This Technical Session listing, which provides the most detailed information. The listing is presented chronologically by day/time, showing each session and the papers/abstracts/authors within each session.

The Session Codes

TA01

Room number. Room locations are also indicated in the listing for each session.

Time Block. Matches the time blocks shown in the Program Schedule.

The day of

Time Blocks

Thursday

A — 8:30am - 10:00am
B — 10:30pm - 12:00pm
C — 1:30pm - 3:00pm
D — 3:30pm - 5:00pm

Friday

A — 8:30am - 10:00am
B — 10:30am - 12:00pm
C — 1:30pm - 3:00pm
D — 3:30pm - 5:00pm

Saturday

A — 8:30am - 10:00am
B — 10:30am - 12:00pm
C — 1:30pm - 3:00pm
D — 3:30pm - 5:00pm

Thursday, 8:30AM - 10:00AM

■ TA01

Room 32, Alter Hall

Consumer Search

General Session

Chair: Rajdeep Grewal, University of North Carolina, Chapel Hill, NC, 27599, United States, grewalr@unc.edu

1 - A Model of Online Product Search with Endogenous Review Sampling

Marton Varga, INSEAD Business School, Boulevard de Constance, Fontainebleau, 77305, France, marton.varga@insead.edu, Paulo Albuquerque

The authors propose a structural model of online search with endogenous product page and review sampling, subject to search costs. Product's utility to consumers comes from three sources: (i) product characteristics, displayed in the category page and thus known to the consumer before product search; (ii) additional product characteristics revealed upon sampling the product page; (iii) an experiential-related shock, representing personal satisfaction with the product upon purchase. While searching, consumers update their beliefs about the distribution of the third term by reading product reviews and thereby mitigate related uncertainty, at a cost. The authors show that there exists an optimal strategy for product and review sampling and apply the model to study consumer search and purchase behavior at an online retailer.

2 - Inferring Automobile Market Structure from Search Data

Pradeep Chintagunta, University of Chicago, Chicago, IL, United States, pradeep.chintagunta@ChicagoBooth.edu, Jae Hyen Chung, Sanjog Mishra

In this paper, the authors present a new approach that allows inferring the market structure from aggregate market share data and individual search data. Using a new likelihood-based estimator that leverages the joint likelihood of the search and purchase decisions, authors obtain market structure while incorporating consideration sets into the analysis. Market structure is based on a factor-analytic approach that decomposes the distribution of preferences and that is embedded in the estimation of the model parameters. The authors apply the method to a simulated data set to demonstrate that it provides consistent estimates and apply it to SUV market share data and individual online vehicle search sequence data to demonstrate its application in an empirical context. Comparing the results from a multinomial probit model that analyzes the market structure only with market share data, the authors show the importance of taking consideration sets into account when studying the nature of competitive interactions in the marketplace.

3 - Cost of Webrooming: A Case of Automobiles Market

Guneet Kaur Nagpal, UNC-Chapel Hill, Kenan Flagler Business School, Chapel Hill, NC, 27514, United States, guneet_kaur@kenan-Flagler.unc.edu, Rajdeep Grewal

Webrooming refers to the shopping strategy wherein shoppers first search the products online and then visit stores to purchase them. A typical shopper in the automobiles category is a webroomer, who spends on average 11.5 hours online before visting 1-2 dealerships in the proximity. The authors seek to estimate the cost of webrooming by first providing an evidence that there exist two mutually exclusive sequential stages of consumer search in the automobiles category, i.e. online search followed by travel to automobile dealerships; and then estimating the consumer search cost in these two stages. For the first stage, which is the brand-choice stage, the authors estimate the automobile demand in presence of price uncertainty about the in-market brands, and the modeling approach rationalizes the observed consideration sets as an outcome of consumers' online search effort. For the second stage, which is the dealership-choice stage,the authors rationalize the price dispersion with the variation in consumer travel costs. Authors apply the models to the purchase behavior of 70,000 unique autoshoppers who are webroomers.

■ TA02

Room 33, Alter Hall

Digital Economy I: Automation, AI, and Online Technology

General Session

Chair: Pinar Yildirim, University of Pennsylvania, Philadelphia, PA, 19104, United States, pyild@wharton.upenn.edu

1 - Human Judgment and A.I. Pricing

Avi Goldfarb, University of Toronto, Rotman School of Management, 105 St George Street, Toronto, ON, M5S 3E6, Canada, avi.goldfarb@rotman.utoronto.ca, Ajay Agrawal, Joshua Gans

Recent artificial intelligence advances can be seen as improvements in prediction. We examine how such predictions should be priced. We model two inputs into decisions: a prediction of the state and the payoff or utility from different actions in that state. The payoff is unknown, and can only be learned through experiencing a state. It is possible to learn that there is a dominant action across all states, in which case the prediction has little value. Therefore, if predictions cannot be credibly contracted upfront, the seller cannot extract the full value, and instead charges the same price to all buyers.

2 - The Editorial Power of Newspapers

Markus Mobius, Microsoft Research, Cambridge, MA, 02142, United States, mobius@microsoft.com, Susan Athey, Jeno Pal, Sida Peng

Newspaper have agenda setting power on their landing pages: a newspaper can prioritize articles in terms of (a) whether to cover a story at all, (b) how prominently to display a story (in terms of horizontal and vertical placement as well as font size). At the same time, readers of a newspaper have preferences over news articles which affect the order in which they consume news. We separately estimate the agenda-setting power of newspapers as well as reader preferences using a unique dataset of scraped US newspaper landing pages which record the x/y position of each headline in 30 minute intervals. Disentangling these two forces has many interesting applications. For example, a frequent criticism of aggregators and other news intermediaries is that they wrest editorial control from newspapers and therefore reduce diversity of opinion. However, this argument implicitly assumes that newspapers have significant agenda setting power. Agenda setting power also raises the question of "optimal" agendas: are newspaper agendas tailored to the preferences of the most opinionated readers or towards the median reader? This questions matters in the light of increasing media fragmentation which might increase news consumption polarization if moderate readers read more biased news.

