

Candidate Statement

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I am currently an assistant professor of marketing at the Questrom School of Business at Boston University. I develop and test new theories on how marketers can optimize their digital marketing strategies in the areas of online advertising and behavior-based marketing. My research highlights two distinctive features of the modern marketplace: a long tail of niche products that cater to consumers with different tastes and the operational ease for firms to collect and disseminate information.

My first line of research focuses on *online advertising* of product information, in which I study firms' optimal disclosure of taste-related product attributes and find that the optimal disclosure of these attributes often departs considerably from that of product quality (Sun 2011, Sun 2012, Sun and Tyagi 2017). In addition, I model consumers' costly search for product information and demonstrate that by providing too much information, a firm may discourage consumers from initiating search and hurt its own profit (Branco, Sun and Villas-Boas 2012, 2016). My work on online advertising hence suggests that firms should carefully choose the type and amount of product information to disseminate.

My second line of research zooms in on *behavior-based marketing*, marketing strategies that are tailored to individual consumers' behavior. For social and targeted advertising,¹ I investigate how bloggers alter their content when incentivized by the amount of traffic (Sun and Zhu 2013), nonconformity in large online social networks such as Facebook (Sun, Zhang and Zhu 2017), the optimal network structure for product diffusion (Zhang et al. 2017) and the optimal targets of retargeted advertising² (Miklos-Thal, Sun and Zhang 2017). For behavior-based pricing, I examine competitive consequences of geo-targeted mobile coupons³ (Chen, Li and Sun 2017a), profit implications of smart technologies that can learn consumer preferences over time (Chen, Li and Sun 2017b) and the role of bilateral ratings in peer-to-peer markets⁴ (Ke, Jiang and Sun 2017). My work on behavior-based marketing uncovers important and often surprising consequences of new technologies that trace individual consumers' behavior over time.

In a third line of research, I explore the impact of new technologies and phenomena on *public policy*, particularly in the domains of healthcare and sustainability (Liu and Sun 2012; Sun and Trudel 2017).

I have published nine research papers to date including six papers in top marketing journals (one paper in *Journal of Marketing Research*, three papers in *Management Science* and two papers in *Marketing Science*), one paper in the *Journal of Economics & Management Strategy*, one paper in *Marketing Letters* and one paper in *Pacific Economic Review*. I currently have six papers in the pipeline (one paper being revised for a second round review at *Marketing Science*, one paper under review at *Information Systems*

¹ Social advertising relies on social networks in generating, targeting and delivering marketing communications.

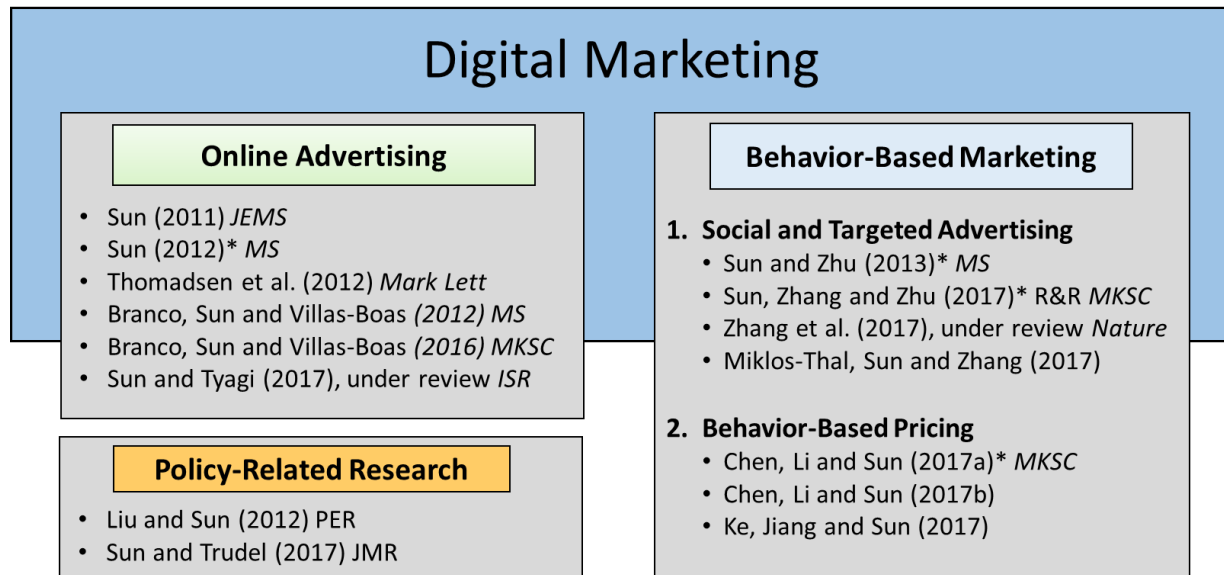
² A form of online advertising that is targeted to consumers based on their previous Internet actions.

