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EDUCATION

Ph.D., Information Systems	Carnegie Mellon University	May 2010 (expected)
M.S., Industrial Administration	Carnegie Mellon University	May 2007
M.B.A.	University of Texas at Austin	May 2005
M.S., Electrical Engineering	Stanford University	June 2000
M.S., Physics	Stanford University	June 1999
B.A., Economics, Physics	Grinnell College	May 1997

HONORS & AWARDS

Carnegie Mellon University: William Larimer Mellon Fellowship 2005 – 2008

University Of Texas at Austin: Beta Gamma Sigma, Chancellor's List, Deans' Honors Award

Stanford University: Centennial Teaching Assistant Award

Grinnell College: Full Scholarship 1993 – 1997 (covering tuition and fees, books, room and board),
Phi Beta Kappa, Dean's List, Joseph Wall Phi Beta Kappa Scholar's Award,
H. George Apostle Prize in Physics, Graduated with honors in Economics & Physics

State Education Commission of China: Selected in 1991 as the only high school student representing China to attend, on full scholarship, [Lester B. Pearson College of the Pacific](#), which promotes peace and international understanding.

RESEARCH INTERESTS

Strategic and Economic Implications of Technological Innovations
Social Networks and User Generated Contents
Online Word-of-Mouth
Software Licensing and Pricing
Digital Information Goods and Services
Enterprise Application Systems
Product Differentiation and Network Effects

TEACHING INTERESTS

High-Tech Marketing
Technology Strategy and Management
Digital Markets and e-Commerce
Pricing
Business Intelligence

DISSERTATION

[Economics of Innovations in Software Licensing: Usage-Based, Ad-Supported, and Software as a Service](#)

- Essay 1: [Software licensing: pay-per-use versus perpetual.](#)

- Essay 2: [On-demand enterprise software: the software as a service model.](#)
- Essay 3: [An economic analysis of ad-supported software.](#)

Committee:

Prof. Tridas Mukhopadhyay (Co-Chair), Prof. Pei-yu Chen (Co-Chair),
Prof. Onur Kesten

WORKING PAPERS

Papers are available either online or upon request; abstracts of papers are provided in the Appendix.

1. Jiang, B., P. Chen, and T. Mukhopadhyay. [Software licensing: pay-per-use versus perpetual.](#)
2. Jiang, B., P. Chen, and T. Mukhopadhyay. [On-demand enterprise software: the software as a service model.](#)
3. Jiang, B. [An economic analysis of ad-supported software.](#) (*under review*)
4. Jiang, B. and P. Chen. [An economic analysis of online product reviews and ratings.](#)
5. Jiang, B. Vertical differentiation of information goods: market segmentation, product cannibalization, and optimal quality design.
6. Jiang, B. and B. Wang. [Impact of consumer reviews and ratings on sales, prices, and profits: theory and evidence.](#) (*under review*)
7. Wang, B. and B. Jiang. A cross-category analysis of the effects of consumer reviews and ratings.
8. Jiang, B. An economic analysis of business process offshoring: competition, tariffs, and market interactions.

CONFERENCE PRESENTATIONS

Jiang, B., P. Chen, and T. Mukhopadhyay. *Enterprise Software as a Service.* INFORMS Marketing Science Conference, Vancouver, Canada, June 2008.

Jiang, B., P. Chen, and T. Mukhopadhyay. *On-Demand Enterprise Software: the Software as a Service Model.* Workshop on Information Systems and Economics, Montréal, Canada, December 2007.

Jiang, B. *An Economic Analysis of Ad-Supported Software.* INFORMS Conference on Information Systems and Technology, Seattle, WA, November 2007.

Jiang, B. and P. Chen. *An Economic Analysis of Online Product Reviews and Ratings.* INFORMS Marketing Science Conference, Pittsburgh, PA, June 2006.

CONFERENCE/WORKSHOP PARTICIPATION

Doctorial Consortium, Marketing Science Conference. Vancouver, Canada, June 2008.

INFORMS Marketing Science Conference. Vancouver, Canada, June 2008.

International Conference on Information Systems. Montréal, Canada, December 2007.

Workshop on Information Systems and Economics. Montréal, Canada, December 2007.

INFORMS Conference on Information Systems and Technology. Seattle, WA, November 2007.

INFORMS Annual Meeting. Seattle, WA, November 2007.

Theory-Rich Marketing Modeling Workshop. Duke University, August 2007.

Workshop on Information Systems and Economics. Evanston, IL. December 2006.

Doctorial Consortium, Marketing Science Conference. Pittsburgh, PA. June 2006.

INFORMS Marketing Science Conference. Pittsburgh, PA. June 2006.