3 - Information Shocks and Internet Silos: Evidence from Creationist Friendly Curriculum

Ananya Sen, MIT, Cambridge, MA, United States, ananyasen100@hotmail.com, Catherine Tucker

Studying factors that influence adoption of new products and technologies lies at the heart of marketing. In this paper, we study a manager's decision to adopt automation for a production process. Automation offers efficiency by generating consistent high input at low operation costs. But at the same time, it reduces the interaction among employees and reduces a manager's ability to take advantage of employees' peer monitoring capacity. We study how automating some tasks in a production process influences the effort of the employees working on the same process production, and whether and when a manager should choose to automate the production process. Comparing the costs of an automated production system to one that is not, we show that while automation provides significant cost-cutting benefits, it may still result in an overall costlier system because of the increase in the cost of incentivizing the remaining employees. We show that as some tasks in production can be automated and automation becomes gradually more cost-efficient, human teams are less likely to be employed under cooperative contracts which reward an employee for his peer's achievement but rather under competitive contracts which reward an employee for achievements better than his peer.

4 - Men and Machine: When Should a Firm Adopt Automation?

Mustafa Dogan, Carnegie Mellon University, Pittsburgh, PA, United States, mdogan@andrew.cmu.edu, Pinar Yildirim

Studying factors that influence adoption of new products and technologies lies at the heart of marketing. In this paper, we study a manager's decision to adopt automation for a production process. Automation offers efficiency by generating consistent high input at low operation costs. But at the same time, it reduces the interaction among employees and reduces a manager's ability to take advantage of employees' peer monitoring capacity. We study how automating some tasks in a production process influences the effort of the employees working on the same process production, and whether and when a manager should choose to automate the production process. Comparing the costs of an automated production system to one that is not, we show that while automation provides significant cost-cutting benefits, it may still result in an overall costlier system because of the increase in the cost of incentivizing the remaining employees. We show that as some tasks in production can be automated and automation becomes gradually more cost-efficient, human teams are less likely to be employed under cooperative contracts which reward an employee for his peer's achievement but rather under competitive contracts which reward an employee for achievements better than his peer.

■ TA03

Room 34, Alter Hall

Managing Information in Marketing

General Session

Chair: Doug J. Chung, Harvard Business School, Boston, MA, 02163, United States, dchung@hbs.edu

1 - Does Restricting Information Make the Crowd More Accurate?

Vineet Kumar, Yale University, 131 Dartmouth Street, 4th Floor, Boston, MA, 02116, United States, vineet.kumar@yale.edu

Crowdsourcing has been widely used for fairly accurate information gathering, and digital technologies enlarge the scope. We examine how herding in crowdsourcing can arise based on how much information is made available to participants in such a crowd setting. Using a randomized experiment in partnership with a financial information provider, we evaluate how users who receive different informational treatment respond and how overall quality and quantity of information can be enhanced.

2 - Using Deep Learning to Overcome Privacy and Scalability Issues in Customer Data Transfer

Clarence Lee, Cornell University, 401b, Sage Hall, Ithaca, NY, 14853, United States, clarence.lee@cornell.edu

Customer privacy is becoming an increasingly important topic for marketers. Recent high profile hacks of databases containing sensitive customer information, and the growing need to build data infrastructures sufficient to support analysis of "big" data, present nontrivial obstacles to researchers seeking to utilize individual-level customer data from firms. In this paper, I show that recent developments in machine learning may enable researchers to transfer models, instead of data, as a potential alternative to the process of anonymizing and sampling customer data for release. I demonstrate how effectively several types of deep learning models can preserve desired characteristics of original data, and compare estimation and counterfactual results as estimated from real versus the synthetic customer data generated by the transferred models.

3 - The Value of Firm-initiated and User-initiated Quality Signals: An Empirical Analysis of Apartment Rental Platform

Lingling Zhang, University of Maryland, College Park, MD, United States, lingzhang@rhsmith.umd.edu, Fan Feng, Vithala R. Rao

Information asymmetry is an acute problem faced by many service-oriented platforms such as apartment rental platforms. Apartment renters (or consumers in general) typically have less information about the quality of the apartment than the platform or the provider, causing inefficiency in matching. In this context, there is hardly any repeated transactions and hence no opportunity for providers to develop their reputations. Without a reputation system, both platforms and providers necessarily use various other means to signal quality. In this research, we study the effect of platform-initiated and providerinitiated quality signals. We collaborate with a leading online apartment rental platform in an Asian market. Our dataset includes detailed records on more than 540,000 listings from a major metropolitan city. The platform issues a quality badge for selected apartments, which we label as firm-initiated signals. Meanwhile, apartment owners (the platform's business users) provide text description to signal quality, which we label as user-initiated. We perform text mining to identify the most informative features from the unstructured information provided by the business users. Given that the quality signals may be determined endogenously, we adopt the causal forest method (Wager & Athey 2017) with matching and form the identification strategy by utilizing a large set of covariates. We focus on the heterogenous effect of quality signals and quantify how the effect varies by key characteristics of the apartments. Our research has direct implications on how platforms and service providers with limited reputation information can influence consumer choices through the disclosure of quality information.

4 - The Comprehensive Effects of Sales Force Compensation: A Dynamic Structural Analysis of Performance and Selection

Doug J. Chung, Harvard University, Morgan Hall
161 Soldiers Field, Boston, MA, 02163, United States,
dchung@hbs.edu, Byungyeon Kim

We provide a comprehensive model of salespeople's behavior in response to compensation plans. The model takes into account many of the key behavioral elements that constitute a realistic sales force setting; present-bias, forward looking behavior, allocation of effort, and stay or leave decision of a salesperson. Combined, the paper provides insights on how different components of compensation affect performance and selection on heterogeneous salespeople. In addition, the paper introduces a key methodological contribution to the marketing literature. We provide a formal proof that distance-to-quota act as an exclusion restriction that can be used to identify discount factors in an infinite horizon setting. In addition, we identify conditions under which a quasi-hyperbolic discounting model is identified. Empirically, we find evidence of present-bias in salespeople's behavior.

