Contact Information

Name Miaomiao Zhang

Email mzhang@hbs.edu

Institution Harvard Business School

Program and field PhD in Business Administration, Technology and Operations Management

Research affiliation Laboratory for Innovation Science at Harvard Business School AI Institute

I entered the Harvard PhD Program in Business Administration in Fall 2022 and have remained enrolled through the present. I completed four academic years and am starting my fifth year as a PhD Candidate. My program prepares scholars to develop managerially relevant theory and conduct rigorous empirical research on operations, innovation, and organizations. My coursework provides a broad methodological and theoretical foundation. Core training in microeconomic theory, econometrics, causal inference (statistics), and filed experimental design is complemented by doctoral seminars in strategy, innovation and digitization, and the economics of ideas and entrepreneurship. Electives in natural language processing and causal inference using unstructured data supports my use of computational methods alongside field experiments, large-scale archival data, and (minor) qualitative approach.

Advisory Committee

Jacqueline N. Lane Harvard Business School

Scott Stern MIT Sloan School of Management

Raffaella Sadun Harvard Business School

Research Interests

My research examines how digitalization—and artificial intelligence in particular—reshapes problem solving and decision-making during the earliest stages of innovation. I study how agents (including human decision makers, evaluators and AI counterparts) and organizations define problems, search for solutions, interpret incomplete market signals, and update their theories of value before reliable performance evidence exists. Digital platforms and AI tools can expand access to ideas, expertise, and customer information, but they also influence which information receives attention and how decision makers interpret it. I identify constraints in information processing, technology augmentation, and knowledge diffusion, then design and test interventions that help organizations use digital technologies more effectively and efficiently with productivity and creativity impact.

This research connects individual judgment and belief updating to organizational and market outcomes. I pursue this agenda through field experiments and computational analyses conducted with venture competitions, accelerators, crowdsourcing platforms, and other innovation partners. My recent industry work experience examines when generative AI broadens the search for novel ideas in a team-based collaborative setting (Google Research Summer 2026), how algorithmic systems can improve the matching of experts to entrepreneurial ventures (Harvard Innovation Labs 2025), and how lowered experimental costs affects innovation process and digital experimentation (Forthcoming study 2026-2027). I also investigate the quality of idea generation space in terms of novelty, value, impact, and homogenization implications of AI scaffolding compared to a human-centered crowdsourcing context (Freelancer.com 2023-2024) as well as unintended consequences of digital platforms on global knowledge spillover with platform design implications (Stack Overflow 2022-2023). Ultimately, I seek to understand how firms can design digital and AI-enabled innovation systems that complement human expertise while preserving critical judgment and productive learning trajectory.

Dissertation Agenda

The dissertation examines how problems, customers, and evaluative criteria become linked in the formation and selection of innovative opportunities. Its central premise is that early-stage innovation requires decision makers to determine which problems are worth solving, for whom, and what evidence should change their beliefs. The studies investigate how professional experience, communication, and technology-mediated support shape this reasoning process. Across field experiments and computational analyses, the project seeks designs that improve entrepreneurial experimentation and reduce costly false negatives in idea selection.

Job Market Paper (Tentative)

Customer Sampling and Demand-Side Learning

Generative AI has significantly reduced the marginal cost of producing solutions (ideas and ready-to-test prototypes). When hypothesis generation is cheap, the binding constraint on value creation moves to the pre-formulation stage of hypothesis generation deciding which problem is worth solving and which customers to serve. This job market paper proposal aims to tackle the “who to talk to” and “what problem to solve” questions in the early-stage of demand validation process for new idea formation, which has become increasing important in the era of low signal to noise ration or noise-conflated signals. It examines how innovators and decision makers alike identify, sample, and learn from potential demand-side market, and how the composition and interpretation of demand-side signals affect experimentation, scalability, and downstream market success. The work extends my problem-centric perspective by tracing how an initially framed customer problem and partition of

market segment is revised through iterative feedback with (biased) market feedback, endogenous to innovators' own search function. I plan to use large-scale archival data complemented with a field experimental setup for mechanisms testing.

Research Project in Progress

Judging the Problem: A Problem-Centric Approach to Early-Stage Venture Evaluations

With Jacqueline N. Lane. This working paper studies whether making problem-customer fit salient changes how experts evaluate other venture dimensions. In a randomized field experiment at a premier U.S. venture competition, 178 judges assessed 109 ventures across 1,153 venture-judge assignments. The intervention lowered average problem-customer scores without shifting overall recommendations, but produced pronounced heterogeneity. Treated investors rated business models more critically and with less dispersion, while treated entrepreneurs assigned higher and more dispersed impact ratings. The study develops an account of how professional experience structures the relationships experts perceive among evaluative criteria.

Published Papers

My published research examines how digital technologies change the production and distribution of knowledge. Across studies of generative AI and digital platforms, I investigate how technology alters the costs of searching for ideas, the division of labor between humans and machines, and the frictions that determine whose knowledge receives attention. Together, these papers show that the value of digitalization depends not only on technological capability, but also on how organizations design human-AI collaboration and govern the production and dissemination of information.

In "The Crowdless Future? Generative AI and Creative Problem-Solving," published in *Organization Science*, my coauthors and I compare human crowdsourcing with two forms of human-guided generative AI search. Human-generated solutions were more novel, whereas human-AI solutions achieved greater strategic viability, financial and environmental value, and overall quality. Human guidance that prompted the AI to differentiate each successive solution further improved performance. The findings contribute to the economics of AI by showing how generative AI changes the production function for innovative ideas. AI can reduce the time and marginal cost of generating alternatives at scale, but its value depends on complementary human inputs that direct search and counteract the model's tendency to reproduce conventional solutions. The paper therefore identifies both substitution and complementarity between human and machine intelligence in organizational problem solving.

In "Unwind the Clock? Temporal Distance and User Interactions on a Digital Platform," published in *Strategic Management Journal*, my coauthors and I examine whether digital connectivity eliminates geographic barriers to knowledge exchange. Using proprietary Stack Overflow data and changes in temporal distance created by daylight saving time, we find causal evidence that a one-hour increase in temporal distance reduces cross-regional views by 13.6 percent and votes by 20.9 percent. These effects are especially pronounced in niche knowledge communities. We also show that platforms can mitigate these barriers by changing how content is presented to users. The paper develops an economic view of digital-platform design in which attention and coordination remain scarce resources even when information is globally accessible. It demonstrates that algorithms governing content visibility can either reinforce temporal fragmentation or expand the diffusion and productive use of specialized knowledge.