Bowen Lou

Contact Information

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Selected Graduate-Level Coursework

- **Economics** Microeconomic Theory, Game Theory, Decision Processes and Behavioral Economics Seminar(Prof Uri Simonsohn), Numerical Methods in Economics(Prof Ulrich Doraszelski), Empirical Methods for Industrial Organization(Prof Aviv Nevo)
- **Statistics** Online Methods in Machine Learning, Topics in Machine Learning & Econometrics, Applied Econometrics(Prof Paul Shaman), Statistical Inference, Observational Studies(Prof Dylan Small), Nonparametrics & Log-Linear Models(Prof Paul Rosenbaum), Data Analytics and Statistical Computing(Prof Andreas Buja), Advanced Data Analytics(Leskovec, Rajaraman and Ullman's book), Data Mining(Prof Matt Taddy)
- **Information Management & Strategy** Information Strategy and Economics(Prof Lorin Hitt), Pro-Seminar in Technology Strategy & Innovation, Corporate Strategy(Prof Harbir Singh)
- **Operations Management** Optimization, Operations Management Seminar(Prof Xuanming Su)
- **Sociology** Organizational Analysis(Prof Edward Laumann), Computational Social Science
- **Computer Science** Databases, Data Warehousing, Algorithms, Computer Systems, Object Oriented Architecture, Practicum Project on Network Analysis of Natural Language

Education

The Wharton School, University of Pennsylvania(UPenn), PA, USA — Expected 2020
Ph.D Candidate, Operations, Information and Decisions Department
Track: Information Strategy & Economics

The Wharton School, University of Pennsylvania(UPenn), PA, USA — Expected 2018
M.A. in Statistics

University of Chicago (UChicago), IL, USA — 2014
M.S. in Computer Science, Specialized in Data Analytics

Shanghai Jiao Tong University (SJTU), Shanghai, China — 2013
B.Eng in Information Security

University of California, Los Angeles (UCLA), CA, USA — 2011
Visiting Student, Summer School

Research Interest

Topics: Economics of Information Systems; Artificial Intelligence; Technological Innovation; Data Science; FinTech; Social Media

Methods: Econometrics; Natural Language Processing; Network Science; Machine Learning

Working Paper

1. Data Analytics Skills, Innovation and Firm Productivity. (with Lynn Wu & Lorin Hitt)

   Abstract: We examine the relationship between data analytics capabilities and innovation using detailed firm-level data. To measure innovative activity, we utilize a survey on process- and innovation-oriented business practices for 331 firms, as well as patent data to analyze the innovative output and characteristics that are reflected in patents for a broader sample of more than 2,000 publicly-traded firms. We find that data analytics capabilities are more likely to be present and are more valuable in firms that are oriented around process improvement and that innovate by recombining a diverse set of existing technologies; data analytics skills have no effect on firms that focus on generating entirely new innovations. We interpret these findings as consistent with data analytics skills being complementary to the effective exploitation of existing knowledge by expanding the search space to find improvements and to enable broad recombination in innovation. Data analytics is less effective for complementing the explorative practice of mostly or entirely new (novel) innovations.

2. Data Analytics Supports Decentralized Innovation. (with Lynn Wu & Lorin Hitt)

   Abstract: Modern analytics technology can accelerate the innovation process by increasing the rate at which existing knowledge can be identified, accessed, combined and deployed to address new problem domains. However, like prior advances in information technology, the ability of firms to exploit these opportunities depends on a variety of complementary human capital and organizational capabilities. We focus on how the benefits of analytics to innovation may differ depending on how firms organize their innovative activities. Our analysis draws on prior work that has measured firm analytics capability using detailed employee-level data and matches these data to metrics on intra-firm inventor networks that reveal whether a firm has a centralized or decentralized innovation structure. In a panel of large firms from the years 1988 to 2013, we find that firms with a decentralized innovation structure have a greater demand for analytics skills and receive greater productivity benefits from their analytics capabilities, consistent with a complementarity between analytics and decentralized innovation. Furthermore, we find the complementarity is strongest for innovation involving the recombination of existing technologies. Our results suggest that organizational structures, such as decentralization, have a substantial influence on the ability of firms to capture the benefits of analytics for innovation, primarily because analytics can facilitate the linking of distant technologies between different decentralized groups.

3. Does Employer Brand Matter: Empirical Analysis on Online Job Reviews, Social Media Usage and Firm Performance. (with Fujie Jin & Lorin Hitt)

   Abstract: In this study, we look at how employee-contributed job reviews and firm-managed social media posts jointly build up employer brand as an intangible asset and influence market valuation. Using a unique dataset combining job reviews, social media posts and firm performance data, we find that positive job reviews increase firm market value, particularly in labor-intensive industries, and for positions with higher employee mobility. In addition, firms can complement this effect by including more employee-related content on their social media pages. This is likely because different sources of information could jointly influence employees job movement decisions, and firms with stronger employer brands are likely to retain key employees for longer periods of time and save costs in recruiting. Overall, our results indicate that firms should have coordinated strategies across platforms, presenting a consistent employer brand, to maximize their market valuation.

4. Data Analytics Capabilities Mitigate post-IPO Decline in Innovative Quality. (with Lynn Wu & Lorin Hitt)

   Abstract: We examine the role of data analytics in facilitating innovations for firms that have just gone through an initial public offering (IPO). It has been well documented that an IPO is often associated with a decline in innovation despite the infusion of capital from the IPO that should spur innovation. Using patent data for 2,013 firms that have gone through an IPO, we find that firms that have acquired data analytics capability do not decrease their innovative output. Moreover, we find this sustained rate of innovation is driven principally by the continued development of innovations that either recombine existing technologies into new ones or reuse existing innovations by applying them to new problem domains—both forms of innovation that are especially well supported by analytics. Our results suggest that the increased deployment of analytics may reduce the innovative penalties of IPOs, and that investors and managers can potentially mitigate post-IPO reductions in innovative output by directing newly acquired capital to the acquisition of analytics capabilities.

Short Summary

Bowen Lou is currently a fourth-year doctoral candidate in the Operations, Information and Decisions department of the Wharton School, with specialization in Information Systems.
Now his research interest lies in the broad area of economics of information technologies. His research projects examine the relationship among big data, innovation and firm performance. Bowen is also passionate about proposing or applying eclectic but robust solutions from network science and natural language processing to derive valuable insights in large-scale datasets and solve real-world problems.