■ TA05

Room 232, Alter Hall

Panel Discussion on Digital Marketing Applications of AI and Deep Learning I

Invited Session

1 - Panel Discussion on Digital Marketing Applications of AI and Deep Learning I

Moderator: Xueming Luo, Temple University, 1801 Liacouras Walk, Philadelphia, PA, 19122, United States, luoxm@temple.edu

AI and DL algorithms will leverage big and rich data like sentiment, image, video, and diverse subtleties of human interactions in one end-to-end process, not captured by traditional marketing. Empowered by deep neural networks, new marketing applications in the industry are astonishing (academic works are lacking): smart chatbots with personality, consumer classification and unmet needs detection, user preference discovery and recommendation, social semantics and personalized content curation, digital fraud and data breaches prevention, intelligent customer service and ad targeting, omnichannel marketing and dynamic pricing, and autonomous retailing and platform ecosystems.

Panelists

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■ TA06

Room 234, Alter Hall

Advertising Effects

Contributed Session

Chair: Eiji Motohashi, Yokohama National University, 79-4 Tokiwadai, Hodogaya-ku, Yokohama, 2408501, Japan, motohashi@ynu.ac.jp

1 - Consumer Privacy, Imperfect Information, and Marketing Avoidance: Evidence from Retargeting

Alex Eiting, TU Braunschweig, Schleinitzstrasse 23a,
Braunschweig, 38106, Germany, a.eiting@tu-bs.de

The most common method of identifying and tracking online consumers' activity involves the placement of cookies on a consumer's hard drive that are then offered back to the website during subsequent visits by the consumer. As online advertising becomes more personalized, firms run the risk that tracking will elicit a "creepy" feeling of being followed and that customers will find the advertising invasive of their privacy and that reactance will lead them to resist the ad's appeal. Against this background, the upcoming General Data Protection Regulation (GDPR) builds on the European Data Protection Directive 95/46/EC with additional key requirements including tighter requirements for obtaining valid consent to the processing of personal data. So any "do not track" mechanism is assumed to facilitate consumer self-selection by their expected net benefit. To learn about the motivations and mechanisms behind consumer opt-out and to set up our econometric model, we accessed Federal Trade Commission's fairly large-scale panel discussion series for an exploratory pre-analysis. To estimate the model, we conducted a large-scale field experiment in cooperation with a major fashion and sporting goods retailer. Results suggest that consumer engage in mental trade-offs of privacy concerns and benefits - so-called privacy calculus. The relationship between privacy concerns and benefits from personalized advertising seems to be mediated by the extent of customer's imperfect information. By exploiting a large-scale quasi-experiment in cooperation with an online retailer for furniture, interior design, and home textiles, study 2 quantifies the effect of opt-out on consumer behavior. The findings suggest that consumer opt-out is economically meaningful. However, without more structure, it is not possible to conclude what part of the effect was due to information asymmetries. To analyze this problem, we set up a structural model of advertising avoidance and use the additional restrictions that the model provides to estimate its parameters. Estimates are used for counterfactual simulations.

2 - Duration of Advertising Effects on Brand Choice: How do Recency Effects Change According to Time from Ad Exposure to Category Purchase?

Hiroshi Kumakura, Professor / Visiting Scholar, Chuo University / New York University, 742-1 Higashi-Nakano, Hachioji, Tokyo, 192-0393, Japan, kumakura@tamacc.chuo-u.ac.jp

The principle of recency, closeness in time between advertising exposure and category purchase, has been proposed to discuss short-term and behavioral ad effects on brand choice in advertising literature. This principle asserts that a single ad exposure near purchase occasion exerts a powerful influence on sales, and the principle is useful for especially digital and mobile marketing focusing on the consumer who is close to making a purchase decision. In recency advertising planning, although the timing of ad exposure is the most important and is attributed to the duration of ad effects, the duration by a single ad exposure has rarely been discussed. Hence, we discuss 1) how long advertising effects on brand choice by a single ad exposure continue, 2) how they are strong, and 3) how they decline. Namely, we measure recency effects and show how they change according as time passes, by estimating the probability densities of time (hours) from consumer's ad exposure to his/her category purchase, and by focusing the gap of shapes among these probability densities. Here, advertising effects of an individual consumer on an individual brand per outlets are to be discussed with hierarchical Bayes model. One of managerial implications of this research is that stronger recency effects are observed in a consumer having no loyal brand and in outlets of convenience stores and vending machines, in which a consumer may use the product at or near a store soon after his/her purchase and the price is higher without price promotion, than in supermarkets.

3 - A Model Integrating the Multi-agent Simulation and State-space Representation for Understanding the Interaction Effect of Advertising and WOM

Eiji Motohashi, Associate Professor, Yokohama National University, 79-4 Tokiwadai, Hodogaya-ku, Yokohama, 2408501, Japan, motohashi@ynu.ac.jp, Sotaro Katsumata, Akihiro Nishimoto

This study aims to propose the model integrating the multi-agent simulation and state-space representation and understand the interaction effect of advertising and WOM. WOM has had important role in consumer's purchase behavior, so companies have to consider the effect of WOM in order to implement the effective advertising planning. We incorporate the dynamics among consumers and heterogeneity in purchase decision making to the model. The particle filter is used to estimate the model. It is shown that the proposed model is beneficial to predict sales and understand the consumer's purchase decision making process.

4 - Understanding the Effects of Cross-media Consumption During Super Bowl Advertising

Prasad Naik, University of California, Graduate School of Management, Davis, CA, 95616, United States,
Panaik@ucdavis.edu, Neeraj Bharadwaj, Michel Ballings

Consumers increasingly view a television program on a primary screen and attend to social media on a second screen. During such cross-media consumption, how do stimuli from multiple screens influence viewers' emotional response? To address this open question, we construct a dataset over a two-year span, extract factors from structured and unstructured variables, and estimate the effects of those factors from primary (i.e., television ads during the Super Bowl) and secondary screens (i.e., consumers' Facebook posts) on ad likability. Results show that both screens contribute to the explained variance. A novel aspect of this study is to discover, based on the psycholinguistic literature, the three thinking styles (viz., formal, analytic, narrative) using not only the "bag of words" approach, but also the grammatical and syntactical role words play, thereby transcending the typical sentiment analysis and broadening our understanding of simultaneous media consumption.

