Applicant's Name: Haonan Zhang

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Year of Enrollment: 2021.

Description of Courses Pursued:

Business School: Empirical Research Methods, Dynamic Structural Model, Behavioral decision theory, Adaptive Experiment and Bandit.

Economics: Microeconomics I, II, III, Game Theory, Empirical IO, Applied Econometrics.

CS: Machine Learning, Big Data Analytics, Interactive Learning, Reinforcement Learning.

Statistics: Stochastic Process, Advanced Regression, Causal Modelling, Causal Inference and Counterfactual Reasoning, Causal Machine Learning.

My name is Haonan Zhang, a fourth-year Ph.D. student in Quantitative Marketing at the University of Washington's Foster School of Business. My research interests lie in (1) Algorithmic, Personalized Pricing and Targeting; (2) Channel choices and pricing in omni-channel retailing and online marketplaces; (3) Digital Marketing, Recommender System and their impacts on consumers' behaviors. My advisors are Prof. Hema Yoganarasimhan and Prof. Shirsho Biswas.

My current research projects investigate how the adoption of online shopping impacts consumer price sensitivity in the offline channel. Using transaction-level data from a major pet supplies retailer in Brazil and leveraging the COVID-19 pandemic as an exogenous shock, we compare the shopping behaviors of ``covid switchers" -- customers who previously shopped exclusively offline but switched to online shopping at the onset of COVID-19 -- with ``offline-only" customers who remained offline throughout the observation period. Employing a discrete choice model and difference-in-difference (DID) analysis, we find that consumers who

adopt online shopping become more price-sensitive offline, with this effect persisting across various product categories over time. Further analysis suggests that this increased offline price sensitivity is primarily driven by the convenience of having an additional shopping channel (i.e., Channel Effect) rather than exposure to lower online prices (i.e., Price Exposure Effect). Furthermore, consumers who adopt online shopping exhibit higher overall purchase rates, suggesting that nudging customers toward omnichannel shopping can help firms buffer against the risk of losing sales entirely, as these customers are more likely to shift their purchases online. These insights highlight the importance of coordinated pricing and targeted promotional strategies for omnichannel retailers across both online and offline channels. They also contribute to the emerging literature on the spillover effects of online shopping adoption on offline consumer behavior in an increasingly digital retail landscape.

My current and future research also delves into (1) consumer channel preferences and aims to improve omnichannel retailing by developing effective choice architectures and digital nudges and (2) designing personalized and targeted pricing policies to capture rich consumers' heterogeneity in price sensitivity. Specifically, I utilize A/B testing to examine (1) how offering consumers a choice between personalized and generic online recommendation algorithms influences their purchasing behavior and engagement across both digital and physical channels and (2) the impact of different privacy policy communication strategies on new users' privacy choices, particularly how the framing of privacy messages—whether seen as beneficial, neutral, or conservative—sways their decisions. This research is still in progress, and I am keen to deepen my grasp of the applications of AI in contemporary research in digital economics. Regarding the second direction of price targeting, we plan to propose a competitive targeting framework that differentiates consumers' price sensitivity and aims to quantify consumer welfare of price targeting in the presence of fierce price competition in the online marketplace setting. We also want to provide insights into the value of various data sources in understanding consumers' heterogeneity.

Digitalization and AI tutorial offers me the unique opportunity to learn cutting-edge research in digital economics. I am looking forward to listening to others and sharing my unique perspective with the participants, which would be a wonderful learning opportunity that will shape my future academic career.