

By Rachel Stowe Master

## DISSERTATIONS SHOWCASE

A LOOK AT FOUR RECENT DOCTORAL GRADUATES AND  
THE RESEARCH THEY DID TO EARN THEIR PHDS.

**T**his issue is the second that introduces some recent Jindal School PhD graduates and the research they undertook to earn their doctorates and their positions in academia. Their work underscores the successful efforts of the Jindal School's PhD programs in management science and international management studies to prepare highly trained graduates for careers in academic, research and industry positions.

### SHIVAM GUPTA

PhD in Management Science with a concentration in operations management, 2016

**CURRENT POSITION:** Assistant Professor, Texas State University (Starting June 2018); Assistant Professor, Supply Chain Management and Analytics, University of Nebraska-Lincoln.)

**PREVIOUS EXPERIENCE:** As assistant project manager at JLL India in Gurgaon, India, Gupta was involved in managing construction projects from conception to completion.

**DISSERTATION DETAILS:** My dissertation focused on and contributed to purchasing operations management and agricultural operations management.

Imagine Mars Inc., a major producer of confectionery that has to periodically source raw materials from its suppliers. To stay competitive, reducing procurement costs while maintaining good long-term relationships with its supply base are vital to its sourcing strategy. Having a small supply base or sourcing large quantities from individual suppliers exposes Mars to too much supply risk. On the other hand, having a

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Shivam Gupta

large supply base puts more administrative burden on Mars. To balance these two effects, Mars typically uses lower and upper bounds on the size of the supply base and on the quantity sourced from each individual supplier. These bounds are referred to as “business rules.”

In our study, we incorporated such rules and other practical considerations and designed an auction mechanism that does three things: It helps screen low-cost suppliers from a supply pool. It finds the best allocation rule, that is, the quantity awarded to each selected supplier. It finds the best payment rule, that is, the payment made to each supplier for each unit sourced. Overall, we demonstrated that the proposed auction is the most cost-effective among all possible mechanisms. Furthermore, our auction is extremely easy to implement in practice.

While working on my dissertation, I also became increasingly interested in agricultural

operations, a growing field in OM. My focus here was to analyze the practice of distressed selling, commonly observed in many developing countries, where farmers sell their produce to outside agents at prices much lower than the government’s guaranteed price. In Gupta et al. (2017), we built a tractable model to capture the ground realities — limited and uncertain procurement capacity on the government’s side, and high holding costs and lack of affordable credit on the farmers’ side — that lead to distressed sales. Using real data, we validated our model and developed useful policy suggestions.

**RESEARCH INTERESTS:** My research interests lie in purchasing and sourcing management, socially responsible operations management and supply chain management. In particular, I am interested in building sound mathematical models of important problems

in these topics and analyzing these models rigorously. The result is typically a strategy or policy recommendation to a sourcing manager or a policymaker.

**PUBLICATIONS FROM DISSERTATION RESEARCH:**

Gupta, Shivam, M. Dawande, G. Janakiraman and A. Sarkar, “Distressed Selling by Farmers: Model, Analysis, and Use in Policy-Making,” *Production and Operations Management*, Vol. 26, Issue 10, October 2017: 1803-1818.

Gupta, Shivam, “On a Modification of the VCG Mechanism and Its Optimality,” *Operations Research Letters*, Vol. 44, Issue 3, May 2016: 415-418.

Gupta, Shivam, W. Chen, M. Dawande and G. Janakiraman, 2015, “Optimal Descending Mechanisms for Constrained Procurement,” *Production and Operations Management*, Vol. 24, Issue 12, December 2015: 1955-1965.

**DISSERTATION CHAIRS’ COMMENTS:**

Gupta’s dissertation committee co-chair, Dr. Ganesh Janakiraman, Ashbel Smith Professor of Operations Management, noted that the theme of his dissertation was sourcing: cost-effective sourcing strategies for organizations and the practice of “minimum support prices” often used by governments in developing countries and “distressed selling” by farmers.

“Shivam rigorously examined this phenomenon,” Janakiraman said, “and developed some analytical tools that could inform policymakers of the effectiveness of various strategies that could weaken this phenomenon and deliver better prices and incomes to farmers.”

That work won the Institute for Operations Research and the Management Sciences — INFORMS — Public Sector Operations Research Section Best Paper Award in 2015.

