Retail Analytics
MKTG 462-51

Professor Brett R. Gordon
Winter 2020

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Van Barletta (van@vanbarletta.com)

<table>
<thead>
<tr>
<th>Section</th>
<th>Days</th>
<th>Class Meeting Times</th>
<th>Room</th>
</tr>
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<tbody>
<tr>
<td>51</td>
<td>Fridays</td>
<td>8:30am – 11:30am</td>
<td>TBD</td>
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Review Session TBD TBD TBD

* Office Hours are available by appointment. Email is the best way to reach me.

**Note: This section will use R for analytics. Stata will not be supported.**

**Overview of the Course**
In this class, you will learn how to use analytics and data to address decisions faced by retailers and manufacturers. The class has an emphasis on empirical pricing and promotion decisions, but we will also address other topics in retailing.

The class is organized around a hierarchy of topics in retailing. We spend roughly one week examining pricing and promoting to an individual customer. We then gradually move to more aggregate decisions: products, categories and the store.

As we progress through this hierarchy of retail decisions, we illustrate how different types of data can be used to answer managerial questions. We categorize data into two broad types: opportunistic data and designed data. A key part of the class is understanding the limitations of different types of data.

There will be weekly homework assignments that are a mix of individual and group work. There is no final exam.
This class is very practical and hands-on. Most of the data we will analyze is from real-world managerial problems. The class has evolved over the years with collaborations from leading retailers and consulting firms who have brought problem-driven challenges to the classroom.

I expect everyone to have a working knowledge of statistics (e.g., you should know what a t-test is) and a working knowledge of regression. In the past, students who have never taken a statistics course find this course quite challenging.

**In this section, the default software to analyze data will be R and Excel.** Prior knowledge of these tools will be extremely useful, although no prior knowledge of R will be assumed. I will provide review sessions and extensive assistance with R.

I recognize that the default statistics software supported by Kellogg in DECS has been Stata. However, R (and Python) are the standard statistical languages used by data scientists today. I will use R for all class lectures and examples where we provide both code and data to illustrate how to analyze the case.

**Required Material**

**Course Packet**

**Texts**

There is no required textbook for this course. However, below I have listed a number of references that provide additional information on pricing, promotion and retail analytics.

**Pricing Books**


**Analytics**


How to Measure Anything: Finding the Value of Intangibles in Business, Hubbard, 2010

**Retailing**


Evaluation of Work

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<tr>
<th>Weight</th>
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<tbody>
<tr>
<td>Class Attendance 10%</td>
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<tr>
<td>Class Participation 10%</td>
</tr>
<tr>
<td>Individual Homework Assignments 40%</td>
</tr>
<tr>
<td>Group Homework Assignments 40%</td>
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</table>

1. Class Participation and Attendance

Class participation and attendance is 20% of your grade. This includes attendance at each session (10% of grade) as well as your active, constructive contributions to each session (10% of grade).

Attendance

I will take attendance at each of our ten sessions. If you miss 0-1 sessions, this will not affect your course grade. After this, you will lose 5% of your attendance grade (i.e., from 10% to 5%) for each absence. If you reach 3 absences, your participation score is zero. **If you miss 4 or more classes you will not earn a passing grade in the course.**

On-time arrival is expected. If you must leave early or arrive late to class, this will affect your participation grade (you cannot participate if you are not present). Please contact me in advance of class if you know that you must arrive late or leave early. If you must leave class for any reason, the Kellogg Student Handbook prohibits re-entry. I would ask that you abide by this policy.

_I realize that students face many issues during the quarter that impact attendance, late arrival to class and early departure from class. I will handle requests for excused absences and exceptions to the attendance policy on a case by case basis but you must notify me in advance via Qualtrics online survey, which is available via Canvas._

Participation

Positive contributions to class discussion increase your participation. Poor preparation and detrimental participation decrease your participation score.

It is important that you have read the material in the course packet prior to attending class. In addition, you should familiarize yourself with any data that we will discuss that day. You will need to check the course web site on Canvas to obtain data and instructions for both homework assignments and in-class analysis.
2. Homework Assignments
You will find the homework assignments on Canvas where you can also submit your completed assignments. There is a homework assignment each week but no final exam. All assignments must be submitted electronically through Canvas. Assignments will be returned electronically via Canvas.

Individual Assignments
There are 5 individual assignments and I will only count 4 towards your final grade. If you hand in all 5 assignments, I will drop your lowest score. Alternatively, you may decide to not hand in one of the individual assignments.