■ TA07

Room 237, Alter Hall

Retailing I

Contributed Session

Chair: Yoonju Han, Kelley School of Business, Indiana University, 1309 E. 10th Street, Hodge Hall 2100, Bloomington, IN, 47405, United States, yjhan@indiana.edu

1 - The Effect of Competition on Retail Price and Variety Decisions: Theory and Evidence

Fabio Caldieraro, Associate Professor of Marketing, FGV - EBABE, Rio de Janeiro, R. Jornalista Orlando Dantas, 30, Rio de Janeiro, 22231-010, Brazil, fabio.caldieraro@fgv.br, Andre G. Trindade

The effect of competition on retail price and variety decisions: theory and evidence We study the impact of competition on a firm’s pricing and product variety decisions both theoretically and empirically. We focus on grocery stores, an industry where variety is particularly important to consumers. By looking at a large number of markets, we find that both prices and variety are higher when there are two competing stores than in those markets with a single store. We propose and test a model that explains these patterns based on two main forces: (a) incentives to increase variety increase with competition because of a business stealing effect; (b) a larger set of products allows firms to better screen heterogeneous consumers leading to a strategic price-increasing effect under stronger competition. We also find that consumer welfare is higher under competition, not because of prices, but because of the net increase in consumer utility due to the better (wider) availability of products in the market.

2 - Measuring Product Differentiation using Market Share Distributions

Young Han Bae, Assistant Professor of Marketing, Penn State University, Greater Allegheny, 4000 University Drive, Frable 217, McKeesport, PA, 15132, United States, yzb1@psu.edu, Hyunwoo Lim, Thomas S. Gruca, Gary J. Russell

It is well known that the relationship between the size of market share and market share rank follows a power law. Specifically, the market share power law implies that a log-log plot of market share size versus market share rank is linear with a negative slope. The most likely explanation for this type of relationship is that brands in a product category have true quality values drawn from the extreme upper tail of a product quality distribution. Using this fact, we argue that slope of the log-log plot provides a measure of the amount of quality differentiation in a product category. Moreover, by compiling a dataset of log-log plot slopes for many categories, it is possible to study how product category characteristics impact product differentiation. We implement this approach using a dataset containing the market shares of 5,733 brands in 562 consumer packaged goods categories in the United States. We first show that power law market share distributions are a valid empirical generalization. We then show that the parameters of the power law distributions show considerable variation across product categories, and that this variation is significantly related to category-level measures of marketing activity. Our empirical results provide strong evidence that strong product differentiation is associated with categories that are perceived to be important by consumers and that have lower levels of price promotions and couponing. We discuss implications of our approach both for marketing managers and researchers in marketing strategy.

3 - The Dynamics of Shopper Engagement and Purchase Conversion at Retail Checkout

Yoonju Han, Indiana University, 1309 E. 10th Street, Hodge Hall 2100, Bloomington, IN, 47405, United States, yjhan@indiana.edu, Raymond R Burke, Shibo Li, Alex Leykin

The checkout area or “front end” of a supermarket sells an ever expanding assortment of products, and is one of the most productive areas of the store and an important driver of trip satisfaction and future store loyalty. Prior research on retail checkout has focused on how waiting time affects customer satisfaction and the implications for queue management. Little is known, however, about how shoppers attend to, engage with, and shop products while waiting in line. This research proposes a simultaneous equations model which predicts that, as shoppers move through the checkout lane, their motives, abilities and contextual factors dynamically influence their eye fixations, product interactions, and purchases. We estimate the model using a unique dataset of eye-tracking and survey data collected from a field experiment at a large U.S. grocery chain. The research reveals that product engagement and “impulse purchases” are the predictable outcome of interactions between personal, contextual and marketing factors. The study provides marketing researchers and store managers with valuable insights for product organization, merchandising, and line management at retail checkout.

■ TA08

Room 238, Alter Hall

CB - Unfamiliarity & Choice

Contributed Session

Chair: Paul Wang, University of Technology Sydney, Marketing Discipline Group, P.O. Box 123, Sydney, NSW 2007, Australia, paul.wang@uts.edu.au

1 - Consumer Preference for Opaque Products

Lucas Stich, Ludwig Maximilians Universität München, München, Germany, stich@lmu.de, Martin Spann, Gerald Häubl

Selling opaque products refers to a marketing practice where sellers offer goods or services for which they conceal some product attributes from buyers and reveal them only after a non-refundable purchase. Examples include selling hotel rooms on Priceline and Hotwire, lucky bags in retailing (e.g., Fukubukuro; surprise boxes on Amazon), or surprise menus in restaurants. Prior research is analytical in nature, has focused primarily on the sellers of opaque products and explained consumers’ choice of opaque products by a lower price to compensate for the uncertain product characteristics. In contrast, we propose that consumers can have a preference for the unique aspects of opaque products and not necessarily need a discount to choose an opaque alternative when non-opaque products are also available. We propose choice difficulty, exploration, and excitement as candidate pathways to explain consumers’ choice of opaque products, which we test in a series of experiments. We find that consumers choose opaque products more frequently the higher the perceived difficulty of making a choice. In addition, both the desire to discover unfamiliar things as well as the anticipated pleasure from experiencing surprise (and uncertainty resolution) can induce consumers to choose opaque products. Our results also indicate that opaque products can be an effective means to motivate consumers to make a choice rather than delaying it.

2 - A Unified Model of Context-dependent Preference

Prithwiraj Mukherjee, Assistant Professor, Indian Institute of Management Bangalore, Bannerghatta Road, Bangalore, 560076, India, pmukherjee@iimb.ac.in, Arnaud De Bruyn, Ayse Onculer

We present a generalized theoretical model of context-dependent preferences based on a multi-attribute utility theory formulation, where we assume that attribute-wise utilities are stable, but weights on each of these is shaped by context, including choice set, past experience, word of mouth and advertising, via an anchoring mechanism. Our theoretical model explains and proposes boundary conditions to several documented biases including the compromise effect, attraction effect and status quo bias. Using this parsimonious theoretical model, we also derive a choice model and compare it to existing models using choice-based conjoint data. We also present data from some additional studies to test the robustness of our approach. Our model has several implications for marketing managers, in product line design, new product design and product differentiation.