³ Customized digital coupons that are delivered to consumers' mobile devices based on their real-time locations.

⁴ In a peer-to-peer market, individuals can interact directly with each other to buy or sell goods and services and a buyer (seller) is often rated by the seller (buyer).

Research, one paper under review at *Nature* and three working papers close to submission) and a number of works in progress. I follow a question-driven approach in my research and use a broad range of methodologies. My theoretical models are often the first in the subject area and my empirical work strives to identify causal effects. A summary of my research is presented in Figure 1.

Figure 1: Research Summary⁵



Recognition of my research is reflected in its accumulation of 511 citations (Google Scholar as of April 2017) with a healthy trajectory and recently accepted papers still waiting to show their impact. Régis Renault (2015) discusses my research on information disclosure (Sun 2011) in the *Handbook on Media Economics* as a significant breakthrough in the literature on product advertising. The INFORMS Society for Marketing Science chose my paper on product ratings (Sun 2012) as a finalist for the John D. C. Little Award, which acknowledges the best paper published in *Marketing Science* and *Management Science* in each year. David Bell discusses my research (Sun, Zhang and Zhu 2017) in his recent book, *Location Is (Still) Everything* (Bell 2014), highlighting the importance of our study for understanding the importance and limitations of social advertising. As further evidence of the scholarly recognition of my research, I was invited to contribute to a review article discussing the role of analytical work in the field of marketing (Thomadsen et al. 2012) and became a top 10% author on SSRN by downloads in March 2017.

I have given 55 research presentations at world-class business schools and prestigious marketing conferences, including the Summer Institute of Competitive Strategy at UC Berkeley, the UTD FORMS Conference, the Workshop on Economics of Advertising and Marketing and the Choice Symposium. My papers have been assigned as doctoral readings in the marketing groups at BU, JHU, Florida, Maryland,

⁵ All my papers are available at <http://people.bu.edu/monic>. Papers marked with * are included in the packet.

McGill, Minnesota, MIT, Purdue, Stanford, UT Dallas, Toronto, Virginia Tech, Wash U and Yale, and in other groups at ASU (IS), Harvard (TOM), UC Berkeley (IEOR) and HKUST (IS). I currently serve as an Associate Editor for *Information Economics and Policy*, an Editorial Review Board member for *Marketing Science* and *Customer Needs and Solutions*, and an award-winning reviewer for *Management Science*.

My research is directly motivated by and tightly connected to business practice. Over the years, I have fostered close relationships with top IT executives in China and undertaken major research collaborations with leading Chinese Internet companies such as Sina (over 100 million registered users worldwide) and Kaixin. Currently, I am working with my colleagues at Questrom to help the *Philadelphia Inquirer* design retargeting campaigns to increase digital subscriptions and with Jura Liaukonyte (Cornell) to help a European mobile data service company, Widerfi, design its geo-targeting experiments. My work has also drawn significant attention from popular media, with featured discussions in *UConn Today*, the *Harvard Business Review*, *HBS Working Knowledge*, *Stanford GSB news*, and *Forbes*.

Research Contributions

My research contributes to the literature on digital marketing, particularly in the areas of online advertising and behavior-based marketing. The four papers included in the packet showcase the breadth of my research in terms of topics (product ratings, mobile geo-targeting, blogs and online social network) and methodologies (the ratings paper has both an analytical model and empirical evidence, the geo-targeting paper is game-theoretical, the blogs paper features a natural experiment and the social network paper features a large-scale field experiment).

1. Online Advertising to Consumers with Different Tastes

My first line of research focuses on the online advertising of product information to consumers with different tastes and makes the following contributions to the literature:

- Sun (2011) shows that when consumers have different tastes for a product attribute, firms can profit from withholding information on the attribute even if disclosure is costless.
- Sun (2012)* theorizes that a higher variance of product ratings increases sales if and only if the average rating is low and tests the theory in the context of online book sales.
- Branco, Sun and Villas-Boas (2012, 2016) characterize consumers' optimal search for product information and explain why providing too much information may hurt a firm's profit.
- Sun and Tyagi (2017) demonstrate that introduction of a distribution channel may either increase or decrease marketplace disclosure of product fit information.

