RETAIL AND SUPPLY CHAIN ANALYTICS

Instructor and Teaching Assistant

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Course Description and Objectives

- Supply chain analytics is unique and, to some degree, represents a paradox because it is concerned with one of the oldest and also the most newly discovered activities of business.
  - Supply chain system activities - communication, inventory management, warehousing, transportation, and facility location - have been performed since the start of commercial activity.
  - It is difficult to visualize any product that could reach a customer without logistical support.
    - Yet it is only over the last few years that firms have started focusing on logistics and supply chain management as a source of competitive advantage.
  - There is a realization that no company can do any better than its logistics system. This becomes even more important given that product life cycles are shrinking and competition is intense.
  - Logistics and supply chain management today represents a great challenge as well as a tremendous opportunity for most firms.
- This course will assist you in understanding the importance of data in the supply chain and how organizations can gain competitive advantage using the analytics tools at various stages in the supply chain.
  - Numerous examples of firms that have been successful in implementing such tools will be discussed.
- In order to ensure that students have in-depth understanding of supply chain analytics implementation in different industries, we will analyze different cases using real data.
- We will also play a simulation game to provide you hands-on experience.
- This course includes applications of the tools learned in earlier courses.

Course Material and other Readings

- **Recommended Textbook**
  - Chopra, S. and Meindl, P. *Supply Chain Management: Strategy, Planning, and Operations* (C&M), 6th Edition.

- **Other Useful Readings**
  - Fisher M. and Raman A. (2010). *The New Science of Retailing: How analytics are transforming the supply chain and improving performance*, Harvard Business Press, Boston, Massachusetts, USA.
  - Feigin G. (2011). *Supply Chain Planning and Analytics: The right product to the right place at the right time*, Business Expert Press, New York, USA.
  - Davenport, T. H. and Harris, J. G. (2007). *Competing on Analytics: The new science of winning*. Harvard Business Press.
  - Davenport, T. H., Harris, J. G., and Morison, R. (2010). *Analytics at Work: Smarter decisions, better results*. Harvard Business Press.

- **Course home page:** This page will guide you to all the downloadable files related to the course, in particular:
  - Excel spreadsheets for cases (posted in the course of the term)
  - Class notes (posted in the course of the term).
  - Links to other web locations that may be of interest to the class.
    - I encourage you to inform me of interesting links so I can make them available to the entire class.

Grading (Refer to the last page for the details of honor codes)

Final grades will be based upon a weighted average of:

Grade Component	Group/Individual	Weightage	Honor Code
Attendance and Class Participation	Individual	15%	1N
Case report submissions ○ Case # 1 ○ Case # 2 ○ Case # 3 ○ Case # 4	Group	 10% 10% 10% 15%	3N-a
Beer game	Group	10%	3N-a
Final Exam	Individual	30%	4N

Cases

- Cases are important since they give the opportunity to apply tools learned in class to real situations.
- 5 cases will be assigned and discussed in class.
  - **There is no submission required for Case #5.**
- Written case analyses are **due by 8 a.m.** on the day for which they are assigned.
  - Late assignments are not acceptable - no credit will be given.
- Case studies will require you to understand and solve unstructured problems for the real companies.
  - The goal is to improve your decision making process in the real-world scenario, which is extremely important to be a successful senior executive.
- You need to discuss each case within your group before the assigned class discussion date for that case.
  - Any team member might be called on in class to discuss the analysis and key conclusions of the group.
- Please provide quantitative analysis (either in the form of tables or excel file) wherever necessary. Such analysis if done well will essentially improve the strength of the case report.

- Be concise and organized
    - Summarize your recommendations on the first page and support it by a clear analysis and explanation.
    - **Make sure that all of your recommendations are supported by qualitative and/or quantitative analysis.**
    - Provide exhibits wherever necessary, and all such exhibits must be referred in the report.
- The write up should not exceed 4 pages (12pt, 1½ lines spaced), excluding exhibits.
- Remember you are writing for someone who knows the facts of the case
    - Focus on your recommendation and reasons behind it.

