

MS-007-0133

**BOMR Project: A Local Business Operations Management Review**  
**A brief emersion for students into the world of operations**

John Howard, Alan Chow, Nancy Lambe  
Department of Management  
Mitchell College of Business  
University of South Alabama  
Mobile, Alabama 36688

Email: [jhoward@usouthal.edu](mailto:jhoward@usouthal.edu)  
[alchow@usouthal.edu](mailto:alchow@usouthal.edu)  
[nlambe@usouthal.edu](mailto:nlambe@usouthal.edu)  
(251) 461-1560

POMS 18th Annual Conference  
Dallas, Texas, U.S.A.  
May 4 to May 7, 2007

## ABSTRACT

Most students taking a survey course in Operations Management are not Management majors and few have any concept of how pervasive Operations Management is across all businesses entities. An instructor can lecture, show videos and lead in-class exercises, but true internalization only comes from getting close to a real operation. Recognizing the value of participative examples and activities, we present a class project that provides students with real Operations Management exposure.

Our solution involves

- Finding and evaluating local businesses with which to partner
- Carefully defining the areas of study for the students
- Coaching students during their investigations
- Assessing student performance through class presentations
- Conducting peer reviews

We present the methods used, problems encountered and results over several semesters.

Students get additional exposure to operations through other students' presentations.

Additionally, students find real value in this project.

## Introduction

Operations Management is a staple course required in most business curriculums. While many of today's students work either part or full-time, most have no concept of the actual operations of a company prior to the course. Weast (1996) pointed out that the need for alternative teaching methods and a shift away from the outdated methods has been recognized by

higher education. As a learning method to increase the students' understanding of the course material, and to see its applications in the real world, we propose the following project based learning method.

Felder and Brent (1999) suggest the use of active learning in the classroom as a way of improving the quality of teaching, because student attention can be better maintained when they are given periodical activities to keep them involved. Review of the literature suggests that educators have tried to utilize realistic applications for classroom activities for some time (Pollock, Ross-Parker, and Mead, 1979; Dillbeck, 1983; Romeu, 1986; Hill, 1987). We present here one of the activities we have successfully utilized in our Operations Management course in the Mitchell College of Business at the University of South Alabama.

### The Situation

The three authors of this paper all teach Operations Management at the University of South Alabama near the beautiful gulf coast of Alabama. Seventy percent of our students are non-resident and most of them hold full or part-time employment, but very few have ever been in one of the large neighboring paper mills, chemical plants, steel mills, cement plants, shipyards or distributions centers nor for that matter one of the numerous small factories, seafood plants or bakery operations. Furthermore, they fail to recognize the numerous operating functions right under their noses in restaurants, cleaners, banks, carwashes, etc.

About 25% of our students are Management Majors, while the rest are majoring in Accounting, Finance and Marketing. Business students in general lack any appreciation for the criticality of the operations function and they lack awareness of the number of jobs in operations or the career paths that can originate there. We teach Operations Management in 50-minute classes M-W-F and 75-minute classes T-Th and 150-minute classes one night a week.

## The Challenge

In short, students know not of what we speak. To them it seems irrelevant and immaterial. In order for students to be motivated and to fully engage them with the material taught in the Operations Management course, students need the ability to relate to the material and value it. Many approaches are used to try to bridge the great divide: lectures, readings, case studies, videos of real world operations and in-class exercises to simulate various operating situations (Howard, Lambe, and Chow, 2007).

Nothing works like being there in a factory to see the miles of conveyors and the scale of the equipment, to hear the sounds and smell the smells, to sense the speed of machinery, to struggle with the complexity and confusion, to know the personalities and temperaments of the workers, to witness the struggle for production and quality while keeping everyone safe and the environment unsullied by spills. You have to have been there to both love it and hate it and admire the people that make it all work. Ideally, we could have class trips to various businesses, but the class schedules and students' working precludes that.

## Our Solution = BOMR

We have recruited local businesses (we call them client companies) to help us by hosting student visits. The students visit in groups of three. They tour the facilities, do interviews, take pictures, draw layouts, chart data, etc. In three hours or less, they understand the products/services provided, the processes employed, why and how the company is successful and they attempt to make at least one suggestion for improvement.

