Practice Makes Perfect? A Comparison of Prompt- and Fine-Tuning of Digital Participants to Simulate Human Responses in Advertising Research

Steffen Prior [a]* and Tobias Langner[a]

[a]Schumpeter School of Business and Economics, University of Wuppertal, Wuppertal, Germany

*Corresponding author:
Steffen Prior
University of Wuppertal
Gaußstraße 20
42119 Wuppertal
Germany

Email: prior@wiwi.uni-wuppertal.de

Phone: +49 202 439 2430

Large language models (LLMs) offer a scalable alternative for simulating human responses in advertising research. However, off-the-shelf LLMs do not reliably reproduce advertising outcomes such as A_{Brand}. We examine two strategies to improve simulation quality: (1) tuning—via prompt tuning, which adapts the model through instructions, and fine-tuning, which trains the model. (2) Information scope, which describes how a person is represented to the model (e.g., through demographics). In Study 1, we identified expert strategies for improving digital participants. Building on this, we fine-tuned our AI model using responses from 1,168 humans. In Study 2, we compared responses of human participants with those of prompt-tuned and fine-tuned digital participants across varying levels of information scope. We find that AI can simulate directional preferences but cannot match the means and variances produced by humans. Thus, digital participants may assist in pretests but are not yet substitutes for humans in main studies.

Keywords: Digital participants, large language models, advertising effectiveness