Digital ad spending was predicted to surpass spending on TV ads in the U.S. in 2016, reaching \$72 billion and representing 36.8% of total media ad spending (eMarketer 2016). My earliest publication (Sun, **“Disclosing Multiple Product Attributes,”** *Journal of Economics & Management Strategy*, 2011) examines how a firm can optimize the online advertising of product information. While previous literature on product advertising focuses on the disclosure of quality attributes, with Milgrom (1981) establishing the classic unraveling result that a firm would disclose product quality whenever disclosure is costless,⁶ my paper offers a first result on how this result may not hold for taste-related product attributes. Intuitively, disclosure of a taste-related product attribute has the benefit of attracting well-matched consumers and the cost of alienating ill-matched ones. When consumers know that product quality is low (high), the seller finds the benefit (cost) to be dominant and chooses (not) to disclose the taste-related attribute. When disclosure reveals both product quality and fit, it is possible for the firm’s incentive to conceal the taste-related attribute to dominate its incentive to disclose product quality. The paper has been cited 92 times and discussed in the *Handbook of Media Economics* (Renault 2015) as an important milestone that informs subsequent studies in the product advertising literature (e.g., Koessler and Renault 2012).

I have used the insights derived from the study above to develop and test an analytical model of the variance of product ratings (Sun, **“How Does the Variance of Product Ratings Matter?”** *Management Science*, 2012). A higher variance of ratings, similar to the disclosure of product fit information, attracts well-matched consumers and alienates ill-matched ones. The benefit of a higher variance is weaker (stronger) than the cost when the average rating is high (low), as consumers are more (less) confident about the quality of the product. To test the model predictions, I collect rating, price and sales rank data for a random sample of 667 books in the bestseller section of Global Books in Print at two different points in time from Amazon.com and barnesandnoble.com.

As sales can be driven by book characteristics that are correlated with the ratings, the causal effect of ratings can be confounded. I control for book-level confounds by differencing all variables across the two sites. However, if Amazon customers tend to like a particular book more or less than Barnes & Noble customers and the ratings reflect such preferences, the causal effect of ratings would still be confounded. I control for book-site interactions by differencing all variables across time, assuming that consumer preferences for a book are stable over time.

Overall, the difference-in-differences analysis suggests that a higher variance of ratings on Amazon improves a book’s relative sales rank when the average rating is lower than 4.1 stars, which is true for 35% of the books in my sample. The paper extends earlier work on product reviews (e.g., Chen and Xie 2005; Chevalier and Mayzlin’s 2006; Chintagunta, Gopinath and Venkataraman 2010) and has a major impact on subsequent studies of product reviews in marketing (e.g., Packard and Berger 2016), operations (e.g., Qiu and Whinston 2017) and information systems (e.g., Kwark, Chen and Raghunathan 2014). The paper has been cited 276 times and honored as a finalist for the John D.C. Little Award.

⁶ The firm with the highest quality in any non-disclosing pool would separate itself by choosing disclosure.

The next two papers in this line of research address a natural follow-up question on whether to advertise taste-related product information: how much of such information should be advertised? Together with Fernando Branco (Católica) and J. Miguel Villas-Boas (UC Berkeley), I have laid the groundwork for this question by investigating consumers' search of product information in a continuous-time model (**Branco, Sun and Villas-Boas, "Optimal Search for Product Information," *Management Science* 2012**). We characterize the optimal stopping rules for purchase and no-purchase as functions of the consumers' search costs and the average importance of each product attribute. The purchase threshold increases with attribute importance and decreases with search cost, and the seller chooses its price strategically to affect the extent of consumers' information search. Interestingly, lower search costs can *hurt* consumers as the seller charges higher prices in anticipation of a higher purchase threshold. We also find that consumer discounting creates asymmetry in the purchase and no-purchase thresholds and leads to lower (higher) prices if (no) search occurs in equilibrium. By focusing on in-depth learning within a product, the paper informs subsequent studies of consumer information search across multiple products (e.g., Ke, Shen and Villas-Boas 2016) and extends prior search literature that focuses on identifying the best alternative in a given choice set (e.g., Kamenica 2008; Anderson and de Palma 2009).

Based on our findings above, we consider a seller who needs to determine the optimal amount of product information to provide to consumers (**Branco, Sun and Villas-Boas, "Too Much Information? Information Provision and Search Costs," *Marketing Science*, 2016**). We find that, in general, an intermediate amount of information maximizes the likelihood of purchase. If too much information is provided, some of it is not as useful and the average informativeness per search occasion may become too low for the consumer to initiate search. If too little information is provided, on the other hand, the consumer may not have enough information to reach the purchase threshold. When ex-ante valuation is higher, it is optimal for the seller to offer more information. In addition, the optimal amount of information tends to be higher for the seller than for the consumer. The paper extends prior literature on information provision with costless search (e.g., Mayzlin and Shin 2011) and provides a rational explanation of why sellers should avoid overloading consumers with too much information.