It is our job (the faculty) to find and sign up a diverse group of companies with clearly definable operating functions, to define the areas of study, to coach the students during their

investigations, and assess their performance. The BOMR project is weighted in the course equivalent to an exam (about 20% of the student's grade).

When we prospect for client companies, we have some search criteria. Of course, they must be willing. Sometimes this takes a little selling. However, we want them to be aware of the time commitment. Often large corporations do not work out because they must seek approval from some headquarters that always have some issues with liability or security. We try to get them to see the benefits of supporting their local university, possibly getting a helpful suggestion from the student inquiries and possibly identifying a candidate for employment. Of course, another criterion is distance. We draw from a radius of 45 minutes. Distance is often a serious consideration for our students.

Operations that are too large cannot be absorbed in the time we expect the students to spend on this project. They simply do not have time to get their arms around it. The operations need to be mostly visible. Banks for example are often willing, but so much of the operations are on computer that they are difficult to observe. In addition, of course since the students are going to share their findings with the class we want variety in type of organization (manufacturing, retail, distribution, service, etc.). Therefore, if you decide to do something like BOMR, you need to start about a semester in advance to line up your client companies. Table 1 provides a list of current "client companies" and their type of operation.

Table 1 – Client Companies

<b>Company</b>	<b>Type of Operation</b>
ABS Bus. Services	Sells and services business machines
China Doll Rice	Repackages and distributes rice and beans
Community Coffee	Local operation is a distributor
Crown Products	Produces novelty products
Holcim Inc.	Large cement manufacturer
Marshall Biscuits	Produces a line of frozen bakery items
Mobile Lumber Trust Mfg	Manufactures roofing trusts
Mobile Paperboard	Produces paper products from recycled paper
Quality Filters	Manufactures air filters -- residential and commercial
Southern Fish & Oyster	Buys seafood from boats, processes, and sells retail and to restaurants
Steiner Shipyard	Builds and refabs small ships
University of South Alabama Bookstore	Supplies new and used books, class supplies, clothing, etc.
University of South Alabama Dining Services	Food services of USA campus, operated by Aramark
University of South Alabama Publication Services	A print shop for a wide range of materials

### The Process

Prior to the start of the semester, the instructor locates possible client companies, explains the program, assesses acceptability, gains their agreement and identifies company contact person for each. Phone calls are not enough. You need to visit and see the operation to assure that it will meet the needs of the project. Instructor passes out the assignment with the list of businesses after the first exam. Students form their own groups and sign up for a business to visit. We try to keep the group size to three for several reasons. We have classes of about 30 and this comes out to 10 reports. In addition, with three students it is difficult for one student to slough off work on the others, as peer pressure is higher than in groups of four or more. There is

also the scheduling problem. The students have to schedule the site visit around their course schedule, work schedule and the client company's availability.

As a courtesy to our client companies, the instructor sends out reminder letters to all client companies prior to handing out the assignment. Students compare schedules and select contact person who calls the business and sets up a site visit. Before sending students on their site visits, it is a good idea to remind the students about professionalism, safety, courtesy, and proper attire: no shower shoes, short shorts, or halter-tops. The students need to show up prepared to get to work. They need to be mindful that these companies would like to get something in return, like some good ideas for improvements. Students are reminded to treat this visit like a pre-job interview, because it could be.

Students make the site visit as a group (they all must be there together). During the site visit, student typically perform most of the following activities: conduct interviews, collect information, draw sketches and flow charts, take pictures (if allowed) and study processes, which should take approximately 3 hours.

After the site visit, students meet at school to pull together ideas and prepare a presentation. They may need to make follow-up phone calls with the client company contact to tie down loose ends. The students invite the client company contact to their presentation. When the students make their presentations, all must contribute. The instructor decides how to limit time based on number of groups and time available. Students do peer reviews and submit copies of the presentation to the instructor (for grading) and to the client company contact.

After the presentations, the instructor calls the client companies to (1) verify that they received a copy of the students' report, (2) get feedback on student performance and behavior and the merit of student recommendations, and (3) request future participation of the client

company. The instructor grades the projects and students giving consideration to peer reviews and input from the client company contact.

