This seminar is designed to provide a state-of-the-art overview of theory, methodology and practices in the empirical methods of marketing. Further, students will acquire relevant tools to be prepared for writing a research-based master thesis. This will be supported by an obligatory workshop on academic research. Besides the short presentation, we encourage active participation and interaction between students as important prerequisites for training.

PART I: Pricing

1. Price elasticity
   One of the central measures for pricing is price elasticity. It describes the percentage change in quantity demanded in response to a 1% change in price.
   The aim of this paper is researching the literature on price elasticity and to define the determinants explaining its heterogeneity, e.g. through categories, stores, and over time.

2. Cross-price elasticity
   Price changes of competing products may lead to corresponding cross-category price effects, and therefore to considerable deferrals of demand. The underlying consumers’ change behavior differs by product and product categories.
   The aim of the papers lies in researching the relevant literature on price elasticities, and in defining the determinants explaining the heterogeneity of cross-category price effects, e.g. through categories, stores, and over time.

3. Pricing on two-sided markets
   In two-sided markets the demand is mutually influenced by different market sides. Newspaper and magazine publishing companies operate in such two-sided markets. For instance, magazine publishers sell advertising space to advertising customers as well as printed magazines to their readership. The number of readers influences the pricing for advertisements since the willingness to pay of advertising customers is significantly determined by the number of readers. Conversely, the readers’ willingness to pay is influenced by the number of advertisements in print media.
   The aim of this paper is reviewing the methods and results of empirical studies on marketing in two-sided markets. Especially, the state of the art of research on the influence of marketing variables in two-sided newspaper and magazine markets should be summarized systematically.

4. Non-linear Pricing

Prices are non-linear when the prices per unit change in response to augmented amounts. When this pricing configuration is employed to products from which customers generally demand more than one unit, companies may increase their profits significantly. However, what non-linear pricing configurations do exist for newspapers and magazines, and what advantages do they provide?

The aim of this paper is the systematic review of the current state of research on non-linear prices. Especially, the paper should differentiate between conceptual and empirical studies.


5. Asymmetric Price Response

Since the introduction of the Prospect theory, it is commonly known that consumers punish losses stronger than they reward benefits of the same dimension. This means consumers should react more (negatively) to price increases than to price decreases (positively).

The aim of this paper is describing the Prospect theory and researching empirical findings regarding asymmetrical price reactions systematically.

PART II: Application of machine learning in marketing

1. Using marketing models to predict sales
One important feature of empirical marketing models is that they can be used to predict sales, e.g., sales in future periods, or sales in other stores. Using a detailed data set on consumer purchases of grocery products from a set of supermarkets in the Chicago metropolitan area, this thesis will explore different models that can be used to make predictions. Further, it will assess which variables matter the most when predicting sales.


2. Machine Learning in Marketing
Is machine learning relevant for Marketing? The last years have seen a rise in the use and development of machine learning techniques, in particular in setting in which large datasets are processed. Given the availability of large datasets in marketing, the question arises which role machine learning techniques can play for the analysis of marketing data. It is therefore the goal of this thesis to give an overview of marketing studies which apply machine learning algorithms.


3. Deep learning and neural networks: Applications in Marketing
Deep learning is a new method of machine learning with multi-layered artificial neural networks that work well with large data sets. Deep Learning provides good solutions to many pattern recognition problems, including image recognition, speech recognition and text comprehension. It is therefore the goal of this thesis to explain deep learning. Further, the literature in marketing using deep learning or potential new applications of deep learning in marketing should be discussed.


4. Nearest Neighbors: Applications for gas station expansion
The Technique nearest neighbors in the context of machine learning can be used in several marketing applications to optimize management decisions. The goal of this thesis is to describe the method of the nearest neighbor technique and give an overview where in the marketing literature it is used or in which fields it should be used in the future.
• k*-Nearest Neighbors: From Global to Local. NIPS 2016

5. Clustering in Machine Learning an alternative to market segmentation with conjoint
The most commonly used approach to identify different market segments is the conjoint analysis. With more computer power available, machine learning might be a good alternative. Using Clustering as a machine learning technique to identify market segments, e.g. customer with different willingness to pay or different preferences might be a good alternative. The goal of this thesis is to describe the machine learning clustering approach and compare this to the know conjoint analysis.