A second follow-up question on the advertising of taste-related product information is how the introduction of a distribution channel would affect the optimal advertising strategies. My work with Rajeev Tyagi (UC Irvine) on this question (**Sun and Tyagi, "Product Match Disclosure in a Distribution Channel," under review at *Information Systems Research***) suggests that when a distribution channel is introduced, the manufacturer's loss in her margin is more (less) significant than the loss in her demand if downstream competition is fierce (mild). In order to recoup margin (demand) by appealing to the best-matched consumers (general population), she is more (less) likely to choose disclosure than when she sells directly to consumers. When retailers are in charge of disclosure, they are more likely to disclose product fit information than the manufacturer when product quality is high. Therefore, mandatory disclosure and voluntary word of mouth may benefit high-end retailers while hurting the manufacturer. The paper is currently under review and has been discussed in top information systems journals such as *Information Systems Research* (Kwark, Chen and Raghunathan 2014) and *MIS Quarterly* (Xu and Zhang 2013).

2. Behavior-Based Marketing

Modern marketers' ability to collect data on real-time consumer behavior has fundamentally changed how they think about marketing. My second line of research focuses on behavior-based marketing strategies, particularly in the areas of advertising and pricing.

2.1. Social and Targeted Advertising

Social advertising totals \$15.36 billion a year or 21.3% of total digital ad expenditures (Krasniak 2016). My research on social and targeted advertising continues to emphasize the role of consumer tastes and makes the following contributions to the literature:

- Sun and Zhu (2013)* find that paid bloggers invest more effort in their content and tailor it to mainstream tastes, resulting in higher quality and popularity of the posts.
- Sun, Zhang and Zhu (2017)* show that for taste-driven choices, information on previous adoptions in an online social network could trigger nonconforming behavior.
- Zhang et al. (2017) show that contrary to earlier findings, product diffusion may be faster and farther in less-clustered networks.
- Miklos-Thal, Sun and Zhang (2017) show that the optimal targets of retargeted ads are consumers who have examined an intermediate number of products before leaving the seller's site.

A prominent goal that firms often have for social advertising is to increase user engagement (e.g., Lee, Hosanagar and Nair 2014). I have worked with Feng Zhu (Harvard) to examine the impact of monetary incentives on user engagement in a popular form of social media, blogs (**Sun and Zhu, "Ad Revenue and Content Commercialization: Evidence from Blogs," *Management Science*, 2013**). In particular, we study how compensating bloggers by the amount of traffic attracted to their blogs affect content creation. The unexpected introduction of an ad-revenue sharing program on the largest Chinese portal site, Sina.com, offers a natural experimental setting that is ideal for this research question. Using a difference-in-differences approach to compare the content shift of 4,200 participants before and after the program takes effect to that of 26,974 nonparticipants, we analyze 4.4 million blog posts with blogger fixed effects and instrumental variables.

We find that, relative to nonparticipants, the amount of popular content increases by about 13% on participants' blogs after the program takes effect. About 50% of the increase can be attributed to topics shifting toward three domains: the stock market, salacious content and celebrities. We also find a significant improvement in participants' content quality when measured by the average number of characters, pictures and videos in the posts and the percentage of readers who bookmark the posts for future use. The program effect persists over time and differs across different bloggers: participants with moderately popular blogs shift their content popularity, topics, and quality more than nonparticipants and the participants with very popular blogs. This may be because nonparticipants derive a high level of

disutility when deviating from their natural tastes, whereas very popular bloggers have already covered popular topics and maintained a high level of content quality. We establish the robustness of our results with three alternative approaches: propensity-score matching, Rosenbaum bounds, and AET-SSS (Altonji et al. 2005; Sen et al. 2011). The paper provides the first empirical evidence on how monetary incentives can drive user-generated content toward popular tastes and informs important subsequent studies of social media (e.g., Toubia and Stephen 2013; Goldfarb and Tucker 2014). It has also received the competitive NET Institute Summer Research Grant and been covered in *Forbes* and *HBS Working Knowledge*.

To gain a deeper understanding of user engagement and social influences, I have been working with Michael Zhang (HKUST) and Feng Zhu to explore how users can be *dissuaded* from adoption by information on previous adoptions of a taste-driven choice (**Sun, Zhang and Zhu, “Nonconformity in Online Social Networks,” R&R at *Marketing Science***). Using a large-scale field experiment with 16,298 participants on a leading social networking site in China, Kaixin001.com, we show each participant a randomly generated adoption rate of a virtual house color. The color is also randomly generated and claimed by the site to be the most popular choice among his friends. We find that an increase in the adoption rate makes the user *less* likely to conform to that color. When participants are reminded that their friends will see their color choices, the likelihood of conformity further decreases unless the adoption rate is close to one. Our experimental design rules out important confounding factors such as informational social influence, homophily and identity signaling so that we can focus on the tradeoff between a user’s need to belong and his need to be independent (e.g., Lieberman 2010). As summarized in David Bell (2014), the paper suggests “It’s nice to express your individuality unless you really have to swim against the tide of your friends in a very public way!” Our results are consistent with recent diffusion studies (e.g., Anderson et al. 2015) and the paper has also received the NET Institute Summer Research Grant.