3 - Does the Information Influence Choice of New Healthy Food in Males and Females? – Role of Neophobic Trait and – Type of Unfamiliarity

Varisha Rehman, Assistant Professor, Indian Institute of Technology Madras, Sardar Patel Road, Adyar, Chennai, 600036, India, varisha@iitm.ac.in, Sujatha Manohar

Due to the alarming health issues around the world, there is an urgent need for the food marketers and policy makers to inculcate healthy food choices among the people.The objective of the research was twofold, firstly to study the impact of information (health and taste) on willingness to try new healthy foods and secondly the role of type of unfamiliarity of the food, food neophobia and gender in influencing healthy food choices. A pseudo-experiment was conducted with 385 subjects with 12 versions of the survey where the new dish and the information presented were manipulated. Results show that the gender and type of unfamiliarity have a direct effect on willingness but the information does not have. This could be because the subjects were mostly young and they are more influenced by social and environmental factors rather than by information. The 3-way interaction effect of type of unfamiliarity with the information is significant only for females which suggest that males ignore the information. Since food neophobia is found to be significant on willingness for both males and females, marketers should try to reduce their reluctance. The study differentiates unfamiliarity and novelty in the context of food. The results would help the food marketers to provide the right kind of information in influencing the people to choose a new healthy food. It could also help in deciding on the factors such as packaging, labelling etc. and in designing their advertisements according to the type of unfamiliarity of the food.

4 - Association Between Decision States and Media Preference in a New Consumer Tech Purchase

Paul Wang, University of Technology Sydney, Marketing Discipline Group, P.O. Box 123, Sydney, NSW 2007, Australia, paul.wang@uts.edu.au, David Waller, Mark Morrison, Harmen Oppewal

Consumer decision states are discrete behavioral states that correspond with their particular levels of knowledge, information search, and readiness to make a purchase. Consumer motivation for the information search would vary depending on their decision state. Research on decision states is especially important for both marketing researchers and practitioners to better understand high involvement purchase decisions. Although many studies have observed the use of the Internet as an important vehicle for purchasing, relatively little research attention has been paid to how consumers use multiple media channels such as shop displays, advertising, and sales assistants to search for information and make their purchase decisions. To fill the research gap, we conducted an online survey of more than 1400 respondents to empirically investigate the association between decision states and media preference in a new consumer tech purchase. In addition, the study examines the effect of demographics on consumer media preference. The study has found that consumers use of information varies across decision states, gender, and age. The findings suggest that it is often inadequate and erroneous to treat consumers in different decision states as a homogeneous market.

■ TA09

Room 239, Alter Hall

Understanding Ads

Contributed Session

Chair: Aditya Billore, IIM Indore, Prabandh Shikhar, Rau-Pithampur Road, Indore, 453556, India, adityab@iimidr.ac.in

1 - The Effect of Mobile Search Ads Across Devices: A Geo Experiment

Michelle Andrews, Assistant Professor of Marketing, Emory University, 1300 Clifton Rd, Atlanta, GA, 30329, United States, m.andrews@emory.edu, Ting Li, Francesco Balocco

Understanding the role of mobile search ads in the path to purchase is critical for managing multiple-device campaigns. Since sales attributions to search origins across devices often hinges on individual- or device-level identification, we overcome the problem of multiple-identifiers by designing a field experiment in which we geo-split consumers into treatment and control groups. Modeling the effect of treatments between regions enables us to detect lifts in key advertising performance metrics on tablets and desktops in the same regions where mobile search ads received the experimental treatment. We then investigate the effect of mobile search ads on same and cross-device performance by varying ad bids on mobile keywords based on their position in the purchase funnel. Our multi-period geo-experimental evidence comprises more than 3,000 ad campaigns served to mobile, tablet and desktop that generated more than 70 million impressions, more than 2 million clicks, and more than 75,000 conversions. Our results highlight device interdependencies by demonstrating the nuanced manner through which the position of mobile keywords in the purchase funnel may heterogeneously drive same and cross-device conversion and shape the information gathering process in the shopping journey.

2 - When is the Sweetest Time for TV Commercial?

Chihiro Totsuka, Graduate Student, Keio University, Felica Hiyoshi #202 3-5-12 Kohoku Yokohama, Kanagawa, 223-0061, Japan, c.t.1222@z5.keio.jp

TV commercials still have greatest impact on consumers in Japan and a lot of companies invest large portion of their advertising budget in TV commercial. However, it is difficult to know the effect of TV commercials and each company blindly uses TV commercials in their own ways. In this research, I tried to find out the most effective time zone for TV commercials and to know why the effect become highest at a certain time zone. The reason why I focus on time zone is that it is comparatively easy for companies to control time zone when they place TV commercials. The goal of this research is to propose the way how each company can make the most of their TV commercials. I used a single source data collected by Nomura research institute, which involves data of how much people come in daily contact with TV and websites, and data concerning awareness, preference and purchase experience towards products and I compare the scores of consumers' intention and purchase towards products before they come in contact with TV commercials and after that. Moreover, using data about consumers' demographics and usages of web sites and SNS, I analyzed the reason why some time zones have greater effect on consumers deeply.

3 - You Can Skip this Ad in 5 Seconds: Exploring Consumers' Ad Skipping Behavioron Internet

Aditya Billore, Associate Professor, IIM Indore, Prabandh Shikhar, Rau-Pithampur Road, Indore, 453556, India, adityab@iimidr.ac.in, Manoj Motiani

Consumers encounter advertisements while browsing websites, these ads appear in-page before, during, or after streaming in any web content. Consumers show their rejection or appreciation by skipping the ad or sharing them with other users using social networking sites. The current study attempts to understand how the consumers decide to skip or watch and share the ad. We propose to use need for cognitive closure as the theoretical foundation for explaining the ad skipping behavior. The proposed experiment will explore the ad skipping behavior in context of video advertisement on video content delivering websites (e.g. YouTube).The major constructs used to explore ad skipping behavior are Consumer perceived Advertising Creativity (Divergence and Relevance), Brand Familiarity and ad Avoidance. In this study first we try to understand how ad skipping is different from ad avoidance. The later part of the study tries to explore how brand familiarity and perceived ad creativity influence the decision of consumer to skip or watch the ad. Contrary to the prevalent view regarding the ad avoidance is that consumers are likely to process and appreciate ads from known brands as compared to unknown brand. We here propose that in case of ad skipping the consumers tend not to skip ads from unknown brand because of novelty as unfamiliar brands may reduce the need for cognitive closure (NCC). The results of the study will help in understanding the determinants and consequences of ad skipping behaviour. How ad skipping is different from ad avoidance? And what is the role of brand familiarity consumers' decision about ad skipping.