Appendix A is a copy of the assignment given to students in the Spring semester of 2007. It provides them with the information about the activity, and a listing of the participating client companies. Appendix B is a copy of the grading rubric for determining student group grades for project presentations. Appendix C is a copy of the Peer Review, Client Input, and Student Grade Calculations worksheet used in determining the overall project grade for each student.

### Faculty Observations and Conclusions

BOMR is a lot of work for both the students and the instructor, but it is well worth it. After participating in the BOMR projects, students become more interested in the operations management subject matter and report that the experience is the most worthwhile part of the course. As a side benefit, getting out of academia improves job awareness for the students and helps instructors to relate the future course material to local businesses. We have a running debate in our business school about who is the customer: the students, their future employers, or the citizens of the state. Whoever it is, our product quality has improved by using BOMR in our Operations Management courses.

### References

- Dillbeck, M. (1983). Teaching Statistics in Terms of the Knower. *Teaching of Psychology*, 10:1, pp. 18-20.
- Felder, R. and Brent, R. (1999). How to Improve Teaching Quality. *Quality Management Journal*, 6:2, pp. 9-21.

Hill, T. (1987). Teaching and Research Directions in Production/Operations Management: The Manufacturing Sector, *International Journal of Operations & Production Management*, 7:4, pp. 5-12.

Howard, J., Lambe, N., and Chow, A. (2007). Carter Cranks: An Interactive Class Room Production Exercise, presented at the 18<sup>th</sup> Annual Conference for the Production and Operations Management Society, Dallas, May 4-7, 2007.

Romeu, J. (1986). Teaching Engineering Statistics with Simulation: A Classroom Experience. *The Statistician*, 35:4, pp. 441-447.

Pollock, K., Ross-Parker, H., and Mead, R. (1979). A Sequence of Games Useful in Teaching Experimental Design to Agriculture Students. *The American Statistician*, 33:2, pp. 70-76.

Weast, D. (1996). Alternative Teaching Strategies: The Case for Critical Thinking. *Teaching Sociology*, 24(4), pp. 189-194.

## Appendix A – BOMR Assignment Instructions

### **Business Operations Management Review (“The BOMR Project”) MGT 325 -- John C. Howard -- Spring 2007**

In small groups, you will visit a local business. You will find classmates with similar schedules and interests and select a local business from the list below. (If you have access to a business that has a clearly recognizable operations function that would be willing to host your visit, see me for discussion of suitability.) The maximum number of students in a group will be determined by the instructor based on class size. For each class, there will be only one group visiting each location. Selection is made on a “first come, first served” basis. The instructor will have the master list available at every class. You must have grouped-up and made a selection by February 23rd. After February 23rd, you will make arrangements for a site visit with the business contact person provided. You must work around the schedule of the business. Select one person from your team to make contact with the company you have chosen. Call early to arrange a mutually acceptable time. All team members must visit the site in one group. Presentations will be made during the week of April 9th as assigned. Time allocated for presentations is 12 minutes each. You should invite your business contact to attend your presentation and give him/her a copy whether he/she comes or not.

Each group will do an overview of the operating functions of the business. You will need to describe the business, their products and services, the management organization, the staffing levels, and the operating steps. What type of process strategy is employed (Chapter 7)? Draw a flow diagram (see Chapters 6, 7, and 16) of the work flow. Explain how the work gets accomplished. For complex operations, you may need to see me to narrow the focus to a manageable level. What is the main operating challenge this business faces and how do they address it? Does this business have some competitive advantage? What is it? Is it defensible?

Having developed a general understanding of the business operating functions, choose one of the following areas in which to concentrate:

**Project management** -- How do they manage projects like a facility expansion, new machines, or new product introductions? Go into detail. Do they use teams or the over-the-wall approach? Describe how projects are completed on time and on budget. Elaborate on recent examples. If they have done a capacity expansion recently, explain how they determined how much to add. Did they use any analytical tools we have discussed: breakeven analysis, indifference points, decision trees, factor analysis? Make recommendations for possible improvements that will reduce cycle time and costs or make the project management process more effective.

