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Humboldt University Berlin

Institute of Marketing

Prof. Dr. Daniel Klapper

Advanced Marketing Modeling

Syllabus SoSe 2024

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Course Dates:

| Lectures | Wednesday, | 12:15 pm – 13:45 pm, | SPA 1, room 22 and/or digital |
| Exercises | Thursday, | 12:15 pm – 13:45 pm, | SPA 1, room 22 and/or digital |

Course Description and Objectives:

Evaluating marketing decisions and developing goal-oriented marketing strategies, e.g. maximizing firm profits, depend on the measurement of causal relationships between firms' objectives and marketing activities. In this course, we discuss in depth advanced methods to empirically determine the causal relationship between marketing activities and firms' objectives. In exercise courses students learn how to apply these methods to real data. Special attention is given to modeling the effects of marketing on sales and market share data. In this course we also focus on discrete choice models for individual purchase data and aggregate sales data. Successful participation in this class will enable students to quantify the impact of marketing on key performance measures and to evaluate the success of marketing activities.

Course Prerequisite:

Successful participation of Applied Econometrics (Master course) or an equivalent course.

Course Web Page:

Course material will be made available in the Moodle system of the Humboldt-University Berlin.

Course Reference Materials:

The empirical analyses are done in R. We use a well written textbook that links the computing software R to marketing which is "R for Marketing Research and Analytics" from Chris Chapman and Elea McDonnell Feit (2019, Springer International Publishing). It is recommended to purchase this book.

The following papers and book chapters must be studied in detail:

Berry, S.T. (1994), Estimating Discrete-Choice Models of Product Differentiation, RAND Journal of Economics, Vol. 25 (2), 242-262.

Berry, S. T., Levinsohn, J. & Pakes, A. (1995), Automobile prices in market equilibrium, Econometrica 63(4), 841-890.

Wooldridge, J.M. (2008), Introductory Econometrics, South-Western Cengage Learning, Chapters 2, 3 and 4, 68-166.

Chintagunta, P., V. Kadiyali and N. Vilcassim (2004), Structural Models of Competition: A Marketing Strategy Perspective, *Assessing Marketing Strategy Performance*, eds. C. Moorman and D. Lehmann, Cambridge: Marketing Science Institute, 95-113.

Conlon, Christopher, and Jeff Gortmaker (2020). Best practices for differentiated products demand estimation with PyBLP. *RAND Journal of Economics, 51* (4), 1108-1161.

Nevo, A. (2000), A Practitioner's Guide to Estimation of Random-Coefficient Logit Models of Demand, in: Journal of Economics & Management Strategy, Vol. 9(4), 513-548.

Train, K.E. (2009), Discrete Choice Methods with Simulation, Cambridge University Press, Chapter 3, 4, 6, 8, 9, 10.

https://onlinecourses.science.psu.edu/stat501/node/2

The following books provide additional background:

1. Anderson, S.P., de Palma A. and Thisse, J.-F. (1992), Discrete Choice Theory of Product Differentiation, The MIT Press.
2. Dubin, J. A. (1998), Studies in Consumer Demand – Econometric Methods Applied to Market Data, Kluwer Academic Publishers Group.
3. Franses, P.H. and Paap, R. (2010), Quantitative Models in Marketing Research, Cambridge University Press.
4. Hanssens, D.M., Parsons, L.J. and Schultz, R.L. (2003), Market Response Models: Econometric and Time Series Analysis, Kluwer Academic Publishers Group.
5. Leeflang, P.S.H, Wieringa, J.E., Bijmolt, T.H.A and Pauwels, K.H. (2015), Modeling Markets – Analyzing Marketing Phenomena and Improving marketing Decision Making, Springer.
6. Train, K.E. (2009), Discrete Choice Methods with Simulation, Cambridge University Press. 1st edition is available here: http://elsa.berkeley.edu/books/train1201.pdf.
7. Verboven, F. (1996), International Price Discrimination in the European Car Market. RAND Journal of Economics, 27(2), 240–268.
8. Wooldridge, J.M. (2008), Introductory Econometrics, South-Western Cengage Learning.

Other Course Materials:

All of the topics I will cover have been addressed in the marketing, statistics, and economics literature, both theoretically and in practice. Articles and book chapters relevant to each lecture are named below in the table which shows the sessions and content overview. It is expected that you will have done all of the readings prior to class. If you have questions, bring them to class and I will go over them.