4 - Music Matters: Do Audio Features of Accompanying Music Affect Advertising Effectiveness?

Joonhuyk Yang, Doctoral Student, Northwestern University, Evanston, IL, 60208, United States, j-yang@kellogg.northwestern.edu, Purushottam Papatla, Lakshman Krishnamurthi, Caiyun Liu

The literature suggests that creative aspects play a significant role in how consumers respond to advertising. Specifically, findings indicate that the creative features of an ad affect its likeability which in turn influences purchase intentions for the advertised product. In light of the above findings, there have been calls for increased research into the creative dimensions of advertising - one of which is accompanying music. There is however virtually no research into how the characteristics of accompanying music affect consumer response. The goal of our research is to address this gap and develop insights into the audio characteristics of accompanying music that makes advertising more effective. Our investigation proceeds in two stages. In stage one, we use two large datasets that provide information on the popularity of music along with its audio characteristics. The first, the Million Song Dataset, provides data on the number of times that over a million users listened to more than 380 thousand songs. The second, Free Music Archive, provides similar data for over 106 thousand songs. Both datasets also provide data on audio characteristics like rhythm, tone and tempo of the songs. Our goal for this stage is to identify audio characteristics that increase the number of times that people listen to songs while controlling for factors like genre, release date, artist popularity and duration. In stage two, we assess whether our findings carryover to the context of advertising by investigating the relationship between advertising effectiveness and the characteristics of accompanying music.

■ TA10

Room 605, Alter Hall

Consumer Judgement & Choice

Contributed Session

Chair: Vlada Pleshcheva, Humboldt University Berlin, Wirtschaftswissenschaftliche Fakultÿt, Institut für Marketing, Berlin, 10099, Germany, vlada.pleshcheva@wiwi.hu-berlin.de

1 - Cascade Effect in Service Quality Evaluation

Sheila Roy, Associate Professor, S.P. Jain Institute of Management and Research, I 704 Raheja Vistas Raheja Vihar, Chandivalli, Mumbai, 400072, India, sheila.roy@spjimr.org, Indrajit Mukherjee

We attempt to extend the theory on evaluative judgements of partitioned (sequential) experiences (Ariely and Zauberman, 2003) and the theory on preferences for sequences of outcomes (Lowenstein and Prelec,1994), to service quality evaluations across multiple stages in a service process. Prior research in partitioning of sequential experiences suggest that the overall evaluation of the experience is impacted by summary evaluations of each partition rather than gestalt characteristics such as peak experiences, trend or end. In choice literature, when choices are framed as sequences of outcomes, people tend to prefer improving sequences and delayed gratification. The above research seems to assume that experience of prior stages in a sequence would not impact either the evaluation or choice of future stages. However, in a service setting which is usually designed as a series of stages partitioned by logical breaks, the experience of prior stages may impact evaluation or choice of subsequent stages and the overall evaluation of the sequence may be mediated by evaluation of intermediate stages. This phenomena is referred to as a cascade effect in operations management literature (Shi and Zhou, 2009; Sulek et al., 2006). The objective of the research is to study the cascade effect of prior stage evaluation on subsequent stage customer experience and on overall evaluation of the experience. Through an experimental design of a multistage education loan application process we study the mediating cascade effect of intermediate stages on final service quality evaluation. The findings of the study have managerial implications for the design of customer experiences.

2 - When are Comparison Sites Used in Consumer Search

Peng Yam Koh, PhD Candidate, Singapore Management University, 50 Stamford Road, Singapore, 178899, Singapore, pengyam.koh.2016@pbs.smu.edu.sg, Ernst Osinga, Peter Sander van Eck

Comparison sites allow consumers to compare product and service offerings from different providers on price and non-price characteristics and are ubiquitous in consumer search. While search theory can explain why consumers search on comparison sites, it cannot explain when consumers search on these sites. Moreover, this theory provides little guidance for firms who wish to list on comparison sites. To fill this gap, we develop theory relating key constructs from search theory to the timing of comparison site visits in the consumer's search (i.e., earlier or later in the search). We test our theory using: (i) household panel data capturing online browsing, purchase behavior, and pre-search survey on the Dutch health insurance market, and (ii) a Bayesian probit model with endogenous search equation to address possible self-selection by consumers. We find that the moment of comparison site usage depends on the consumer's: (i) size of the initial consideration set, (ii) dissatisfaction with their current product, (iii) expectation of finding a better deal, and (iv) switching intention. Overall, we deepen search theory by explaining when and for what reasons consumers consult comparison sites. Our findings have important managerial implications for managers of comparison sites and managers of providers listing on comparison sites.

3 - Illusion of Processing Fluency on Pro Social Campaigns Unjustifiable Efforts Produce Guilty Feelings

Yaeeun Kim, Temple University, Philadelphia, PA, United States, enakim@temple.edu, Yaeri Kim, Vinod Venkatraman, Kiwan Park