“This work ... studied a very real issue, that affects millions of farmers, using rigorous mathematical modeling/analysis,” Janakiraman said. “This paper also served as Shivam’s ‘job market paper,’ that is, the paper he presented at universities while interviewing for faculty positions.”

Gupta continues his collaboration with Janakiraman and his other dissertation committee co-chair, Dr. Milind Dawande, Ashbel Smith Professor and coordinator of the Operations Management Area. Most recently they have worked on construction costs — actual and those related to delays — for projects involving a transportation authority and its contractors.

“This paper presents easily implementable contracts the authority can sign with the contractors such that the financial cost and the ‘delay cost’ are both factored,” Janakiraman said. “This is another example of Shivam’s practically relevant but rigorously executed research.”



Ganesh Janakiraman



Milind Dawande

Young Kwark



**YOUNG KWARK**

PhD in Management Science with a concentration in information systems, 2013

**CURRENT POSITION:** Assistant Professor, University of Florida

**PREVIOUS EXPERIENCE:** Systems analyst and solution expert at LG CNS Co. Ltd., Seoul, South Korea

**DISSERTATION DETAILS:** Online retailing has been continuously growing, and consumers have been increasingly relying on online products offered by third-party websites such as CNET.com or online retailer sites such as Amazon.com. My works contribute to the literature by examining the effect of user-generated content on the supply side — sellers' competition and their profits.

**RESEARCH RESULTS:** In my first study, I examined how product information from user-generated content (such as online product reviews) affects the upstream competition and the online retailer by mitigating the consumers' uncertainty. I showed that the effect of the reviews on the upstream competition between manufacturers is critical to understanding which firms gain and which firms lose. The upstream competition is affected in different ways by the information about different kinds of product attributes, which also leads to different implications for the retailers and manufacturers. ... This work is published in

*Information Systems Research.*

In my second study, I analyzed the pricing scheme choices of the online retailers. In addition to selling products using a wholesale scheme in which the retailer purchases products from manufacturers and then resells to consumers,

an online retailer (such as Amazon) often lets others sell their products on its platform for a commission fee for each sale, which we refer to as a platform scheme.

While the online retailer has full control over the pricing scheme choices, [that same retailer] has little control over the third-party information posted by consumers and experts. I found retailers can use the pricing scheme, wholesale or platform, as a strategic tool to benefit from the third-party information. And whether a retailer can benefit critically depends on its pricing scheme choice and the precision of this information. This paper is published in *Management Information Systems Quarterly.*

In my third study, I studied the firms' product-design decisions when user-generated content provides information about consumers' opinions. The rise of Web 2.0 and social media has ushered in a new era of content generation, and a large number of applications have emerged to facilitate content generation. Many firms follow users' conversations on the internet, listen to their opinions and try to incorporate users' ideas into their business. For example, many firms (such as Nike) have a Facebook presence to listen to and interact with their fans...

... For firms, user-generated content has become an important source of information about what consumers like. I found that learning from the consumers for the product-design decision may not always be helpful for competing firms and the user-generated content has very different implications for firms' product design decisions depending on the types of product design. This paper is forthcoming in *Management Science.*

**RESEARCH INTERESTS:** My research has broadly focused on online retail platforms and the effect of the user-generated content. I am also interested in several other issues in online retailing, such as contract and pricing, recommender system, and information and content security, which have significant effects on the sellers' profits in online retail platforms.

**PUBLICATIONS FROM DISSERTATION RESEARCH:**

Kwark, Young, J. Chen and S. Raghunathan, 2014, "Online Product Reviews: Implications for Retailer and Competing Manufacturers," *Information Systems Research*, Vol. 25, Issue 1, March 2014: 93-110.

Kwark, Young, J. Chen and S. Raghunathan, 2016, "Platform or Wholesale? A Strategic Tool for Online Retailers to Benefit from Third-Party Information," *MIS Quarterly*, Vol. 41, Issue 3, September 2017: 763-785.

Kwark, Young, J. Chen and S. Raghunathan, "User-Generated Content and Product Design of Competing Firms," *Management Science*, forthcoming.

**DISSERTATION CHAIR'S COMMENTS:**

One of Kwark's dissertation committee co-chairs, Dr. Jianqing Chen, associate professor of information systems, noted that her research was among the first to examine the effect of user-generated content on the supply side (firms), while existing research focused on the demand side (consumers).