Group Assignments
There are a total of 4 group assignments. I will randomly assign groups of three to four students to work on group homework assignments. To help with grading, please be sure that every student in your group is listed on the first page of the assignment.

Peer evaluations will be completed at the end of the course. Occasionally, there are issues of free-riding within a group. Please try to resolve these issues within your group and if this fails then please contact me. If a group member is not pulling their fair share on an assignment, I encourage you to address the issue immediately. Early intervention can typically resolve the matter and avoid escalation.

Late Assignments
Late homework assignments are not accepted. We will discuss homework assignments in-class the day that they are submitted. In fairness to everyone in the class, I cannot accept late assignments. A late homework will result in a zero for that assignment. There is no way to make up for a missed assignment; I do not offer additional assignments or extra work in lieu of a missed assignment. Given this, please pay close attention to deadlines.

3. Final Exam
There is NO FINAL EXAM.

4. Re-grade Requests
Re-grade requests must be submitted via email to me within 7 days from when the assignment is returned. Along with the graded assignment, you must attach a letter explaining why you are requesting a re-grade. Be as specific as possible. While I will consider the specific concerns cited in your letter, I will re-grade the entire assignment. Note that I personally review all assignments that were designated as being on the border of two grades. Thus, although I consider it reasonable to accept regrade requests, it is rare that I change a grade. It is not that I am unwilling to change grades—I certainly value accuracy in grading—but rather our grading system works well and is designed to avoid ambiguity. Note that after reviewing your entire assignment, it is possible your grade could be lower.

5. Honor Code
The Kellogg Honor Code is applicable in this class. The complete text of the Honor Code is available on the Honor Code web site.

http://www.kellogg.northwestern.edu/stu_aff/policies/honorcode.htm
The Honor Code is enforced at Kellogg and violations are subject to disciplinary sanctions. Honor Code issues seldom arise because of Kellogg’s culture. I do not want such issues to arise in my class.

General ethics and honor code concerns may apply to the specific components of this course as follows:

- I expect you to have a full understanding of any written material you, or somebody else on behalf of you, submit(s) with your name on it. You must come to this understanding in collaboration with your group and you must be completely familiar with the material and be able to answer questions about the assignment. Substantial contribution by each group member is expected. The act of signing the assignment signifies that you have substantially participated in the preparation of the assignment.
- It is not appropriate to discuss group graded homework assignments with students outside your homework group. It is not appropriate to discuss individual graded assignments with other students, unless instructed otherwise by the professor.
- It is appropriate to discuss non-graded assignments with anyone in the course.
- For all graded assignments, you may not use materials containing related analyses from other sources. This includes, but is not limited to, material from current and former Kellogg students and analyses from the Internet. Similarly, students may not use materials distributed by faculty to previous classes (e.g. a case summary handed out to last year’s class).

The discussion in this syllabus of the Honor Code, while intended to be as comprehensive as possible, may not cover all applications of the Honor Code. If you believe something is unclear or omitted, please do not hesitate to speak to me.

6. Slides
Slides from class will be posted on the course web site.

I will typically make a screencast, which is a voice recording of each class with the slides. These will not have video. These screencasts will be posted to Canvas.

7. Laptops and Electronic Devices
You may use laptops for in-class data analysis. This is the only time when laptop usage is allowed in class. Use of all other electronic devices is prohibited unless you receive permission of the professor.

8. Software
Detailed installation instructions for R and RStudio are provided on Canvas. Both pieces of software are FREE. You must have R and RStudio installed and ready to run on your laptop by Week 2.
Course Outline