Previous studies have revealed contradictory effects of processing fluency on attitudes. When processing advertisements, easy to process stimuli are more positively evaluated as a feelings-as-information (Reber et al., 2004), while difficult to process stimuli are more favorable as an effortful investment (Deval et al., 2012; Labroo & Kim, 2009). It is still not clear if the evaluation of disfluent advertisements is motivated with a desirable appeal (e.g., social-benefiting appeal) or an undesirable appeal (e.g., self-benefitting appeal). In the current research, we predict that such perceived disgraceful actions increase unpleasant emotional states such as guilt, which would affect their attitudes (Kouchaki et al., 2014; Peloza et al., 2013). We explore this effect by applying disfluent stimuli to a prosocial behavior campaign. Thus, we hypothesize that people primed with self-benefiting appeals will consider a difficult to process campaign to be less favorable than an easy to process campaign. We tested a moderated mediation using a sense of guilt to explain the psychological mechanism. In Study 1, 311 US participants from Amazon Mechanical Turk were randomly assigned to one of four conditions: 2 (appeal: social vs. self) × 2 (processing fluency: easy vs. difficult). Participants were presented with an appeal scenario (White & Peloza 2009) and a prosocial campaign to process. The level of lexical processing fluency was manipulated as being easy or difficult to understand (Zhang & Mattila, 2015). As predicted, people rated that they are less likely to volunteer for disfluent campaign with self-benefit appeal ($F(1, 305) = 4.30$, $p = .039$) through marginally increasing feeling of guilt. In Study 2, 197 US participants were randomly assigned to one of four conditions: 2 (appeal) × 2 (processing fluency), and we used the same procedures in Study 1 by changing the sharpness of text and pictures in the campaign (Labroo & Kim, 2009). Further, as predicted, we found that guilt mediates the interaction effect on attitudes (95% CI = [.011, .371]).

4 - Do Consumers Value Identical Improvements in Fuel Consumption and Co2 Emissions of Cars Equally?

Vlada Pleshcheva, Research Assistant, Humboldt University Berlin, Wirtschaftswissenschaftliche Fakultät, Institut für Marketing, Berlin, 10099, Germany, vlada.pleshcheva@hu-berlin.de

The present study investigates how the framing of information on the environmental impact of vehicles affects consumers' preferences and willingness-to-pay (WTP) for identical improvements in a car quality. In online choice experiments, the effects from two metrics (fuel consumption vs. CO2 emissions) and three scales of one metric (CO2 in 0.100 kg/km vs. 100 g/km vs. 10,000 g/100 km) are examined. First, from a technical view, fuel consumption (FC) and CO2 emissions are linearly connected by a constant factor and are thus isomorphic in describing the environmental friendliness of a car. Second, rescaling identical information should not change consumer decisions. However, as this study demonstrates, consumers' perception of and WTP for identical improvements in the car quality vary significantly depending on the framing of information. The study's contribution lies in comparing effects from two measures of the same information, not within one measure (FC or CO2) as in previous research, and in contrasting the investigated metric and scale effects among consumers who prefer either diesel or gasoline vehicles. The estimation accounts for heterogeneity in tastes, environmental attitudes, knowledge, and importance of climate change issues for the respondents. The insights of this study serve to provide guidance for both policy makers and car manufacturers on how to present information on car offers.

■ TA11

Room 606, Alter Hall

Digital Marketing I

Contributed Session

Chair: Gabriela Alves Werb, Goethe-Universität – Wirtschaftswissenschaften, Theodor-W.-Adorno-Platz 4, Frankfurt am Main, 60596, Germany, gabriela.werb@wiwi.uni-frankfurt.de

1 - Quantifying the Impact of Interactive Marketing Feature: Evidence from a "Daily Check-in" Experiment

Tianfu Wang, Purdue University, 3384 Peppermill Dr, Apt 2A, West Lafayette, IN, 47906, United States, GustavTF@gmail.com, Xing Fang

Online retailers traditionally attract customer traffic via advertising, price discount, and other promotional events. In recent years, new interactive marketing features, such as "like" (e.g., Facebook), "check-in" (e.g., Yelp), and "follow" (e.g., eBay) have emerged. Despite the tremendous marketing resources devoted to incentivize such behaviors, little is known about their effectiveness, and if so, what is the mechanism behind them? We utilize a quasi-experiment to answer this question. We collaborate with an online retailer to design and implement a week-long daily check-in event. The customers who visit and "check-in" with the retailer receive loyalty points as a reward each day. The customers who participate in the daily check-in event serve as the treatment group while the customers who do not participate in the event serve as the control group. We compare both the short-term and long-term changes in purchase behavior across the two groups of customers. In the follow-up study, we try to resolve the customer self-selection issue via a randomized field experiment. These results provide the first evidence of the cost-effectiveness of "daily check-in" and explore the mechanism of interactive of marketing features.

2 - Morphing for Consumer Dynamics

Alina Ferecatu, Assistant Professor of Marketing, Rotterdam School of Management, Erasmus University, Burgemeester Oudlaan 50, Rotterdam, 3062 PA, Netherlands, ferecatu@rsm.nl, Gui Liberali

Website morphing automatically changes the "look and feel" of websites to match the cognitive styles of its visitors. Current developments in morphing theory assume that consumers' cognitive styles, and therefore their information needs and preferences, are constant over time. However, changes in their information needs can impact the effectiveness of a morph over time. We propose an algorithm that allows for learning under dynamic information preferences. We account for dynamic decision-making stages, such as when website visitors move from the information-gathering stage to the consideration stage, and into the purchase stage. We characterize the learning of the match between morphs and decision-making stages as a multi-armed bandit problem, which we solve with a dynamic allocation index. We develop a novel dynamic programming algorithm to explicitly model the within-visit trade-off between nudging a consumer through the purchase stages, and risking having her terminate the website visit. We design morphs based on categorization theory, which provides us with substantive support for the choice of morph content and language tailored for early and late stages of the purchase funnel. We report a longitudinal field experiment to establish a proof-of-concept for our method.

3 - Visibility-at-risk: An Approach to Estimate a Firm's Risk of Losing Visibility in Organic Search

Gabriela Alves Werb, Goethe-University Frankfurt, Theodor W. Adorno-Platz 4, RuW-Building, Room 1.236, Frankfurt am Main, 60323, Germany, gabriela.werb@wiwi.uni-frankfurt.de, Christian Doppler, Bernd Skiera

Organic search clicks already constitute the most important source of online traffic for firms in several industries, such that a loss of visibility in organic search may severely affect a firm's ability to generate profits. We propose an approach to estimate a firm's risk of losing visibility in organic search results, with the aim to provide insights into its size, heterogeneity and economic consequences. Half of the firms in our sample of more than 1,000 firms face a 5% probability of losing more than 55% of their visibility within one year. This result suggests that many firms that rely on organic search clicks to drive traffic to their domains have a considerable risk associated with their future profits. Our estimates also reveal that the risk of losing visibility is highly heterogeneous across industries. A backtesting analysis with out-of-sample data suggests that our developed risk measure, Visibility-at-Risk, is a valid measure for the risk of losing visibility in organic search results. Finally, our results outline that changes to a firm's visibility index have significant and prolonged effects on profits. These results have important implications for managers and investors.