Course Grading:

You have to register for the course via Agnes until May 17.
Your grade bases on a portfolio exam. You have to submit 3 special work performances (SWP).
SWP 1: accounts for 33.33 % of final grade, deadline May 20, 4:00pm
SWP 2: accounts for 33.33 % of final grade, deadline June 24, 4:00pm
SWP 3: accounts for 33.33 % of final grade, deadline August 12, 4:00pm

All special work performances are posted on Moodle and all special work performances should be passed. Your work on the special work performances must be sent as pdf before the deadline to daniel.klapper@hu-berlin.de. Special work performances must be done individually or in a group of 2 students (BSE students individually). The page constraints of each special work performance are announced in each the special work performance and are binding.

For students of the BSoE program:
3 Special Work Performances   50%
Final assignment   50%

Course Software:

The majority of computing in the course will be done with R. This will include in-class demonstrations and a tutorial how to use R.

Course Topics:

We will cover the following general topics in this course:
(1) Marketing models and marketing data
(2) Response models for aggregate data
(3) Marketing Analytics with R
(4) Regression analysis for analyzing marketing effects on sales
(5) Discrete choice models of demand
(6) Discrete choice models for aggregated data
(7) Discrete choice models for individual choice data

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CW	Date	L/E	Content and Readings
16	Apr 17	L	Course Logistics and Introduction to the Course
16	Apr 18 Pre-recording	E	3. Introduction to R Readings: Chapman & McDonnell Feit (2019), Chapter 2.
17	Apr 24		Discussion about the empirical data set and SWP 1
17	Apr 25	E	3. Introduction to R

			• Fundamentals of Data Analysis
			  ○ Describing Data
			  ○ Relationships Between Continuous Variables
			
			Readings:
			Chapman & McDonnell Feit (2019), Chapter 3, 4.

18	May 01		Labor day, no class

18	May 02
	Pre-recording
		L	3. Introduction to R
			
			• Fundamentals of Data Analysis
			  ○ Comparing Groups: Tables and Visualizations
			  ○ Comparing Groups: Statistical Tests
			  ○ Identifying Drivers of Outcomes: Linear Models
			
			Readings:
			Chapman & McDonnell Feit (2019), Chapter 5, 6, 7.

19	May 08	L	2 Response Models for Aggregated Data
19	May 09		Ascension day – no class
20	May 15	E	Discussion about the empirical data set and SWP 1
20	May 16	E	Discussion about the empirical data set and SWP 1
19	May 17		Registration deadline in Agnes
19	May 20, 4:00pm		Deadline Special Work Performance 1
21	May 22	L	4 Regression Analysis Reviewed
21	May 23	E	Exercise on Regression Analysis, Discussion about SWP 2
22	May 29	L	4 Regression Analysis Reviewed
22	May 30	E	Exercise on Regression Analysis, Discussion about SWP 2
23	Jun 05		Dias Academicus
23	Jun 06	E	Feedback Session on SWP 1
24	Jun 12	L	4 Regression Analysis Reviewed
24	Jun 13	L	Exercise on Regression Analysis, Discussion about SWP 2
25	Jun 19	E	5 Discrete Choice Models of Demand 5.1 Methodological Background 5.2 Discrete Choice Models for Aggregated Data
25	Jun 20	E	5 Discrete Choice Models of Demand 5.2 Discrete Choice Models for Aggregated Data
26	Jun 24, 4:00pm		Deadline Special Work Performance 2
26	Jun 26	L	5 Discrete Choice Models of Demand 5.3 Discrete Choice Models for Aggregated Data
26	Jun 27	L	Dias Academicus
27	Jul 03	E	Exercise on Discrete Choice Models for Aggregated Data, Discussion about SWP 3
27	Jul 04	E	Exercise on Discrete Choice Models for Aggregated Data,

			Discussion about SWP 3
28	Jul 10	L/E	5 Discrete Choice Models of Demand
			5.3 Discrete Choice Models for Individual Choice Data
28	Jul 11	L/E	Feedback session on Special Work Performance 2
29	Jul 17	L/E	Feedback session on Special Work Performance 2
29	Jul 18	L/E	Feedback session on Special Work Performance 2
34	Aug 12		Deadline for SWP 3, 4:00pm

CW = Calendar week

L = Lecture

E = Exercise