While field experiments have become increasingly common in social science research (e.g., Tadelis and Zettelmeyer 2015), I have been working with Michael Zhang, Alex Wang (HKU) and Henry Qian (UT Austin) to identify potential issues with randomly assigning users into different conditions in the context of social networks (**Zhang et al., “A Peril of Randomized Experiments in Social Networks,” under review at *Nature***). For example, while previous experimental research on social networks (e.g., Centola 2010) finds that diffusion is faster and wider-spread in clustered networks, we show that the result may change if the propensity to adopt a particular behavior intrinsically varies with the personality of the user and hence the degree of clustering in his local network. With over five million observations of movie ratings from a large online cultural community in China, douban.com, we obtain estimates of adoption propensities on an individual level and feed them into diffusion simulations. Our results suggest that, contrary to earlier findings, diffusion of an adoption behavior can in fact be faster and farther in less-clustered networks.

Similar to social advertising, retargeted advertising is becoming another popular form of behavior-based advertising (Hamman and Plomion 2013). Recent empirical studies on this topic have found interesting results on the general effectiveness of retargeted ads (e.g., Lambrecht and Tucker 2013; Bleier and Eisenbeiss 2015), but research is still scant on the optimization of retargeted advertising. I have been

working with Jeanine Miklos-Thal (Rochester) and Juanjuan Zhang (MIT) to explore how a firm can maximize the effectiveness of retargeted ads by carefully choosing the targets of such ads (**Miklos-Thal, Sun and Zhang, “The Optimal Target of Retargeted Ads,” *Working Paper***). In our model, a consumer searches across multiple products and websites for a product that matches well with his taste. Each product he checks out serves as a signal of his potential match with other products on the same site and he can leave a website for two reasons: low probability of finding a good match on the site or an exogenous interruption. We find that, interestingly, the optimal targets of retargeted ads are consumers who have checked an intermediate number of products before leaving the site, as these consumers have the highest conditional probability of finding a match. We have presented our results at the UTD FORMS conference, the Marketing Science conference, the BU Economics Department and the Workshop on Economics of Advertising and Marketing, and are currently preparing the manuscript for submission to *Marketing Science*.

2.2. Behavior-Based Pricing

The literature on behavior-based pricing has flourished over the last decade, to which my research makes the following contributions:

- Chen, Li and Sun (2017a)* demonstrate that different from traditional coupons, geo-targeted mobile coupons can limit inter-firm competition and increase profit.
- Chen, Li and Sun (2017b) find that smart technologies (e.g., recommendation systems) that can learn consumer preferences over time can either increase or decrease firm profit.
- Ke, Jiang and Sun (2017) show that bilateral ratings in peer-to-peer markets help low-cost buyers by increasing their acceptance rates and hurt high-cost buyers by increasing their prices.

Smart phones with location services are becoming widely adopted and geo-targeted mobile advertising spending is projected to reach over \$32 billion in 2021 (BIA/Kelsey 2017). Building on a handful of existing studies on mobile targeting (e.g., Ghose, Goldfarb and Han 2013; Luo et al. 2014, Dubé et al. 2017), I have worked with Yuxin Chen (NYU Shanghai) and Xinxin Li (U Conn) to offer the first analytical framework of mobile geo-targeting (**Chen, Li and Sun, “Competitive Mobile Geo-Targeting,” *Marketing Science*, forthcoming**). Our analysis shows that the consumers’ ability to shop for the best geo-targeted offer by changing their locations incentivizes a firm to balance its prices across locations so that high-margin local consumers do not seek better offers at other locations. The intra-firm balancing of prices can effectively limit inter-firm price competition at each location, raising the firms’ profits above that under traditional coupon targeting or uniform pricing. Our results remain to hold when a fraction of consumers are not aware of mobile offers outside of their permanent locations, when mobile offers can be collected unexpectedly and when firms use both permanent and real-time locations to set prices. We demonstrate that, since a consumer can seek out a mobile offer by changing his real-time location, mobile geo-targeting differs significantly from targeted pricing based on other factors such as a

consumer's permanent locations (e.g., Shaffer and Zhang 1995), past purchases (e.g., Villas-Boas 1999; Pazgal and Soberman 2008; Shin and Sudhir 2010; Zhang 2011; Shen and Villas-Boas 2014) and cost to the firm (e.g., Shin, Sudhir and Yoon 2012; Subramanian, Raju and Zhang 2014).