AD HOC REVIEWER

Marketing Science, Journal of Management Information Systems, International Journal of Electronic Commerce, International Conference on Information Systems

TEACHING EXPERIENCES

Instructor, Tepper School of Business, Carnegie Mellon University

MAY 2008 – JUL 2008: Marketing I (Undergraduate Course #: 70381)

Teaching Assistant / Recitation Leader, Tepper School of Business, Carnegie Mellon University

MAR 2008– MAY 2008: Business Intelligence Tools & Techniques (MBA Course #: 45875)

JAN 2008– MAY 2008: Information Resource Management (Undergraduate Course #: 70455)

MAR 2008– MAY 2008: Information Resource Management (MBA Course #: 45872)

AUG 2007 – DEC 2007: Management Information Systems (Undergraduate Course #: 70451)

MAY 2007 – JUL 2007: Information Technology Management (MBA Course #: 45914)

AUG 2006 – DEC 2006: Management Information Systems (Undergraduate Course #: 70451)

JAN 2006 – MAR 2006: Fundamental of IT & Digital Business Strategy (MBA Course #: 45871)

Teaching Assistant/Recitation Leader/Lab Instructor, Dept. of Physics, Stanford University

SEP 1997 - JUN 2000: Various undergraduate physics courses

COURSEWORK AT CARNEGIE MELLON

Courses Taken: Microeconomics I and II, Econometrics I and II, Game Theory, Contract Theory, Mathematics for Economists, Structural Empirical Models in Econometrics, Non-Parametric and Parametric Econometric Models, Analysis of Consumer Online Behaviors, Bayesian Statistics in Marketing, Analytical and Structural Marketing Models, Ph.D. Seminar in Communication Skills, and six (6) Research Seminars.

PhD. Qualification Exams Taken: IS Technical Qualifiers (four areas: *Information Technology, Database, Systems Analysis, and Management Information Systems*), Microeconomics, Game Theory, and Information Systems research.

PROFESSIONAL EXPERIENCES AND PRIOR SCIENCE RESEARCH

CRM Consultant, Database Analyst, CRM Applications Manager (June 2000 – August 2005)

I have held various positions both in an IT consulting firm and at Freescale/Motorola, and have acquired both business and technical expertise in CRM applications, enterprise systems integration, and data migrations. I have worked on many types of applications including Siebel Call Center, eService, Sales and Marketing, Enterprise Applications Integration, data migration, Siebel Tools, Actuate Reports, knowledge management systems, Microsoft SQL Server, Oracle, Macrovision GTL Licensing, Cybersource Credit Card Processing, and systems integration (with GreatPlains Dynamics, Agile applications, and DigitalRiver online stores).

Research Assistant (summer/winter of 1994, 1995, 1996; September 1997 – June 2000)

I conducted physics research while pursuing a PhD in physics at Stanford University, which I later decided to discontinue in pursuit of my industry interest and an MBA. In addition, I worked as research assistant in my undergraduate institution during summers/winters. My prior science research includes condensed-matter physics, simulations of astrophysical models and combinatorial geometry.

PROFESSIONAL CERTIFICATIONS & COMPUTER SKILLS

- Siebel Certified Consultant
- Oracle Certified Database Administrator
- Project Management Certification
- *Programming Languages*: C, C++, Java, JavaScript, PERL
- *Web Technologies and Applications*: TCP/IP, HTML, XHTML, XML, CGI, Dreamweaver
- *Statistical and Mathematical Applications*: R, S+, MATLAB, Mathematica.
- *Database Management Systems*: Oracle, Microsoft SQL Server, Microsoft Access

REFERENCES

Dr. Tridas Mukhopadhyay

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APPENDIX: ABSTRACTS OF PAPERS

“Software Licensing: Pay-Per-Use versus Perpetual”

Jiang, B., P. Chen, and T. Mukhopadhyay

Piracy has been a major problem for perpetually licensed software. This paper discusses how a usage-based licensing architecture can offer technology-based IP protection against piracy. Pay-per-use is a prominent example of usage-based licensing model. We study a software market with potential piracy and possible network effects. We provide an analytical framework to examine the economic implications of pay-per-use versus perpetual licensing for a software vendor facing heterogeneous consumers in terms of marginal usage benefit and acquisition costs for pirated software. Our analyses show that the potential piracy rate, the user inconvenience cost incurred with pay-per-use licensing, and the strength of the network effect are important factors determining the optimal software licensing choice. We find that in a market with a low user inconvenience cost or high potential piracy, pure pay-per-use licensing will yield higher profits than perpetual licensing or mixed licensing. If the inconvenience cost is low enough, pay-per-use licensing will be more profitable than perpetual licensing regardless of the level of potential piracy. The presence of a positive network effect also favors pay-per-use over perpetual licensing; if the network effect is strong, pay-per-use will always dominate perpetual licensing regardless of the inconvenience cost or the potential piracy rate. With higher potential piracy, lower inconvenience costs, and stronger network effects, pay-per-use licensing not only gives the vendor a higher profit but also

yields a higher social welfare than perpetual licensing. Important managerial implications are also discussed.

