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LEHRSTUHL FÜR MARKETING
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Seminar "New developments at the intersection of Data Science and Marketing" (B520)

Winter Term 2025/26

Last updated: September 24, 2025

I. Type of seminar

In this seminar, students work on selected topics that involve modern tools for data analysis, such as those from the domains of Machine Learning or Causal Inference, or at the intersection of these two. Topics can be chosen either from the list of suggested topics or students can propose their own topics. In the latter case, the suitability of the topic will be discussed with the supervisors.

The seminar will equip students to write a research-based master's thesis. Compulsory workshops on academic research and presentation skills will support this. As part of the seminar, students will give a short presentation on their research topics mid-term and a final presentation at the end of the seminar. Additionally, we encourage and expect active participation and interaction between students.

It is expected that students have **at least very solid skills in statistical software (preferably R or Python)**, equivalent to, e.g., a successful completion of DS400 Data Science Project Management. In addition, we expect that students are willing to **familiarize themselves** with new methods and approaches, as well as new tools in R or Python. The respective supervisor will provide support to students in this regard.

II. Topics and introductory reading material

Topics are subject to change. Students are invited to propose their own topics that fit within the general theme of the seminar.

Topic 1	**AI as a Consumer: Can LLMs be used as a substitute for human participants?** The rise of large language models (LLMs) such as ChatGPT has opened new opportunities for marketing and consumer behavior research. Traditionally, empirical studies in these fields rely on human participants to test theories and behavioral patterns. However, an emerging approach suggests that LLMs may serve as synthetic respondents, thus simulating human decision-making. In this topic, students will explore the feasibility of using LLMs as a substitute for human participants in marketing research. Specifically, they will test whether LLM-generated responses approximate established empirical findings in consumer psychology and behavioral economics. This could involve replicating effects such as the framing effect, anchoring bias, or mere exposure effect, comparing LLM-generated data to real survey or experiment data from human participants. By conducting these comparisons, students will assess the strengths and limitations of LLMs in consumer research, discussing their potential as a tool for hypothesis testing, pretesting survey designs, or even replacing costly data collection in certain contexts.
Literature	Arora, N., Chakraborty, I., & Nishimura, Y. (2025). AI–Human Hybrids for Marketing Research: Leveraging Large Language Models (LLMs) as Collaborators. *Journal of Marketing*, *89*(2), 43-70. https://doi.org/10.1177/00222429241276529 Sarstedt, M., Adler, S. J., Rau, L., & Schmitt, B. (2024). Using large language models to generate silicon samples in consumer and marketing research: Challenges, opportunities, and guidelines. *Psychology & Marketing*, *41*(6), 1254–1270. https://doi.org/10.1002/mar.21982 Li, P., Castelo, N., Katona, Z., & Sarvary, M. (2024). Frontiers: Determining the Validity of Large Language Models for Automated Perceptual Analysis. *Marketing Science*, *43*(2), 254-266. https://doi.org/10.1287/mksc.2023.0454
Data	You must collect your own data (synthetic LLM data & online experiment).

Topic 2	**Examining the Impact of Lyric–Music Coherence on Listener Preference: A Deep Learning Approach** This project aims to investigate whether the coherence between a song's lyrics and its musical composition influences listener preference, as measured by song popularity. By representing both lyrics and music through state-of-the-art deep learning embeddings, we propose a framework to quantify coherence via similarity metrics. The study will control for confounding variables (such as genre, artist popularity) and employ statistical models to understand the relationship between coherence and listener engagement. The expected outcome is a deeper understanding of the interplay between textual and acoustic elements in music, which could inform future music recommendation systems and production strategies. Modern music consumption is driven by streaming platforms where millions of songs compete for listener attention. Although previous research has focused on isolated features of songs—such as acoustic properties or lyrical content—the potential interplay between these components is less understood. This project proposes that the degree of coherence between what is sung (lyrics) and how it is played (music) significantly affects listener preference. Deep learning methods now allow us to represent complex data like text and audio in high-dimensional embedding spaces, making it feasible to quantitatively assess such coherence. Research Questions: ▪ Does a higher degree of coherence between a song's lyrics and musical composition correlate with greater listener preference as measured by popularity? ▪ How does the effect of coherence vary across different musical genres?
Literature	Preniqi, V., Kalimeri, K., & Saitis, C. (2023). Soundscapes of morality: Linking music preferences and moral values through lyrics and audio. *PLOS ONE*, *18*(11), e0294402. https://doi.org/10.1371/journal.pone.0294402 Kim, H., & Akama, T. (2024). A computational analysis of lyric similarity perception. *arXiv preprint* arXiv:2404.02342. https://doi.org/10.48550/arXiv.2404.02342
Data	Publicly available datasets

III. Dates

By Sunday, October 5, 2025	Registration via alma	
Friday, October 17, 2025 9:00 – 13:00	Kick-off; assignment of topics, supervisors, and teams Workshop “Academic Working”	SR E01 (Mohlstr. 36)
Wednesday, November 5, 2025 9:00 – 13:00	Workshop “Presentation Skills”	SR 236 (Neue Aula)
Wednesday, November 26, 2025 8:00 – 14:00	Research Plan Presentation	SR 209 (Mohlstr. 36)
Friday, December 19, 2025 By noon (12:00):	Submission of term paper (electronic submission only)	
Monday, January 12, 2026	Feedback Session Meetings will be coordinated individually	
Thursday, January 22, 2026 20:00	Submission of slides for the final presentation	
Friday, January 23, 2026 8:00 – 18:00	Final presentations	FSR (Nauklerstr. 47)

IV. Evaluation and course credit

Students can obtain course credit (9 ECTS). They work in groups on one of the topics mentioned above, taking advantage of the support offered as a group and working on the analyses together. However, each student submits their own work in their 12-page term paper, for which they are solely responsible. To this end, students specialize in different areas within their group’s topic.

The presentations as part of the seminar are to be held jointly as a group; i.e., the group gives a joint presentation that is coherent and consistent in terms of content and form, covering the work of the respective group members. Individual performance, rather than group performance, is graded during the presentation and subsequent discussion.

Prerequisites for obtaining course credit are attendance at all sessions (see above), timely submission of the term paper (maximum 12 pages of text including graphics and tables), presentation of the project in the seminar, and active oral participation. The written term paper accounts for approximately 50% of the final grade, while the presentation and active oral participation together account for the other 50%.

Withdrawal from the course is possible until the kick-off date.
Later withdrawal is only possible in case of illness (with a medical doctor's note). Otherwise, the course will be considered ‘failed’.