**Cost, efficiency and productivity** -- Draw the facility layout of the operations function of the business. Show regular movement of people and material. Describe the type of layout (Chapter 9). Identify opportunities for improvement (shorten distances, remove constrictions/congestion, improve visibility, etc). Some of these companies have large facilities and multiple operations. You don't need to draw the top down view of the whole place. Choose a key operating area and draw it and show the flows into and out of that area. Are there opportunities to reduce staffing levels, reduce waste, or increase productivity? Explain in detail. You might get some ideas from Chapter 10.

## Appendix A – BOMR Assignment Instructions cont.

**Quality control** -- Identify the quality issues faced by this business. Can you suggest possible improvements? What tools do they use (e.g. check sheets, histograms, scatter plots, control charts)? Refer to Chapters 6 and 6S. How do they manage the quality of incoming materials? How do they assess customer satisfaction?

**Aggregate production planning** -- How do they match supply and demand? Do they make what they sell or sell what they make? Plot sales and production by month. Is the business seasonal and how is this addressed? Do you have suggestions that could be more cost effective, improve morale, or be easier to manage? Consider building a spread sheet to evaluate alternatives (OT, subcontracting, hire/fire, pool personnel, etc).

**Inventory management** -- How is inventory managed?

How is the determination made as to how much to order and when? Match the method with the methods we discussed in the Chapter 12 handout.

Do they use ABC analysis and cycle counting? Would these methods be appropriate?

Do they keep safety stock?

Where and how are the various types of inventory stored?

Is it all accessible when and where needed?

How do they know where it is?

When/how are physical counts taken to adjust perpetual inventories?

They will likely not be willing to share annual sales volumes or inventory valuations, but they may be willing to share inventory turnover or the weeks-worth of inventory that they normally maintain. A tough one: how does this compare with their competition?

**SCM** -- How is the supply chain managed? How do they ensure timely, reliable delivery of the required materials of correct quality to ensure uninterrupted operation at minimum cost? Do they use few or many suppliers and why? Is the degree of vertical integration optimum for this business? Do they have a formalized method for evaluating suppliers? Describe in detail. Are there outsourcing opportunities that could be attractive? Do they look globally for suppliers? Are they making appropriate use of the Internet?

**Scheduling** -- I know that at the point in time when you are buttoning up this project we still haven't covered MRP, scheduling, and JIT, but you may want to take a shot at understanding the scheduling method they use. How do they determine the order of job flow in the operations function? How do they determine who will work each day of the week and on what step in the process? How dynamic/fluid is this? Do you have suggestions for improvements?

Your grade will be determined by how well you demonstrate your understanding of the operations of your chosen local business. Each business has different operating challenges and opportunities to achieve competitive advantage through operating excellence. My challenge is to read your report materials and view your presentation and determine your level of understanding and how diligent you were in your search for improvement opportunities. I assure you I will be as objective and fair as possible. This will be difficult in light of the differences in businesses. There will be a peer review form to evaluate the participation of your team mates.

## Appendix A – BOMR Assignment Instructions cont.

You do not need to prepare a separate written report. I assume you will use Power Points to make your presentation. Assuming all your information, observations, charts, graphs, tables, pictures, analyses, conclusions, and recommendations are shown on your Power Points, a hard copy of the Power Points will be sufficient documentation. If you need to show other presentation materials (props, samples, videos, demonstrations, large wall hangings, etc), you will know what you need to provide the instructor. You will provide a copy of your presentation to your contact person at the business you interviewed.

Reminders:

- 1) **Be Respectful of the Company's Time:** These companies have graciously opened their doors to us. We have to remain mindful that they are running businesses upon which their livelihoods depend. They have no time to waste. It is expected that you will gather all the information you will need in one trip, which should take from 1 to 3 hours. You may need to make a follow-up phone call. Gather all your questions and assign one team member to make the phone call. If a follow-up trip is needed to pursue some area in more depth, you will need to ask for permission and make your case to the business contact as to why you need to return. To ease the burden on the business, the contact person may suggest the groups from several class sections of this course visit at the same time. Try to oblige that request. Touring together and comparing notes is acceptable, but each team should pursue its own line of investigation and the reports should be significantly different. Note that some of these businesses can not accommodate visits by all three sections of this course.
- 2) **Make this Worthwhile for the Company:** These companies are hopeful they will get something in return from cooperating in this exercise. Think deeply to see if you can come up with any ideas to help. They know you don't know their business, so you don't need to be embarrassed to pursue a line of thinking that goes nowhere -- who knows, it just might lead to something of value to them.
- 3) **Keep an Eye Out for Employment Opportunities:** Some of these companies will be using this opportunity to get to know you with an eye to possible future employment.
- 4) **Dress and Act Appropriately:** You represent the University. You do not need to wear a coat and tie or its equivalent. Some of these operations are industrial and you must dress for safety. Some may require you to wear a hard hat and/or protection for your eyes and ears. Obviously you should not wear short-shorts, tank-tops or flip-flops and you need to be on time and be prepared to take notes and ask intelligent questions.