“On-Demand Enterprise Software: The Software as a Service Model”

Jiang, B., P. Chen, and T. Mukhopadhyay

This paper provides an economic analysis of the newly emerging software-as-a-service (SaaS) phenomenon, which represents a new form of IT outsourcing. We analyze multi-user enterprise software markets that may potentially have both on-premise software and SaaS offerings, taking into account the salient structural differences between the two software models as well as the distinctively discrete nature of each customer’s demand. Our monopoly analysis shows two key results. First, if customers’ initial setup costs for the on-premise software are high or if the valuation and operational efficiency of SaaS are high, the vendor will find it optimal to offer only SaaS. Otherwise, it will offer both on-premise software and SaaS. We find that both the customer firm’s size and the nature of the software application affect the firm’s choice of software to use. Second, after the monopolist vendor markets its on-premise software, if new technologies enable a superior SaaS product, the vendor will find it optimal to discontinue its on-premise software and offer only SaaS. It may also be profitable for the vendor to practice third-degree price discrimination by giving some price discount to its past on-premise software customers to induce them to switch to SaaS. In a competitive market, we find three key results. First, at equilibrium, both the SaaS and the on-premise software vendor earn positive profits because neither will find it optimal to price its competitor out of the market. Second, if the customers’ valuation of SaaS is below some threshold, the on-premise software vendor’s profitability will not be affected by the presence of the “low-end” SaaS offering. But if above that threshold, the on-premise software vendor’s profitability will suffer because the SaaS vendor will compete for a portion of the on-premise software vendor’s target market. Third, if the SaaS product is superior to the on-premise software in terms of customer value and operational efficiency, the social welfare will actually be lower under a competitive market than under a monopoly market. Our analysis helps explain recent events in the enterprise software market.

“An Economic Analysis of Ad-Supported Software”

Jiang, B.

Enabled by Internet technologies, the newly emerged ad-supported licensing model is a disruptive software business model and has significantly changed the landscape of the software industries. We analyze this new licensing model in both monopoly and duopoly markets with heterogeneous consumers. We show that, ignoring fixed costs, it is generally sub-optimal for a monopolist to offer only conventional, ad-free software. If the per-user advertising revenue is high relative to consumers’ distaste for advertisements, the monopolist will offer only ad-supported software at a reduced price or for free; otherwise, it will offer both types of software. Our analysis of a competitive vertically differentiated market, in which each firm adopts only one platform, shows that unless one firm’s product is far inferior to the other firm’s, both firms are better off if either firm offers its software on the ad-supported platform than if neither does. When both firms can potentially adopt multiple platforms, we find that at equilibrium, the low quality firm offers only ad-free software whereas the high quality firm will offer both ad-free and ad-supported software under very general conditions. More interestingly, we find that even if *neither* firm earns any positive advertising revenue or only one firm does, *both* firms can benefit from the availability of the ad-supported platform. Our analysis suggests that, in a quality differentiated software market with intense price competition, firms may still have incentives to adopt the ad-supported platform even if they do not expect to fully cover the fixed cost required for that platform.

“An Economic Analysis of Online Product Reviews and Ratings”

Jiang, B. and P. Chen

Many online vendors and third-party firms provide consumers with easy-to-use systems to give product reviews and ratings. Availability of online reviews and ratings may significantly influence a vendor's strategies in terms of pricing and market segmentation. Consumers as well as vendors can potentially benefit or lose from such availability though it is unclear whether the net effect to each party is positive, or who gains or loses most. This paper provides an analytical model to study the impacts of online product review and rating systems on vendor marketing strategies, consumer surplus and social welfare. We also examine the effects of both product-level and vendor-level competition on the impact of online reviews and ratings. We find that consumer surplus, vendor profitability, and social welfare can improve with the availability of consumer reviews and ratings, and that vendors may have an incentive to induce higher product ratings by under-charging in earlier periods. Interestingly, we show that, contrary to the conventional wisdom about competition, with the availability of consumer reviews, consumer surplus and social welfare can in fact be higher in a monopolist market than in a duopolistic market.

“Impact of Consumer Reviews and Ratings on Sales, Prices, and Profits: Theory and Evidence”

Jiang, B. and B. Wang

Many online retailers now offer consumer product ratings and reviews, and such information has become increasingly important to both retailers and consumers. However, extant empirical research shows mixed results regarding the effects of online ratings and reviews on product sales. We provide a theoretical framework to understand the impacts of consumer reviews and ratings on firms' prices, sales, profits, and consumer surplus. We show how the economic impacts of consumer ratings may differ depending on the informativeness of the reviews, the quantifiability of the product attributes, and the competitive environment. Our analysis shows that the informativeness of reviews and the non-quantifiability of product attributes enhance the effects of product ratings. We find two interesting and counter-intuitive results. First, even though a monopolist will always benefit from an improvement in its product rating, a firm in a competitive market can *hurt* from an improvement in its product rating. When the low quality firm's product rating improves, its equilibrium profit will *decrease* if its quality is above a threshold, and increase if its quality is below that threshold. Second, if the high quality firm's product rating improves, *both* the high quality firm and the low quality firm will benefit. Our empirical findings based on point-and-shoot digital cameras and multivitamin data collected from Amazon.com provide strong support for our major results.