	Case: Timbuk2		Timbuk 2 analysis

(*): Optional readings. All other readings are required before coming to class.

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Methods and Materials
The course uses a variety of teaching methods and materials, including lectures, case discussions, analytical tools and experiential activities (e.g. games). Some of these activities will require working in groups. This syllabus provides a detailed description of the material to be covered on each class.

Text and Readings
Required readings must be completed before coming to class. The syllabus describes case preparation questions for each case (and also for the lectures); students should come prepared to class to discuss these questions. For every case, the students are required to hand in a one-page executive summary answering the case preparation questions.

Groups
Some assignments and class activities will require working in groups. Please work with your pre-assigned group on these.

Class Preparation
Class participation will be evaluated on each class, but specially during case discussions.

Conduct
- No electronic devices will be permitted in class, unless otherwise established by the professor. In some sessions we will work with Excel during class.
- All class participants should arrive on time. If you plan on leaving early, please talk to the professor ahead and provide your justification.
- Do not walk in and out during class.
- All class participants should be respectful to the professor and classmates.

Grading
Your grade in the course will be based on individual, as well as group efforts and performance. We will use the following weighting scheme:

Class Participation	20%
Assignments	15%
Littlefield Labs Game Write-Up	15%
Final	50%

Class Participation

We will judge class participation on the extent to which you appear prepared, the relevance and depth of your comments, the degree to which you listen carefully and respond to your peers, and your willingness to take chances in order to further the educational experiences of others. Please bring your name card to class. Please notify your instructor by email in advance if you have to miss a class, or if you will be late or leaving early from class. The executive summary of each case will also count as part of class participation.

Assignments

We have one group assignment – the Ritz Carlton analysis – and an individual problem set. Instructions for the group assignment are detailed in the syllabus, in the lecture discussing the Ritz Carlton case. The individual problem set consists on quantitative problems related to the material covered in the lectures. This problem set will also help you to prepare for the final exam.

Littlefield Labs Game

During the course, we will play an experiential game, "Littlefield Labs", to get some hands-on experience on some of the concepts covered in class. The game simulates a laboratory that provides blood testing to customers, and each team will have to manage several aspects of the lab (input materials, capacity at several stages of the process, etc.) in order to maximize the profit of the company. Teams (formed by your working groups) will compete during one week, playing the game online (using a web browser) outside lecture hours. The grade for this activity will be calculated based your ranking in the competition (20%) and a write-up to be handed in at the end of the game (80%). A detailed outline for the write-up will be provided.

Exams

The final exam is a three-hour test. Students should bring class notes and a calculator. The exam will be in English but student can provide their answers in English or Spanish.

Class by Class Summary

Class 1 (Wed Aug 27)

Topics:
The operations function and the process view of operations. Overview of topics.

Process analysis.

Class Activities:
Course overview. Introduction to process analysis. Link operational performance metrics to business performance through the use of ROIC trees.

Prepare:
Read the CBS case "Beleza Natural" and think about the following questions for class discussion:
1. What are the key elements of Beleza Natural business strategy? In what way does the organization of the institutes support this strategy?

2. Discuss the efficiency of the process? What improvements measures do you suggest? How would you prioritize among those measures?

Class activities:
Introduce concepts and tools for process analysis. Link operational performance metrics to business performance through the use of ROIC trees.

Review Session on Fri Aug 29

Students must sit with their groups to prepare for the Littlefield game. Each group needs to bring at least one laptop computer, with functional internet access.

Prepare: Read instructions to play Littlefield.

Topics:
Process Analysis with a product mix
Dealing with variability and response times in a make-to-order operation.