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Part</th>
<th>Case/Activity</th>
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<tbody>
<tr>
<td>Week 1</td>
<td>10-Jan-20</td>
<td>Part A</td>
<td>Introduction</td>
</tr>
<tr>
<td>Week 1</td>
<td>10-Jan-20</td>
<td>Part B</td>
<td>Willingness to Pay: Ninho Case</td>
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<tr>
<td>Week 2</td>
<td>17-Jan-20</td>
<td>Part A</td>
<td>Willingness to Pay: Cree Case</td>
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<td></td>
<td></td>
<td>Part B</td>
<td>Regular Price: Fancy Food Case</td>
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<tr>
<td></td>
<td></td>
<td>Part A</td>
<td>Regular Price: Ace Hardware Case</td>
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<td></td>
<td></td>
<td>Part B</td>
<td>Promoted Price: McCafe Case</td>
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<td></td>
<td></td>
<td>Part A</td>
<td>Promoted Price: Wahaca Case</td>
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<td></td>
<td></td>
<td>Part B</td>
<td>Merchandising: Energy Bar Case</td>
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<td></td>
<td></td>
<td>Part A</td>
<td>Merchandising: Tropicana Case</td>
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<td></td>
<td></td>
<td>Part B</td>
<td>Durable Good Pricing: Canon Camera Case</td>
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<tr>
<td></td>
<td></td>
<td>Part A</td>
<td>Durable Good Pricing: Gloria Jeans Case</td>
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<tr>
<td>Week 6</td>
<td>14-Feb-20</td>
<td>Part B</td>
<td>Category Management: AB InBev Case</td>
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<tr>
<td>Week 7</td>
<td>21-Feb-20</td>
<td>Part A</td>
<td>Category Management: Canfeld, Keurig Case</td>
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<tr>
<td>Week 7</td>
<td>21-Feb-20</td>
<td>Part B</td>
<td>Category Management: OJ Case</td>
</tr>
<tr>
<td>Week 8</td>
<td>28-Feb-20</td>
<td>Part A</td>
<td>Category Management: Kraft Case</td>
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<tr>
<td>Week 8</td>
<td>28-Feb-20</td>
<td>Part B</td>
<td>Assortment Management: FTD Case</td>
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<tr>
<td>Week 9</td>
<td>6-Mar-20</td>
<td>Part A</td>
<td>Store Loyalty: My Madison</td>
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<tr>
<td>Week 9</td>
<td>6-Mar-20</td>
<td>Part B</td>
<td>Store Experiments: C-Store</td>
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<tr>
<td>Week 10</td>
<td>13-Mar-20</td>
<td>Part A</td>
<td>Wrap Up</td>
</tr>
<tr>
<td>Week 10</td>
<td>13-Mar-20</td>
<td>Part B</td>
<td>Best Buy Case</td>
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Homework Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>HW</th>
<th>Type</th>
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</thead>
<tbody>
<tr>
<td>Week 2</td>
<td>17-Jan-20</td>
<td>HW1: Cree</td>
<td>Individual</td>
</tr>
<tr>
<td>Week 3</td>
<td>24-Jan-20</td>
<td>HW2: Ace Hardware</td>
<td>Individual</td>
</tr>
<tr>
<td>Week 4</td>
<td>31-Jan-20</td>
<td>HW3: Wahaca</td>
<td>Individual</td>
</tr>
<tr>
<td>Week 5</td>
<td>7-Feb-20</td>
<td>HW4: Tropicana</td>
<td>Individual</td>
</tr>
<tr>
<td>Week 6</td>
<td>14-Feb-20</td>
<td>HW5: Gloria Jeans</td>
<td>Individual</td>
</tr>
<tr>
<td>Week 7</td>
<td>21-Feb-20</td>
<td>HW6: Canfeld</td>
<td>Group</td>
</tr>
<tr>
<td>Week 8</td>
<td>28-Feb-20</td>
<td>HW7: Kraft</td>
<td>Group</td>
</tr>
<tr>
<td>Week 9</td>
<td>6-Mar-20</td>
<td>HW8: My Madison</td>
<td>Group</td>
</tr>
<tr>
<td>Week 10</td>
<td>13-Mar-20</td>
<td>HW9: Best Buy</td>
<td>Group</td>
</tr>
</tbody>
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There is NO FINAL EXAM
Week 1, Part A: Intro

Casepack:
“The Experimental Revolution in Business,” Jim Manzi, Chapter 11 from Uncontrolled

Canvas:
“The Future of Retail in the Age of Amazon,” Fast Company, Nov 24, 2017 [SKIM, OPTIONAL]
“Marketers debate value of data vs. instinct,” September 2016, [SKIM, OPTIONAL]

Week 1, Part B: Willingness to Pay

Casepack:

Canvas:
Ninho Case
Willingness to Pay, ET Anderson, 2016

Week 2, Part A: Willingness to Pay

Casepack:

Canvas:
“Samsung Wins Appeal In $120M Patent Fight With Apple,” February 26, 2016, Fortune
“Apple wins appeal against Samsung; Technology,” Tim Bradshaw, 19 September 2015, Financial Times [SKIM]
**Week 2, Part B: Managing Regular Price**

**Canvas:**

**Fancy Foods Case**


“Fresh restaurant food for those who aren’t rich,” Stephanie Strom, NY Times, July 29, 2016

“Zone Pricing: How Retailers Can Capture Value and Increase Competitiveness”, BCG.

