# MAR 653
# Marketing Analytics

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## Scope of Course

This course will focus on developing marketing strategies and resource allocation decisions driven by quantitative analysis. Topics covered include market segmentation, market response models, customer profitability, product recommendation systems, churn predictions, media attribution models, and resource allocation. The course will draw on and extend students' understanding of issues related to integrated marketing communications, pricing, digital marketing, and quantitative analysis. The course will use a combination of cases, lectures, and a hands-on project to develop these skills.

## Grading

You will be evaluated on the following components: class participation, team performance on homework assignments, and a marketing analytics team project.

**Class Participation** **:** 10%
**Individual Quiz** : 10%
**Group Homework Assignments** : 30%
**Marketing Analytics Team Project** : 30%
**Marketing Analytics Final Simulation** : 20%

### Attendance

Students are expected to attend at least nine of the ten synchronous sessions. More than one undocumented absence will adversely influence your participation grade. When/if a class is missed, students will be required to watch the recording.

### Materials

Venkatesan, R., Farris, P. and Wilcox, R. (2021). Marketing Analytics: Essential Tools for Data Driven Decisions, https://www.amazon.com/Marketing-Analytics-Essential-Data-Driven-Decisions/dp/0813945151

Media Attribution Simulation, for the exam. Available through Darden Business Publishing. More details on the simulation will be provided during the course.

**Software**

Statistical Software in this Course: Much of what we will be doing can be completed in XLStat. This is an add-on for MS Excel. You can use it for free for 30 days or you can purchase a student version for about $50. Link here: https://www.xlstat.com/en/

Alternatively you can use R, R-Studio, or RCommander. These are free to use but require a bit more technological prowess. More info about R here: https://www.r-bloggers.com/r-guis-which-one-fits-you/

You may also use SPSS by IBM. It is, however, the most expensive and can be obtained here: https://www.ibm.com/analytics/us/en/spss/spss-students/

XL Stat Remote App info: The software for the REMOTE APP is available free of cost on to the Whitman Network using the remoteapp. See Syracuse ITS for more details.

**Homework Assignments**

There are two team homework assignments. Please submit your homework assignments as PowerPoint presentations with a maximum of five slides. You don't have to provide the raw output and/or programming from the software. Submit the pertinent statistics, and/or graphs and/or visuals that are appropriate for your analysis. Extraneous output should not be presented. The primary focus of these assignments should be on analysis, interpretation and managerial application. Imagine your audience as a Marketing manager in this regard. Submit your homework assignments (one submission per team) to the LMS at least one hour prior to that week's live session.

**Marketing Analytics Team Project**

Your project idea should address a business problem for an existing brand or product using marketing analytics. Your final project report should provide marketing strategy guidelines for the business problem you addressed using analysis of marketing data. Some sample project ideas are given below (note that not all of these sample issues have data available):

- What are customer perceptions of hybrid cars? How does a Toyota Prius compare to other hybrid cars in the market? You might use customer surveys and social media conversations to obtain a perceptual map.
- Through a conjoint experiment, evaluate how consumers trade off between prices and the various attributes and features of a vacation cruise line.
- Identify drivers of customer revenue and retention in an online grocery store such as Relay Foods. How can Relay Foods use this information to customize its product and marketing communications?
- What are the different customer segments for Harris Teeter? Do the segment sizes differ across stores? How can Harris Teeter use this information to design its product assortment?

The above are merely examples. You have a wide latitude in terms of what you can explore and discover.

Start with a directed research question and then ensure that you have data available to be able to answer that research question. I have provided some datasets that you may use for the project. Alternatively, you may wish to use data that you collect, have access to or source on your own from websites such as Kaggle. Datasets can be accessed at https://www.kaggle.com/datasets, https://data.world/datasets/open-data https://data.fivethirtyeight.com/, or https://catalog.data.gov/dataset. Some academic journals such *Marketing Science, Journal of Marketing Research* and *Journal of Marketing* have accompanying datasets with their published studies that you can access. Note that you can access journal articles and their datasets for no cost if you access them via https://library.syr.edu/help/work-off-campus.php

You can use any of the following marketing research techniques:

- Cluster analysis
- Regression analysis
- Perceptual maps
- Logistic regression
- Collaborative filtering
- Text analytics
- Ordinal logit
- Conjoint analysis

We will provide some additional datasets as they come available that might be helpful for using the above analytics techniques and finding an appropriate research topic.