Similar to mobile targeting, smart technologies that utilize artificial intelligence (AI) to learn consumer preferences over time are becoming increasingly popular (DeMers 2016) although little research has been done on this topic from the marketing perspective. I am currently working with Yuxin Chen and Xinxin Li on the first analytical framework for the pricing of AI-based smart technologies (**Chen, Li and Sun, "A Model of Smart Technologies," Working Paper**). In our two-period model, the consumer can pay an introductory price to try the service in the first period and his initial usage would enable the technology to learn his preference, forecast his subsequent needs and reduce the operational cost for him to use the service in a repeated consumption occasion. When technology is very smart, the firm prices aggressively in the second period and extracts all consumer surplus upon a correct forecast. When technology is moderately smart, on the other hand, the firm prices more conservatively in the second period and the consumer expects a higher surplus. The consumer hence anticipates a loss in future surplus as the technology becomes smarter and becomes less willing to try the service in the first period. Under certain conditions, the introductory price can be so low that smart technology underperforms a conventional, non-smart technology. I have presented the paper at the UT Dallas marketing seminar and BU Questrom Data Blitz, and we are currently preparing the manuscript for submission to *Marketing Science*.

Peer-to-peer markets offer another important context for behavior-based pricing. A distinctive feature of such markets is that consumers often receive feedback from service providers on how costly it is to serve them. I have been working with Tony Ke (MIT) and Baojun Jiang (Wash U) to explore the effects of such ratings in a model of directed matching (**Ke, Jiang and Sun, "Bilateral Ratings in Peer-to-Peer Markets," Working Paper**). In our model, prices serve as an effective tool for service providers to sort consumers: a high-quality provider can charge either a low price to ensure the applications from low-cost consumers, or a high price to profit from serving high-cost consumers. Our analysis suggests that, consumer ratings can serve as a basis for segmentation and lead to higher prices and profits by softening provider competition. As a result, high-cost consumers pay a disproportionately higher price and derive lower surplus than with unilateral ratings that are given to the providers, whereas low-cost consumers derive more surplus with bilateral ratings due to higher acceptance rates. Our study offers important insights on platform design for the growing peer-to-peer markets of transportation, household services, lending, staffing and accommodations and we are currently preparing the manuscript for submission to *Marketing Science*.

3. Policy-Oriented Research

My research has also identified consequences of new technologies and phenomena for public policy, particularly in the domains of healthcare and sustainability. As a second-year doctoral student, I worked with Ting Liu (Stony Brook) on the welfare implications of secret payments that patients in public health sectors offer to their doctors outside official channels (**Liu and Sun, "Informal Payments in Developing Countries' Public Health Sectors," Pacific Economic Review, 2012**). We find that since formal prices

cannot fully differentiate patient needs, allowing informal payments could improve social efficiency if patients do not have income constraints and it could also improve patient welfare if willingness to pay differs significantly across patients. Since its publication, the paper has been discussed in multiple journals in the fields of health and development economics.

I have also worked with Remi Trudel (BU) on the first micro-level behavioral economic model of recycling (**Sun and Trudel, “The Effect of Recycling Versus Trashing on Consumption: Theory and Experimental Evidence,” *Journal of Marketing Research*, 2017**). We hypothesize and confirm that recycling could reduce consumers’ negative emotions from wasting resources and increase their positive emotions from disposing of used resources. Under certain conditions, the positive emotions associated with recycling can overpower the negative emotions associated with wasting, leading consumers to use a larger amount of resources when recycling becomes an option. In our experiments, the amount of used resources can go beyond the point at which marginal consumption utility has become zero. From a policy perspective, our results call for careful and indirect framing of the recycling option in order to minimize consumers’ focus on the re-usability of resources. The paper is forthcoming at the *Journal of Marketing Research* and has been discussed by the *Harvard Business Review*.

Future Research Directions

As big data accumulate, my long-term research goal remains to be developing and testing theories on the impact and optimization of digital marketing strategies. Aside from the six papers in my pipeline, I also have started the following theory-oriented projects:

- I have been working with Dominique Lauga (Cambridge) on flash sales, promotions offered by ecommerce sellers for a short period of time. In an analytical model, we show that a flash sales platform can rely on established brands to draw in consumers and on new brands to keep sale prices low. We find that the optimal commission rate set by established brands increases with the strength of new brands and the platform profit is bell-shaped in the proportion of new brands. We also discuss the long-term sustainability of the business model and extend the model to incorporate behavioral effects of limiting the duration of a sale (e.g., Narasimhan et al. 2005).
- I have been working with Yi Zhu (Minnesota) on Discovery Commerce (DC), a two-sided ecommerce business model in which consumers subscribe to periodically receive new products and samples from a variety of suppliers. Intuitively, consumers with high shopping costs and flexible preferences are the most attracted to such services. As a result, DC helps merchants reach a desirable niche of the market and identify consumers whose tastes match well with the products. On the other hand, once a consumer discovers a well-matched product, he may no longer use the subscription service for more discoveries. We are building a model to explore the implication of this tradeoff in a dynamic setting to inform the optimization and sustainability of the business model.