**Week 3, Part A: Managing Regular Price**

**Casepack:**


**Canvas:**


“Decision Stages and Asymmetries in Retail Price Pass Through,” Anderson et. al, 2016 [SKIM, OPTIONAL]

**Week 3, Part B: Managing Promoted Price**

**Canvas:**

**McCafe Case**


“Why is Turkey Cheaper When Demand is Higher?,” Catherine Rampell, NYT, Nov. 13, 2013.

**Week 4, Part A: Managing Promoted Price**

**Casepack:**


**Canvas:**

“Price cues and customer price knowledge,” Eric T. Anderson and Duncan I. Simester, pages Read 150-153 [SKIM pages 154-166]
**Week 4, Part B: In-Store Merchandising**

**Energy Bar Case**

Canvas:


**Week 5, Part A: In-Store Merchandising**

Casepack:


Canvas:

Managerial Summary: “Are Sale Claims Less Effective When More Products Have Them?” Anderson and Simester

Managerial Summary “The Power of Price Endings,” Anderson and Simester

“It’s Discounted, but is it a Deal? How List Prices Lost their Meaning,” David Streitfeld, NYTimes, 6 March 2016. [OPTIONAL]

**Week 5, Part B: Durable Goods Pricing and Promotion**

Canvas:

**Canon Camera Case**

“When Retail Prices Cross the Line,” Ayelet Israeli, Eric T. Anderson and Anne T. Coughlan, Kellogg Insight.

MAP Policy Examples [OPTIONAL]
Week 6, Part A: Durable Goods Pricing and Promotion

Canvas:

“Macy's Seeks Answers As Sales Slide --- After resisting, CEO tries discount stores; partnership with Li & Fung unit,” Suzanne Kapner, Wall Street Journal, 13 November 2015

“Apparel Producers Face Challenges of Falling Prices,” July 10, 2015, Mayu Saini, WWD

“Challenges ahead for retail in Brazil, “BW Confidential, June 12, 2014 [OPTIONAL]

“How Valve Experiments with the Economics of Video Games” Geekwire.com, October 23, 2011 [OPTIONAL]

Week 6, Part B: Managing the Category (part 1 of 5)
“Key Intuitions for Category Pricing”

Canvas:

ABInBev Case


“Effective day-to-day category management,” Bearing Point, 2015

Week 7, Part A: Managing the Category (part 2 of 5)
“Managing Complements”

Canvas:

Keurig at Home: Managing a New Product Launch (Kellogg Case)

Keurig: From David to Goliath, The Challenge of Gaining and Maintaining Marketplace Leadership (Kellogg Case) [OPTIONAL]

“Keurig Green Mountain Taken Private in $13.9 Billion Deal; Biggest coffee deal in the world expected to add to JAB’s coffee holdings,” Annie Gasparro, 12/8/2015, WSJ.

Week 7, Part B: Managing the Category (part 3 of 5)
“Analytics for Category Pricing”

Canvas:

OJ Case

“Pricing in Retail: Setting Strategy”, McKinsey, April 2015

Week 8, Part A: Managing the Category (part 4 of 5)
“Managing Private Label”

Canvas:


“Fashion within reach,” Sangeeta Tanwar, 14 December 2015, Business Standard
### Week 8, Part B: Managing the Category (part 5 of 5)

**“Assortment”**

**Casepack:**

“Assortment Planning: Mining Sales Data to Discover Home Run Products You are Missing”, The New Science of Retailing, Chapter 2

**Canvas:**

**FTD Case**


### Week 9, Part A: Managing the Store

**Canvas:**


### Week 9, Part B: Managing the Store

**Canvas:**


### Week 10, Part A: Wrap Up

### Week 10, Part B: Best Buy

**Canvas:**

“Store-within-a-store: Brick-and-mortar's 'godfather strategy','” By Daphne Howland, April 6, 2015, Retail Dive.
**Additional Articles:**


“Retail Analytics Moves to the Frontline,” RSR Report, 2014

“Dominick's discount program adds ammo in price war,” September 28, 2010, Crain's


Managerial Summary: “Price Stickiness and Customer Antagonism”, Anderson and Simester

Managerial Summary “Can Segmented Pricing Damage Customers’ Quality Perceptions: The Case of Installment Billing,” Anderson and Simester

“Optimal Pricing Strategies for an Automotive Aftermarket Retailer”, Mantrala et al. (2006)

Managerial Summary “Can Segmented Pricing Raise Fairness Concerns - The Case of Premium Prices for Large Sizes,” Anderson and Simester