*Marketing Analytics Team*

Select your team members. List the members in the Project Idea PowerPoint deck. Your team should consist, ideally, of three members – though this may deviate based on number of students in the class. **Submit your project idea and project plan as PowerPoint decks.**

*Project Timeline*

| *Task* | *Due Date* |
|---|---|
| Project Idea and Team Composition | 48 hours after week 4 live session |
| Project Plan and Research Design | 48 hours after week 6 live session |
| Final Report and in-class Presentations | 24 hours prior to week 10 live session |

Please feel free to contact me to discuss any project ideas that you may have. The earlier you discuss the project idea and plan with me, the better the chance of evaluating the feasibility of your project idea.

*Project Plan & Research Design*

The project plan and research design due in Week 4 should be 3-4 slides that briefly describe the types of analyses you plan to utilize along with the key variables you have found in your chosen data set. At this time you should also may firm up and/or refine your overarching research question(s). Please note that it is ok to deviate from the this plan a bit based on new techniques that are covered in the remaining weeks of the course and the results of some of your preliminary analyses and examinations of the data.

*Project Report*

The project report should contain the following:

- Executive summary
- Research objective
- Research plan and methodology
- Data findings
- Conclusion
- Recommendations

Use the above as appropriate headings for each section of the paper.

You will present your project results during the week 10 live session. Your presentation deck will also be your project report. You can submit additional appendices with the presentation deck as part of your project report. I will, however, place more importance on the presentation deck when evaluating the report.

*Project Evaluation*

Your project score will be determined by the team's final report, the team's presentation in class, and a team peer evaluation.

Feel free to review past projects (these will be posted) for some examples. Some past research questions used have been:

1. Revenue of a property on Airbnb using the available data?
2. How does review sentiment affect a property's potential to be rented on Airbnb?
3. What are the drivers of Airbnb property revenues in Miami and Paris?
4. How would you optimize Airbnb property revenues in Miami and Paris? Are your strategies different or the same in these cities?

## Readings List

All readings are chapters from the book;

Venkatesan, R., Farris, P. and Wilcox, R. (2021). Marketing Analytics: Essential Tools for Data Driven Decisions, https://www.amazon.com/Marketing-Analytics-Essential-Data-Driven-Decisions/dp/0813945151

The numbers below represent the case or technical note number that is in the upper right hand corner of individual chapters.

| Unit | Asynchronous Session | Synchronous Session |
|---|---|---|
| 1 | Introduction | Chapter 8, pages 188-193 |
| 2 | Chapter 2, pages 22-32 | Chapter 2, pages 22-32 |
| 3 | Chapter 2, pages 32-44 | Chapter 2, pages 32-44 |
| 4 | Chapter 4, pages 67-93 | Chapter 4, pages 93-99 |
| 5 | Chapter 5, pages 100-112 | Chapter 5, pages 100-112 |
| 6 | Chapter 9, pages 194-205 | Chapter 9, pages 194-205 |
| 7 | Chapter 9, pages 205-208 | Chapter 9, pages 205-208 |
| 8 | Chapter 3, pages 43-56 | Chapter 3, pages 56-66 |
| 9 | Chapter 6, pages 123-132 | Chapter 6, pages 132-148 |
| 10 | None | None |

**Homework I**
Due: At least 1 hour prior to week 3 live session

**Assigned Material**:
Segmentation at Sticks Kebob Shop, Chapter 2, 32-44
Segmentation at Sticks Kebob Shop Data SPREADSHEET, UVA-M-0866X.xlsx

**Assignment Questions:**

How do people choose a fast food restaurant to visit?
a. What is important: location, price, assortment, or cuisine?

Who do you think are Sticks' customers, and what are their motivations for visiting Sticks?

What does the survey data tell us about differences between customers and noncustomers?

What survey questions would you use to identify the customer segments?

How many customer segments can you estimate from the survey data?
a. What are the profiles of the customer segments?
b. Which customer segments should Sticks target?

Provide a recommendation for the location of the next Sticks Kebob Shop based on the segmentation analysis and the demographic profiles of the locations in the following table. (Hint: Please consider differences in the set restaurants visited for lunch/dinner by Sticks customers and noncustomers.)

| Loc. | Pop. | Median Age | Median Income | Consumer Spend | Consumer Spend Per Household | Major Customer Profiles |
|---|---|---|---|---|---|---|
| **A** | 29,321 | 39.1 | $92,700 | $722M | $62,404 | Blue Blood Estates, Brite Lites, Li'l City, Executive Suites, Upward Bound, Winner's Circle |
| **B** | 34,183 | 32.5 | $31,900 | $482M | $36,720 | City Startups, Family Thrifts, Hometown Retired, New Beginnings, Sunset City Blues |
| **C** | 42,913 | 32.5 | $55,700 | $754M | $46,828 | Brite Lites, Li'l City, Family Thrifts, Up-and-Comers, Upward Bound, White Picket Fences |
| **D** | 57,509 | 34.8 | $75,500 | $1,184M | $57,880 | Brite Lites, Li'l City, Country Quires, Up-and-Comers, Upward Bound, White Picket Fences |