"She showed that considering the effect on demand side only provides a partial picture, and the findings can be misleading," he said. "Interestingly, once she took into account the effect of user-generated content on the supply side, the conventional wisdom does not necessarily hold any more. Therefore, Young's work has made the picture of the effect of user-generated content complete and generated useful managerial implications for practitioners."

Kwark's work has been well-cited and resulted in publications in three top journals. "The strong record resulting from her solid work," Chen said, "has helped her to establish her name in the field and paved the road for her future, even more fruitful, research path."



Jianqing Chen



Jyotishka Ray

**JYOTISHKA RAY**

PhD in Management Science with a concentration in information systems, 2017

**CURRENT POSITION:**

Assistant Professor, California State University, East Bay

**PREVIOUS EXPERIENCE:** Six years as a customer-care manager in a commercial vehicle business unit in Tata Motors Ltd., located primarily in Mumbai, India

**DISSERTATION DETAILS:** My dissertation is on "Essays on Commercialization of Information Technology Products." This dissertation addresses two important issues in software demonstrations: the design of a feature-limited software demonstration and the role of data demonstration when firms bargain over proprietary data.

The first study was motivated by a provisioning software demonstration design problem drawn from the telecommunications industry. Specifically, we studied the feature-limited demo in which the vendors provide free features in the basic version to let the customers try before they buy the premium version of the software. Companies like Oracle, Salesforce.com and SAP use feature-limited versions of their enterprise software to entice

customers into buying the full product. For example, Oracle provides a restricted-use license containing many free features of its software products, with the PeopleSoft Interaction Hub being one example. While the

restricted-use license allows free access to some of its features, customers need to buy a full-use license to use it as a full-feature enterprise portal. We developed a scientific method to segregate the features into free and premium versions based on the product's utility to the customer.

The second study was motivated by a travel agency using a data demonstration to sell its travel data. Travel data typically consists of booking data such as purchase of airline tickets, hotel rooms, rental cars and search data, which is the browsing activity of the user before the final purchase. According to *The Wall Street Journal*, "data isn't a physical asset like a factory or cash, and there aren't any official guidelines for assessing its value." This led us to ask the perennial question: What is the value of proprietary data? Data owners are often unclear on the price they can charge for it. Buyers are also uncertain about exactly how useful the data will be to them, which limits the price they are willing to pay for it. We build a negotiation process to understand under what condition the data seller should provide

a free demonstration of the data to the buyer before mutually deciding the price.

**RESEARCH RESULTS:** We found that the seller will provide a demonstration revealing full information of the data when she has a moderately high outside option. The insights from this paper would help both the seller and the buyer understand the bargaining process better, when selling or buying proprietary data whose actual worth is unknown to both.

Doing a PhD was a major decision of my life as I had to shift my focus back to academics after six years of corporate experience. It helped me to realize my academic strength and gave me focus and confidence.

**RESEARCH INTERESTS:** Software demonstration, bargaining and economics of information systems

**PUBLICATIONS FROM DISSERTATION RESEARCH:**

Ray, Jyotishka, J. Samuel, S. Menon and V. Mookerjee, "The Design of Feature-Limited Demonstration Software: Choosing the Right Features to Include," *Production and Operations Management*, Vol. 26, Issue 1, January 2017: 9-30.

**DISSERTATION CHAIR'S COMMENTS:**

All three of Ray's studies on the concept of demonstrations address problems relevant to industry and have tangible real-world applications, Dr. Syam Menon, professor, Information Systems Area coordinator and one of Ray's dissertation committee co-chairs, said.

"One of these provided an objective approach to the design of a common category of evaluation software — demos. This has not only been published in a top journal, it has also proven useful to industry," he said, noting that it is the first paper to provide a systematic approach to the design of such demos.

"The other two essays develop models that capture the negotiation process in the context of selling proprietary data products. These provide insights into when such demonstrations should be provided and the potential role of a consultant in such negotiations. One of these is already in late rounds of review in a top journal."

While negotiation is well-studied, using demonstrations to reduce uncertainties is somewhat unique to the data/software domain, and Ray's work is the first to investigate the impact of demonstrations in the negotiation process, Menon added.



