Model Explanation, Accuracy Feedback, and Use of Algorithmic Advice: A Field Experiment

by

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ABSTRACT

The "black-box" nature of modern AI algorithms remains a significant obstacle to building strong human trust in AI systems. By collaborating with a large fresh goods retailer, we conducted a large-scale field experiment, involving 230 brick-and-mortar stores and over 1,000 products (SKUs), to examine how the provision of model explanations and accuracy feedback affects human store managers' trust in and subsequent use of the algorithmic advice on order quantities. Model explanations are information disclosed to make the underlying logic of the algorithmic advice more transparent, while accuracy feedback is information indicating the algorithm's historical performance in predicting actual sales quantities. We randomly assigned all the stores into four conditions: i) no provision of extra information; ii) model explanations only; iii) accuracy feedback only; and iv) both model explanations and accuracy feedback. The results show that while providing model explanations only created a small positive effect, while providing accuracy feedback exerted a much larger positive effect on managers' adoption of algorithmic advice, indicating accuracy feedback is much more influential than model explanations. More interesting, providing both types of transparency information leads to an unexpected negative interaction effect. Our findings bear novel and important implications for AI designers' trust-building strategies in practice.

BIOGRAPHY

Zike Cao is an associate professor of Information Systems at School of Management, Zhejiang University. Zike's research focuses on how new information technologies impact users' behaviors and the consequent implications for business practices and regulations in various contexts including e-commerce and social media. His work has been published in top journals in the field including Information Systems Research and MIS Quarterly. Zike obtains his PhD in Information Systems from Hong Kong University of Science and Technology and his BSc in Management from Zhejiang University.