Prepare:
Read "National Cranberry Cooperative (NCC)".
To prepare for the discussion do the following:

1. Draw a process flow diagram showing the major process steps, inventories and flows beginning with Receiving and finishing with the Separators. Indicate the capacity at each of the process steps in *barrels per hour*. You should assume:
    a. 16,000 barrels per day is the average of deliveries over the 20 days from 9/20-10/9.
    b. Each truck carries 75 barrels on average
    c. Trucks arrive uniformly over a 12-hour period
    d. 70% of trucks carry exclusively wet berries and 30% of them carry exclusively dry berries.
    e. During high-volume period, the destone/dechaff/dry operations starts at 7AM (rather than 11 AM as shown in Figure E).

2. Which operation (or operations) is the bottleneck?

3. How late does the plant need to be open (i.e., when does the plant shut down) during this peak season?

4. How bad is the truck delay at the loading dock during this peak season?

5. What are the basic options for improving the operation? Which options would you recommend and why? In justifying your recommendation, be sure to include a simple quantitative analysis (i.e., include an intelligent back of the envelope calculation).

In class, be prepared to discuss and defend your recommendations.

For the second half of the class:
Recommended optional reading: "Variability and its Impact on Process Performance".
Think about the following questions for class discussion:
1. How important is response time in the businesses you are familiar with? What are the causes of the response time problems in these businesses? How can a firm effectively manage response time?
2. What are the consequences of exactly balancing capacity and demand? Why is excess capacity needed?

Class Activities:
Discuss NCC.
Discuss the impact of variability and utilization on response times. Introduce queuing models and insights for the design of service operations.

Due: NCC executive summary

Topics:
Debrief Littlefield

Prepare:

Read "Manzana Insurance – Fruitvale Branch".

For Class Discussion: (first half)
Manzana Insurance is based on the operations of a real insurance company, though certain details have been simplified. Be prepared to answer the following questions in class:

1. What operational problems is Manzana facing? How might they be connected to the deteriorating profits experienced over the past year?

2. What are some possible alternatives for improving Manzana's performance? How might these specifically help to eliminate the causes of the problems facing Manzana?

You are Bill Pippin. On the memo on the first page of the case, Tom Jacobs identifies various problems facing the Fruitvale branch. He then asks for "a memo with concrete suggestions." Write that memo and be prepared to discuss it in class.

Class Activities:
In the first half: discuss the results of the Littlefield game.
In the second half: discuss the Manzana Case.

Due:
Homework: Littlefield write-up (Group assignment)
Manzana Insurance executive summary

Class 4 (Fri Sep 26)

Topics:
Quality Management and Statistical Process Control

Prepare:
-Read the note "Improving Customer Engagement".
-Download the spreadsheet that comes with the case and bring laptop to class.
-Answer the online: http://www.surveymonkey.com/s/XBWT6NC

Class Activities:
In quality management, we will discuss the following issues:
1. Definition of quality.
2. What is statistical process control, and why is it important?
3. What is special and common cause variation? Why is it important to distinguish between the two?
4. Constructing and interpreting control charts.

Class 5 (Wed Oct 1)

Topics:
Process capability and Six-Sigma. Quality in services.
Dealing with uncertainty in a make-to-stock operation: the Newsvendor model.

Prepare:
Read "The Ritz-Carlton Hotel Company: The Quest for Service Excellence". Do group assignment about the case. (see below).

Make a forecast for the iPhone world-wide sales (in units) during the fourth calendar quarter (Oct-Dec) of 2012 (this is the first fiscal quarter of Apple for 2013). Please provide your forecast in the following web survey before coming to class: http://www.surveymonkey.com/s/ZKKQHNZ

Recommended optional reading: "Betting on Uncertain Demand: The Newsvendor Model".

Class Activities:
Discuss process capability and Six-Sigma. Discuss Ritz Carlton Case.
We will learn the Newsvendor model to understand the implications of production pre-commitment and risk in supply chain management.