The questions used for segmentation are available for both the customers and noncustomers. You want to see if the customers of Sticks Kebob are different than the noncustomers in their responses to these questions. Say you find four segments, but

there was a higher chance of finding Sticks Kebob customers in segments 2 and 3. You would then try to see if segments 2 and 3 are different than others in terms of demographics and if segments 2 and 3 provided different responses on the segmentation questions. The segmentation questions provide the psychographic profile, and the other variables in the survey provide the demographic profile.

**Homework II**
Due: At least 1 hour prior to week 7 live session

**Assigned Material:**
Retail Relay (C), Chapter 9, pages 205-208

Defection Detection: Measuring and Understanding the Predictive Accuracy of Customer Churn Models, Journal of Marketing Research
Chapter 4: Decision Trees - from *Introduction to Data Mining* by Tan, Steinbach, and Kumar

**Assignment Questions**:

Use the Relay train data to develop a model to predict customer retention. You may use logistic regression to predict the variable "retained". For each of the regressions listed below, estimate the model coefficients in the train data and predict retention using the estimated model in the test data. You will use the coefficients obtained from the model estimated using the train data to do this. Name this predicted value "pretain". Calculate the hit rate. This can be calculated as % of matches between the value of pretain and retained in the test data.

1. Use esent, eclickrate, avgorder, ordfreq, paperless, refill, doorstep as independent variables to estimate the model using train data. Report the model coefficients. Predict retention, and calculate hit rate in the test data.

2. Use avgorder, ordfreq, paperless, refill, doorstep as independent variables to estimate the model using train data. Report the model coefficients. Predict retention, and calculate hit rate in the test data.

3. Use esent alone as independent variables to estimate the model using train data. Report the model coefficients. Predict retention, and calculate hit rate in the test data.

4. Create a dummy variable called weekend which is 1 if favday is Friday, Saturday or Sunday, and 0 otherwise. Use esent, eclickrate, avgorder, ordfreq, paperless, refill, doorstep, and weekend as independent variables to estimate the model using train data. Report the model coefficients, and predict retention, and calculate hit rate in the test data.

Answer the following questions based on the 4 regression outputs above.

5. Why is esent a strong predictor of retention? Do you see any issues with using esent as a predictor for retention? Recommend transformations of esent that can overcome the issues of using esent as a predictor.

6. Does the sign of the coefficients for avgorder, ordfreq, and weekend make sense? What consumer behavior explanation can you provide for the sign of these coefficients?

7. What are your recommendations to Relay Foods Management for improving their customer retention?

## Other Course Policies

**Policy on Academic Integrity**
All work in this course must be your own effort. When group/team assignments are submitted, those assignments must be solely the work of the team members. Violations of this policy will be considered academic dishonesty and referred to the Academic Disciplinary Committee. The Whitman School of Management has adopted an academic policy emphasizing that honesty, integrity, and respect for others are fundamental expectations in our School. The Policy requires that all SOM students sign a certification that they have read, understood, and agreed to comply with the Academic Integrity Policy. All SOM students should have already completed a certification statement. All other students enrolled in this course, are also required to complete a certification statement available in the Undergraduate Office (Suite 215). (The Policy is available at http://academicintegrity.syr.edu) Completed statements will be kept on file in the Undergraduate Office. Plagiarism and academic dishonesty are serious offenses.

**Religious Observance**
SU's religious observances policy, found at http://supolicies.syr.edu/emp_ben/religious_observance.htm, recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holy days according to their tradition. Under the policy, students are provided an opportunity to make up any examination, study, or work requirements that may be missed due to a religious observance provided they notify their instructors before the end of the second week of classes.

**Disability-Related Accommodations**
If you believe that you need accommodations for a disability, please contact the Office of Disability Services (ODS), http://disabilityservices.syr.edu, or call (315) 443-4498 for an appointment to discuss your needs and the process for requesting accommodations. ODS is responsible for coordinating disability-related accommodations and will issue students with documented Disabilities Accommodation Authorization Letters, as appropriate. Since accommodations may require early planning and generally are not provided retroactively, please contact ODS as soon as possible.

Syracuse University and I are committed to your success and to supporting Section 504 of the Rehabilitation Act of 1973. This means that in general no individual who is otherwise qualified shall be excluded from participation in, be denied benefits of, or be subjected to discrimination under any program or activity, solely by reason of disability.