- I am working on a model to capture the competitive effects of ad blockers, which cost publishers \$22 billion in 2015 (PageFair and Adobe 2015). As content sites seek the delicate balance between subscription and advertising revenues (e.g., Godes, Ofek and Sarvary 2019), readers' ability to block out a fraction of ads could attract them to an ad-sponsored site. If the likelihood of ad-blocker usage increases with the amount of ads displayed, an ad-sponsored site needs to carefully weigh an ad blocker's cost of advertising revenue from existing readers against its benefit of attracting new readers from the site's competitor. My model highlights the roles of ad-blocker price and the relative attractiveness of site content in this tradeoff.

On the empirical front, I would like to develop new relationships with industry partners and have started the following explorations:

- To test the intuition in Sun and Tyagi (2017) that upstream disclosure of product information may vary with the degree of downstream competition, I have scraped data on the price, number of pictures, brand and other characteristics of a large number of online-only fashion items from two leading Indian fashion e-tailers, Myntra and Jabong. Preliminary analysis confirms our intuition: products that are sold through one e-tailer have a lower number of pictures posted on the e-tailer's site than on the brands' own site, while products sold through both retailers have a higher number of pictures on the e-tailers' sites.
- Tanjim Hossain (Toronto) and I have been in conversation with a leading Chinese e-tailer of skincare products, Guopi.com, for a large-scale field experiment to test the main prediction from Sun (2011) that information on taste-related product attributes may hurt the sales of high-quality products. I have also conducted MTurk experiments with Sarah Whitley (BU) to test the same prediction.
- Inspired by Chen, Li and Sun (2017a), Jura Liaukonyte approached me to work on a grant proposal to the European Union for theory-guided business experiments in collaboration with a Lithuanian data service company, Widerfi. Given the company's service to multiple advertisers, we plan to carry out a series of tests on the competitive consequences of mobile geo-targeting.
- I have been in conversation with Andrew Stephen (Oxford) for potential collaboration with a Portuguese fashion startup, Farfetch, to empirically test the prediction that retargeting is the most effective on consumers who have checked an intermediate number of products before leaving the site (Miklos-Thal, Sun and Zhang 2017). To test the same idea, I have also been involved in a research initiative at the Questrom School that aims at helping the *Philadelphia Inquirer* to optimize its digital marketing strategies.

Teaching, Learning and Mentoring

Since joining Questrom in 2013, I have been teaching the undergraduate Marketing Research course, with a current average instructor rating of 4.7 out of 5. I follow a design-thinking approach to “teach,” creating interactive environments in which students *experience* business-like scenarios and tackle challenges in real time. Students in my class analyze their own preferences, design a gift for a classmate through empathetic interviews and prototyping, take on the roles of clients and consultants, debate as plaintiffs and defendants, and serve real-world clients in research teams. My students often comment that they have never thought that they would become interested in marketing research until they take my class. I am currently teaching a more advanced version of this class to the MBA students.

I have had the opportunity to co-teach a PhD research seminar, Marketing Management and the Customer-Focused Firm, with my colleague Susan Fournier. Together, we brought significant pedagogical innovations to the seminar, asking each student to choose a favorite research topic, highlight the most important papers in the area and organize a session accordingly. The class enabled the students to gain a deep understanding of the literature and spurred many interesting research ideas. During my recent visit at MIT, I also gave a guest lecture on behavior-based pricing in the PhD Research Seminar in Marketing.

Prior to joining Questrom, I taught at the economics department of BU and the business schools of Stanford and USC. As an economics PhD student at BU, I served as a teaching assistant and summer instructor for Introductory Microeconomics (Econ 101) and as an instructor for the math camp that prepares incoming PhD students for their coursework and dissertation research. At Stanford GSB, I taught marketing research to MBA students and offered a customized session on mobile payments in the school’s executive education program. During my time there, enrollment in my MBA class rose from seven students in 2009 to almost 70 in 2011, with a cohort size of under 400. At USC, I taught the undergraduate capstone course in Strategic Management and received average instructor ratings of 4.90/5 and 4.96/5, with 39 students in each section. I also taught an elective MBA course in demand forecasting, with an average rating of 4.6/5.

My teaching has greatly benefited from the observations of and advice from my colleagues at BU, Stanford, and USC. I also have visited startups in the Silicon Valley and headquarters of large companies such as General Mills to keep myself up to date with new marketing practices. I have enjoyed learning from distinguished industry experts such as Avinash Kaushik, the author of *Web Analytics 2.0*, and Carl Marci, the chief neuroscientist at Nielsen, both of whom have guest lectured in my classes.