## Appendix B – Grading Rubric

The presentations are graded using the following rubric:

STUDENTS \_\_\_\_\_ Business \_\_\_\_\_

Grading Factor	Possible	Points
1. Describe the business (type, location, people you met, experiences, etc)	5	
2. Describe the products and services (show samples, pictures, etc)	5	
3. Describe the management structure and staffing (chart?)	10	
4. Describe the operating steps (flow charts, etc)	10	
5. What is the type of process strategy (Ch7)? How is work done?	5	
6. What is the main operating challenge?	5	
7. Does this business have some competitive advantage? What is it? Is it defensible? How?	5	
8. In what management area did you concentrate your attention?	5	
9. What did you learn about this area? Charts, tables, graphs, diagrams, observations, conclusions, etc?	15	
10. What improvements do you recommend?	10	
11. Clarity of presentation and did you give the instructor a copy?	20	
12. Did you invite your business contact to this presentation and did you give him/her a copy?	5	
<b>Project Grade</b>	<b>100</b>	

Student Names	Percent of Project Grade based on peer reviews	Percent of Project Grade based on client contact input	Student Grade

## Appendix C – Peer Evaluation Form

**Mgt 325 BOMR Project Peer Evaluation Form**

Section (circle one): 101, 102, 103

Name of your Business: \_\_\_\_\_

Student completing this form: \_\_\_\_\_

**Name of 1st student being evaluated:** \_\_\_\_\_

Please indicate your evaluation of the team member named above by circling the number corresponding to the statement that best matches that person's performance on the team project. All individual ratings will remain confidential. For comments use back of form.

<u>This member of the project team:</u>	<u>Never</u>	<u>Rarely</u>	<u>Sometimes</u>	<u>Usually</u>	<u>Always</u>
Attended scheduled team meetings and site visit	1	2	3	4	5
Was punctual in attendance	1	2	3	4	5
Made valuable contributions	1	2	3	4	5
Completed tasks on time	1	2	3	4	5
Assisted other members as needed	1	2	3	4	5
Completed his/her fair share of the project	1	2	3	4	5
Was a "TEAM" player	1	2	3	4	5

  

	<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Undecided</u>	<u>Agree</u>	<u>Strongly Agree</u>
This team member made a valuable contribution to the overall project	1	2	3	4	5
The quality of this member's contribution met my expectations	1	2	3	4	5
I would be willing to work with this individual on another project	1	2	3	4	5

**Name of 2nd student being evaluated:** \_\_\_\_\_

Please indicate your evaluation of the team member named above by circling the number corresponding to the statement that best matches that person's performance on the team project. All individual ratings will remain confidential.

<u>This member of the project team:</u>	<u>Never</u>	<u>Rarely</u>	<u>Sometimes</u>	<u>Usually</u>	<u>Always</u>
Attended scheduled team meetings and site visit	1	2	3	4	5
Was punctual in attendance	1	2	3	4	5
Made valuable contributions	1	2	3	4	5
Completed tasks on time	1	2	3	4	5
Assisted other members as needed	1	2	3	4	5
Completed his/her fair share of the project	1	2	3	4	5
Was a "TEAM" player	1	2	3	4	5

  

	<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Undecided</u>	<u>Agree</u>	<u>Strongly Agree</u>
This team member made a valuable contribution to the overall project	1	2	3	4	5
The quality of this member's contribution met my expectations	1	2	3	4	5
I would be willing to work with this individual on another project	1	2	3	4	5