Maximilian Matthe

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RESEARCH INTERESTS

Substantive: Competition & Market Structure, Strategic Market Analysis, Market Evolution

Methodological: High-Dimensional / Unstructured Data Analysis, Perceptual Mapping, Machine Learning

EDUCATION

Doctoral Candidate, Quantitative Marketing   2022 (expected)
   Goethe University Frankfurt, Germany
   Jointly affiliated with *efl – the Data Science Institute*
   Supervisors: Bernd Skiera and Daniel M. Ringel (UNC Chapel Hill)

Visiting Doctoral Scholar   Fall 2018 & Spring 2019
   Kenan-Flagler Business School
   University of North Carolina at Chapel Hill, USA

M.Sc. Financial Economics (MMF), Goethe University Frankfurt, Germany   2017

B.Sc. Mathematics and Economics, University of Wuerzburg, Germany   2015

WORKING PAPERS

[1]   Mapping Market Structure Evolution
   with Daniel M. Ringel & Bernd Skiera
   Under 2rd round revision at **Marketing Science**

[2]   Discovering Information Needs from Online Search Tasks
   with Daniel M. Ringel and Bernd Skiera

[3]   Estimating Positioning Dynamics from Parliamentary Speeches
   with Orian Mahlow and Daniel M. Ringel

SELECTED WORK IN PROGRESS

Carbon Profiling of Modern Marketing Analytics
   single-authored

ACADEMIC CONFERENCE AND SEMINAR PRESENTATIONS

2021   Research Seminar, University of Cologne, Cologne, Germany
   Symposium on Statistical Challenges in Electronic Commerce Research (SCECR), Spain (online)
   Artificial Intelligence in Management Workshop and Conference (AIM), USA (online)
   INFORMS Marketing Science Conference, USA (online)

Annual Conference of the European Marketing Academy (EMAC), Spain (online)

2020   Symposium on Statistical Challenges in Electronic Commerce Research (SCECR), Spain (online)
INFORMS Marketing Science Conference, US (online)

2019   Annual Conference of the European Marketing Academy (EMAC), Hamburg, Germany
Finalist for Best Paper Award based on Doctoral Work

Presentations by coauthors not listed

AWARDS AND SCHOLARSHIPS

Finalist, ASA Section on Statistics in Marketing Doctoral Research Award	2022
Fellow, AMA-Sheth Doctoral Consortium	2022
Research grant, efl – the Data Science Institute, Research grant for dissertation project (23,200€)	2021
Research grant, DFG – German Science Foundation, (with Bernd Skiera, ~ 200,000€)	2021
Research grant, efl – the Data Science Institute, Research grant for dissertation project (22,800€)	2020
Finalist, best paper award based on doctoral work (EMAC 2019)	2019
Travel grant, DAAD, for research visits at UNC Chapel Hill (~15,000€)	2019
Travel grant, "Forschungstopf" by Goethe University Frankfurt (2,000€)	2019

TEACHING EXPERIENCE

Predictive Modeling in Marketing (Master's Level)   Summer 2022
   Co-instructor

Empirical Customer Data Analysis (Bachelor's Level)   Fall 2021
   Co-instructor, Evaluation: **5.6/6**

Marketing Analytics (Bachelor's Level)   Fall 2017 – Spring 2021
   Teaching Assistant & Instructor for Selected Sessions

Real Analysis & Linear Algebra (Bachelor's Level)   2017
   Teaching Assistant

Supervised Bachelor's / Master's thesis projects: 14

SKILLS

Programming:	Python, R, C++, Java(Script)
Data Science:	Git, GPU / Cloud Computing, Conda, Jupyter
Languages:	German (native), English (fluent)

WORKING PAPER ABSTRACTS

[1] "Mapping Market Structure Evolution", with Daniel M. Ringel and Bernd Skiera

Abstract: A common element of market structure analysis is the spatial representation of firms' competitive positions on maps. Such maps typically capture static snapshots. Yet, markets tend to be in flux, and market structures can evolve. Embedded in the evolution of market structures are firms'

trajectories—the series of changes in firms' positions over time relative to all other firms in a market. Identifying these trajectories can reveal firms' (re-)positioning strategies, identify emerging threats and opportunities, and provide a forward-looking perspective on competition. To unlock these insights, we propose a novel dynamic mapping framework (EvoMap). Our proposed framework is compatible with a wide range of extant mapping methods (such as Multidimensional Scaling, Sammon Mapping, or t-SNE) and allows accurately identifying firms' trajectories from high-frequency and potentially noisy data. We validate our framework in an extensive simulation study and show that it recovers market structure evolution far more accurately than existing approaches. We apply our framework to time-evolving measures of firms' competitive relationships based on their product descriptions and identify the trajectories of more than 1,000 publicly listed firms over 20 years. Our findings reveal changes in the positioning strategies of several firms such as Apple, Walmart, and Capital One.

[2] "Discovering Information Needs from Online Search Tasks", with Daniel M. Ringel and Bernd Skiera

Abstract: Consumers routinely use online search engines, such as Google, to search for information. In response, many firms provide such information to attract consumers during their online searches. Thereby, a prerequisite for successfully attracting a firm's target audience is identifying what information these consumers desire. To do so, firms must understand consumers' information needs, that is, the information consumers seek to obtain with their searches. Yet, identifying information needs is non-trivial, as information needs naturally are (I) unobservable and (II) heterogeneous across consumers. This article aims to provide an approach for identifying consumers' information needs within their online searches. To do so, we develop a novel market research approach and validate it in an empirical application. Our approach enables researchers and firms to collect primary data at scale in a real-time online search environment, and identify consumer information needs through unstructured data analysis. We implement our approach for online searches around "credit cards" in Germany. Our approach reveals nine broad information needs, including information around prices and fees, specific brands, traveling, or mobile payment options. Moreover, our analysis shows that information needs differ across consumers, for instance, across genders and along the purchase funnel.

[3] "Estimating Positioning Dynamics from Parliamentary Speeches", with Orian Mahlow and Daniel M. Ringel

Abstract: Political parties and their members regularly hold speeches in which they express their opinions. Thereby, their speeches can reveal their underlying positioning – potentially in very high frequency. Herein, we propose a method for estimating high-frequency time-series of party positioning from their members' parliamentary speeches. Our approach leverages two recent methodological innovations: pre-trained language models and dynamic scaling. We apply our approach to data covering parliamentary speeches within the German Bundestag during a 12-year period. Our estimates are highly consistent with a plethora of established benchmarks derived from manifesto texts, expert-surveys, roll-cast votes, or party-embeddings. In contrast to extant approaches, our estimates uncover substantial positioning dynamics within each term-of-office for multiple parties (e.g., a gradual shifts towards the center). We demonstrate that simple measures of positioning dynamics derived from our estimates can help to explain up to 20%p of additional variance in weekly election polls.

ACADEMIC REFERENCES

Prof. Dr. Bernd Skiera
Goethe University Frankfurt
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Ass. Prof. Daniel M. Ringel
University of North Carolina at Chapel Hill
Email: dmr@unc.edu