Due:
Assignment on Ritz Carlton Hotel

The Excel file **ritz.xls** posted on the course website contains a listing of a subset of all defects reported in the DQPR for the Ritz-Carlton Buckhead over the period from January 1997 to November 1997. The subset contains all defects for twelve categories of defects that directly impact the customer and are identified as causes for customer dissatisfaction.
(continue on next page…)

Analyze this data file and answer the following questions in an executive summary due at the start of class:

1. Does the data in the file **ritz.xls** indicate any significant quality problems?
2. If you were to select a category of defect to address from the DQPR data, which category would you address? Why?
3. For your chosen defect category, consider the process that generates the defects. Assess whether or not the process is in control using a p-chart.
4. Using the data and your common-sense knowledge of hotel operations, generate hypotheses about the possible root causes of the defect category that you selected.

Explanation of fields in the **ritz.xls** file:

Field Name	Explanation
ID	Unique ID number assigned to each defect in report
Date1	The date the defect was recorded in the DQPR
Date2	The date the defect occurred
Time	The time the defect occurred
Count	The number of defects of this type
Keyword	The category of defect type that the defect is assigned to
Memo	Detailed description of the defect
Source	Source of information of this defect to the DQPR
Room	The room number of guest
Department	Department where suspected cause of the defect

The "Summary Counts" workbook contains total counts of defects by keyword for each date (Date 2). This workbook also has the occupancy data (estimated number of guests in the hotel on each day).

Assignment: Provide a one page write-up answering questions 1,2,3 and 4 above.

Topics:
Role of speculative and reactive capacity in matching supply with uncertain demand.

Prepare:
First half.
Read "Sport Obermeyer, Ltd.". Think about the following:

1. Using the sample data given in Exhibit 10, make a recommendation for how many units of each style Wally Obermeyer should order during the initial phase of production (a spreadsheet with Exhibit 10 is posted in the course website). Assume there are no limits in the total size of the order (i.e. there is unlimited capacity), and ignore the minimum order quantity constraint in your analysis. Also, assume that there would be no future production for these parkas (i.e., only one production decision is taken to satisfy the demand). *This question is part of the problem set due on this class.*

2. As indicated in the case, there are two production runs in Asia. The first production takes place six months before the Las Vegas show (production early), and the second one right after the show (production late). The production capacity after the show is limited and therefore some production must be done early. Discuss qualitatively the factors that Wally Obermeyer should consider in deciding which parkas to produce early and which to produce late.

Second half:
Listen to the first 30 minutes of the NPR American Life documentary about NUMMI.
http://www.thisamericanlife.org/radio-archives/episode/403/nummi
(the episode is also available on iTunes)
Think about the following:
-   What are the main differences between General Motors (GM) and Toyota in how the view production efficiency in their plants?
-   Why did Toyota choose to hire the same employees that worked in the GM Fremont plant?
-   What is an "andon chord"? What are the benefits and costs of "pulling the chord"?

Class Activities:
Study how one fashion apparel supplier uses forecasts and early sales information to increase its flexibility.

Discuss the principle of lean operations, just-in-time production, and continuous improvement.

Due:
Problem set.
Sport Obermeyer executive summary.

Topics:
Analyze the implications of sourcing decisions on operational efficiency.
Course summary.

Prepare:
Related to the Timbuk2 case, discuss the following questions with your group and provide a one-page summary of your conclusions:

1. What channels does Timbuk2 sell through and which one is the most profitable?
2. How should Timbuk2 go about deciding which options to offer customers through mass-customization? In other words, what general principles or analysis could be used to deepen their understanding of the appropriate choices? You may want to consider several of the options mentioned (an added handle, different color logos, different size panels, etc.)
3. What are the costs and benefits of moving production to China? If so, what challenges are they likely to face and what changes will they need to make? In particular, think about utilization of San Francisco factory before and after outsourcing as well as about inventory needs.

Class Activities:
Mass customization offers an infinite variety of goods that are customized to a consumer's exact specifications. This session explores the pros and cons of this strategy and also discusses issues involved in outsourcing of manufacturing operations to low-cost countries.

The second half of the session will review some of the main concepts covered in class.

Due: Timbuk2 executive summary