Syam Menon

Steve Sauerwald

**STEVE SAUERWALD**

MBA 2008, PhD in International Management Studies, 2014

**CURRENT POSITION:**

Assistant Professor, University of Illinois at Chicago

**PREVIOUS EXPERIENCE:** Management consultant at xact4u strategy consulting AG, Karlsruhe, Germany

**DISSERTATION DETAILS:** My dissertation research sheds light on how external influences, such as shareholders and proxy advisory firms, affect important corporate-governance outcomes, including excess CEO returns and shareholder dissent. Previous research has primarily examined the internal influences of corporate-governance mechanisms. However, firms are open systems and interact increasingly with external constituents to acquire resources. Thus, shareholders and proxy advisory firms have an important influence on the firm that my research endeavored to reveal.

**RESEARCH RESULTS:** The first essay in my dissertation examined the effects of board social capital on excess CEO returns — financial returns from a CEO's firm-related wealth and compensation that exceed shareholders' financial returns. For example, during a CEO's tenure, the average shareholders enjoyed returns of 50 percent, which sounded nice at first glance. But if the CEO reaped returns of 160 percent, there was a 110 percent excess in

CEO returns (that is, 160 percent minus 50 percent) that would raise eyebrows among shareholders. I argued that excess CEO returns are an important concern because of an interesting tension between CEOs and shareholders: Firms want CEOs to own stock, which motivates CEOs and rewards them for superior performance. However, if CEOs benefit far more from their shareholdings than shareholders, it may be a sign of managerial excess and other problems.

I argued that the board plays an important role in constraining unwarranted CEO returns because of two competing normative pressures: corporate elite norms and monitoring norms. If a board enjoys external social capital — such as relationships with directors in other boardrooms — CEOs enjoy higher returns, because it gives directors the discretion to deviate from shareholder expectations. On the other hand, if a board enjoys internal social capital — such as directors who have worked together for a long time — then directors are more comfortable in monitoring the CEO's compensation and returns from shareholdings more closely. This study appeared in the *Strategic Management Journal*.

Another essay in my dissertation examined the voting advice that proxy advisors, such as Institutional Shareholder Services, provide to shareholders. I found interesting differences across countries and firms. For instance, proxy advice has a stronger influence on shareholder dissent in firms that have a large percentage

of institutional ownership. This is because institutional investors are not well-informed about the ins and outs of the business. By providing voting recommendations to these shareholders, proxy advisors help them to more effectively exercise their voting rights.

Second, I found that proxy advice varied in its influence and its ability to predict firm performance across countries. The more a country deviates from the U.S. corporate governance system, the less influential and accurate is proxy advice. This study was published in the *Journal of Management*.

**RESEARCH INTEREST:** I am primarily interested in corporate governance research. Corporate governance impacts the strategic decisions of companies and ultimately firm performance. Therefore, external constituents need to better understand how to monitor and advise management and boards of directors. Additionally, managers can benefit from this research in corporate governance by more effectively interacting with their boards and shareholders.

**PUBLICATIONS FROM DISSERTATION RESEARCH:**

Sauerwald, Steve, Z. (J.) Lin and M.W. Peng, "Board Social Capital and Excess CEO Returns," *Strategic Management Journal*, Vol. 37, Issue 3, March 2016: 498-520.

Sauerwald, Steve, J. (H.) van Oosterhout, M. van Essen and M.W. Peng, "Proxy Advisors and Shareholder Dissent: A Cross-Country Comparative Study," *Journal of Management*, published online December 2016.

**DISSERTATION CHAIR'S COMMENTS:**

Dr. Mike Peng, O.P. Jindal Chair of Global Strategy, was one of Sauerwald's MBA professors.

"Steve was a very special student," Peng said. "His knowledge and intellectual curiosity were so awesome that I approached him and recruited him to join our PhD program. So naturally I became his dissertation advisor."

Peng attributes Sauerwald's success to his strong work ethic, focus and dedication, as well as his mastery of a body of research that is connected with real-world practice.

"Steve has quickly become a promising and influential young scholar in corporate governance," he said.

"SMJ is the No. 1 journal in the field of strategic management. JOM is also a very reputable management journal. Research universities live and die by the papers we publish in competitive, top-tier journals. So scholars who can accomplish early publications in higher-quality journals are valued tremendously by their universities and also by the academic profession.

"Needless to say, I'm very proud of Steve." ▲



Mike Peng