Outside of the classroom, I mentor students to foster their research interests, methodological rigor and independent thinking. Students often come to me for advice on their start-up ideas, career development, networking opportunities and recruiting prospects. In particular, I have helped a Stanford startup in social finance, SoFi, put together a marketing research presentation with market share simulations from conjoint analysis and secure first-round venture capital funding.

At Questrom, I am currently serving as a secondary advisor for Albert Valenti and have served before as a primary advisor for Shujun Zhang. I also counsel the other quantitative students in the marketing group on coursework and research. I have had the opportunity to co-advise a behavioral student, Masha Ksendzova, on her first-year paper and work with another behavioral student, Sarah Whitley, on product advertising research. I have also supervised an undergraduate student, Yi Luan, for an independent research study and hired her as a TA and an RA. Outside Questrom, I have been sought out to advise multiple economics PhD students at BU on their research, including Ying Lei who worked as my RA, became my formal advisee and recently joined the marketing department of Peking University.

At Stanford, I hired three graduate students for research assistance and helped them secure excellent placements by discussing their work experience with potential employers. Rita Ren, a computer science Master's student who helped me use natural language processing to classify product reviews, was placed at Google. Yinfeng Qin, an engineering Master's student who helped me scrape and organize blog content from Sina, was also placed at Google. Su Chen, a statistics PhD student who helped me with my research on the optimal search and provision of information, was placed at Two Sigma. I also served on the oral or dissertation committees of Yi David Wang, an economics PhD student placed at Blackrock, Ping Li, a Master's student in marketing placed at J.P. Morgan, and Daniel Chavez-Clemente, an Aeronautics and Astronautics PhD student placed at Intel.

Service to Boston University

Boston University is my alma mater and I love it. Upon joining Questrom, I started an IS-Marketing Brownbag Workshop to facilitate the development of new research on digital marketing. Multiple faculty members presented their works-in-progress at the workshop and received helpful feedback. With Questrom's current strengths and recruiting efforts in the digital domain, I expect the workshop to gain increasing popularity in the future. I have also co-organized the Questrom Research Day, a mini-conference aimed at updating faculty members from all departments with each other's ongoing research. In 2016, I worked with my colleague Tim Simcoe as part of the Dean's Office Research Working Group to evaluate the research impact of emerging economics journals.

Within the marketing department, I have co-organized the seminar series and the weekly PhD research lab. I also participate in the recruiting of faculty members and PhD students every year. During 2015-16, I served on a five person recruiting committee which oversaw the entire recruiting process, reviewing all applications, interviewing candidates at the AMA conference, organizing recruiting visits and bringing our decision process to a close. We successfully recruited Daniella Kupor from Stanford University and Chiara Longoni from New York University through this process. Recently, I have also helped the operations group recruit Pnina Feldman from UC Berkeley.

I am currently leading the group teaching effort for the undergraduate Marketing Research class at Questrom, which spans six sessions in an academic year. In this role, I offer PhD students (Albert Valenti) and junior colleagues (Daniella Kupor, Haewon Yoon) opportunities to observe all of my classes and meet with me every week to ask questions. I also write recommendation letters and create industry

connections for my students on a regular basis. Recently, I have started working with my colleague Janelle Heineke on the business analytics curriculum at Questrom.

I look forward to giving back to BU by taking on a leadership role appropriate for a tenured faculty member. In the near future, I plan to help advance Questrom through deeper involvement in faculty recruiting and the PhD program and contribute to the school's digital initiative through curriculum design and industry networking efforts.

Service to Academia

I currently serve as an Editorial Review Board member for *Marketing Science* and *Customer Needs and Solutions* and as an Associate Editor for *Information Economics and Policy*, a highly-regarded interdisciplinary journal focused on policy-related research on the production, distribution and use of information in markets. I have been recognized with meritorious and distinguished service awards by *Management Science* every year for the past six years and regularly review for *Journal of Marketing Research*. I have also served as an ad hoc reviewer for top journals in economics (e.g., *AER*, *RAND*), information systems (e.g., *ISR*, *MISQ*) and operations research (e.g., *POM*). In total, I have reviewed over 100 manuscripts for 20 academic journals. I have also reviewed grant proposals for the Social Sciences and Humanities Research Councils of Canada and Hong Kong.

I contribute to the organization of academic conferences in various capacities. Recently, I served as an active member of the organizing committee for the UTD FORMS conference and co-organized a special session on analytical models of information in online and offline markets with Pinar Yildirim (Penn) for the Marketing Science conference. In the past, I have served as a discussant at prestigious conferences in marketing (SICS, QME), information economics (NET, ZEW) and industrial organization (IIOC), and as a session chair at the Marketing Science conference. I look forward to continue my service to the academic community through performing editorial services, organizing conferences and fostering interdisciplinary research.

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