Class Participation

- Each student is expected to arrive in class on time and ready to participate.
- Numerous examples and a number of cases will be discussed in class. Each student may be called upon to answer questions from time to time.
- Because of the concentrated format, it is extremely important to keep up with the material covered in class.
- Your class participation grade will be based on the **quality (NOT quantity) of your individual contributions** to the discussion in every class.
    - Your questions and comments in the class will be the part of your class participation, because all of these things contribute to the learning of class.
- Keep your eyes open for any news/analysis/report related to the course material, and share them in class.
    - We will try to begin each class session with such news/analysis/report.

Beer Game Report

- Each group will play an online supply chain simulation game and develop a report on how they made their decisions and their final outcomes.
- The game will be played in the classroom.
- Instructions on how to play the game will be provided in class.
- **The reports will be due at 5:00 pm in one week from the last day of the class.**
- The report should include:
    - Details of your results (with appropriate visuals).
    - Discussion of your initial strategy. What worked and what didn't work?
    - Discussion of what you could have done differently and why.
    - Discussion of key take-aways. How would you use these take-aways in your workplace?
- There is no specific format and length for these reports.
- The groups will be evaluated on how you perform in the game and how you explain your strategies in the report.

Classroom Behavior

- Please arrive on time.
- If you choose to attend class, it would be appreciated if you do not leave early. If you will have to leave early for any reason, let me know before the class.
- **Cell phones must be switched off in the classroom**.
    - There will be **penalty** for using cell phones in the classroom.
- During class, computers can be used **only for** the classroom related activities.
    - Again, there will be **penalty** for violating this rule.

Course Outline and Schedule (Tentative)

- Session 1
  - ***Discussion of the course and course expectation***
  - ***Understanding the Supply Chain Analytics***
  - **Form teams**
    - Suggested Reading: Chapter 1 (Chopra and Meindl)

- Session 2
  - ***Supply chain drivers and metrics***
  - ***Facility location and Network design in the supply chain***
    - Suggested Reading: Chapters 3 and 5 (Chopra and Meindl)

- Session 3
  - **Managing transportation in supply chain**
    - Suggested Reading: Chapter 14 (Chopra and Meindl)

- Session 4
  - **Modeling discrete choice**
    - **Required Reading:** Modeling Discrete Choice: Categorical Dependent Variables, Logistic Regression, and Maximum Likelihood Estimation. Author: Ovchinnikov, Anton S. (Darden Business Publishing UV6335)

- Session 5
  - **Case Discussion #1: Applichem (A) (HBS 9-685-051)**
  - **Explanation of Cases # 2, 3, and 4**

- Session 6
  - **Case Discussion #2: DHL Supply Chain (Ivy Case W12888)**
  - ***Uncertainty and coordination in a supply chain***
    - Suggested Reading: Chapters 7, 10, and 12 (Chopra and Meindl)

- Session 7
  - **Case Discussion #3: Predicting Customer Churn at QWE Inc. (Darden Business Publishing UV6694)**
  - ***Actual Implementations of Supply Chain Analytics for different problems across firms in different domains***

- Session 8
  - **Case Discussion #4: The Texxell Mini-Case (will be distributed in class)**

- Session 9
  - **Supply Chain Management Simulation: Root Beer Game V2 (HBS 6619)**

- Session 10
  - ***Discussion of Root Beer Game***
  - **Case Discussion #5: Tucker Company Worldwide: Delivering Value in Logistics Services (Ivey Case 9B19D002, 2019) (*No Submission for this case*)**
  - ***Wrap-up***
  - **Submission of the beer game report**
    - Your team report on the decisions you made and outcomes you achieved in the beer game **will be due at 5:00 pm in one week from the last day of the class.**

Coding scheme for ALL course work

	What kinds of collaborative activities are allowed?		What material can be referred to?[1]	
References /Coding Scheme	Can I discuss general concepts and ideas relevant to the assignment with others?	Can I discuss specific issues associated with the assignment with others?	Can I refer to external material?[2]	Can I refer to the case-study solutions or problem set solutions?
4N	N	N	N	N
3N-a	Y	N	N	N
3N-b	N	N	Y	N
2N-a	Y	Y	N	N
2N-b	Y	N	Y	N
2N-c	N	N	Y	Y
1N	Y	Y	Y	N
0N	Y	Y	Y	Y

[1] Any referencing needs to be accompanied with appropriate citations
[2] A non-exhaustive list includes journal articles, news items, databases, industry reports, open courseware