■ TA12

Room 745, Alter Hall

Marketing Strategy - Markets & Analyses

Contributed Session

Chair: Ke Li, New Jersey City University, 110 First St, Apt 20J, Jersey City, NJ, 07302, United States, kli@njcu.edu

1 - Optimal Couponing with Required Purchase Quantity

Aharon Hibshoosh, Professor, San Jose State University and Lincoln University, 401 15th Street, Apt 10, Oakland, CA, 94709, United States, rhibshoosh@gmail.com, Uri Ben Zion, Uriel Spiegel

The model describes a common deal routinely offered by Kroger and others. The model is an extension of related coupon rationing models by Ben Zion, Hibshoosh and Spiegel (e.g. BHS 2000). A profit maximizing firm is offering a coupon with a stipulation that every consumer using the coupon must purchase C items of product x. The firm simultaneously optimizes its decision variables: the coupon discount level D and its required coupon purchase quantity C, under nominal rigidity. The profit's C and D elasticities are denoted as eC and eD, and the optimal values as C* and D*, correspondingly. We adhere to our couponing framework where in contrast with the restricted parametric modeling in marketing we assume a general market response function of the decision variables. Furthermore, we model the consumer choice in a commodity space rather than in some spatial framework with separable consumer utilities. As common in couponing modeling we assume marketing to two market segments: a top full price loyal market segment and a lower deal prone one, assuming downward leakage. We identify parsimonious functions of elasticities which, in general, determine the optimal values. For example, we prove that: a) at optimum eD > eC ; b) D* depends only on the gap eD-eC. The optimal coupon shares of segments are simple fractions involving only linear functions of eC and eD. Based on the general results we also develop as private cases parametric results and generate explicit solutions for C*and D*, a rarity in the couponing literature.

2 - When Does More Information Mean Less for Consumers

Xiaoyan Xu, PhD Candidate, National University of Singapore, 21 Lower Kent Ridge Road, Singapore, 119077, Singapore, A0133851@u.nus.edu, Yuetao Gao, Wei-Shi Lim

In some service industries (e.g., credit cards, mobile phone plans, insurance), many consumers do not carry the service plan that best fits their needs. Recently, service-switching infomediaries have entered the market and consumers can locate better service plans by using websites' free service if the infomediaries can reach them. An infomediary is an Internet-based information provider that gathers information about consumers' preferences based on their existing consumption behaviors and recommends service providers to them; however, the choices are restricted to only the service providers enrolled with the infomediary. We examine how provision of information by an infomediary affects service providers' profits and consumer surplus. We find that when a large proportion of the uninformed consumers are not matched with their ideal service, the infomediary profits by adopting a non-exclusive contract to enroll all service providers. In addition, enrolling with the infomediary is a dominant strategy for the service providers. However, they may consequently realize less profit. Furthermore, we show that although the infomediary intends to provide information such that consumers can make a better service choice, consumers are worse off if the reach of the infomediary to uninformed consumers is high. Consumers are better off if the reach is low.

3 - Analyzing Lost Customer Behavior in the Business Analytics Era

Ke Li, Assistant Professor, New Jersey City University, 110 First St, Apt 20J, Jerse City, NJ, 07302, United States, kli@njcu.edu, Anthony C. DiBenedetto, Eric M. Eisenstein

Winning back lost customers has gained more and more importance in businesses since winning back lost customers can recapture lost revenue and at the same time costs much less than acquiring new customers. The extant papers on winback mainly focused on developing strategies to regain customers that were lost during the retention stage only and examine factors such as customer perceptions of fairness, customers' first-lifetime satisfaction through survey, price discounts, service-based win-back offers, and defection reasons on the likelihood of reacquiring these lost customers. In this paper, we explore how customers' experiences, customer engagement and company's touch point in customers' journey during the conversion period and retention period respectively influence customer reacquisition probability within the competitive environment. Different machine learning methods that could be used for winback segmentation are also discussed. Our study helps firms to understand how to apply different winback strategies to different segments of their lost customers in the business analytics era.

■ TA13

Room 746, Alter Hall

Multi – Channel Strategies I

Contributed Session

Chair: Penelope Schoutteet,Vrije Universiteit Brussel, Pleinlaan 2, Brussels, 1050, Belgium, pschoutt@vub.ac.be

1 - Dominant Retailer, Lower Product Quality and Uninformed Customers

Axel G. Stock, University of Central Florida, Dept of Marketing CBA, P.O. Box 161400, Orlando, FL, 32816-1400, United States, Axel.Stock@ucf.edu, Somnath Banerjee

A number of consumer and business reports suggest that slightly lower quality (or feature) variants of products are being sold through dominant and mass retailers, while higher quality variants continue to be sold through specialty and weaker retailers and, customers are uninformed about such differences. We study two intriguing questions based on this phenomenon viz. (1.) why are lower quality-lower priced variants sold primarily through dominant retailers and not the weaker retailers? (2.) why do the weaker retailers or manufacturers not inform customers about these quality differences? Using a game theoretic model, we find that (1.) in a bilateral monopoly of manufacturer and retailer an increase in bargaining power of the retailer leads to a lower product quality in the channel, if quality is non-contractible. Consumer surplus rises, while social welfare follows an inverted-u shaped curve with increase in retailer dominance and the associated decrease in product quality. (2.) The weaker retailer does not have an incentive to communicate its higher quality even if the advertising is costless, if the quality differences are not too high. The motivation for this result is traced to the threat of increased competition in the event of such advertising.

2 - Effects of App Adoption Besides a Mobile Website on Customer Purchase

Huan Liu, PhD Candidate, University of Groningen, Nettelbosje 2, Groningen, 9747AE, Netherlands, huan.liu@rug.nl

The usage of mobile devices during purchase journey is constantly growing. The notable mobile channels are mobile websites (hereafter: m-webs) and applications (apps), which have very similar attributes but also differences. Online retailers can easily expand their business to m-webs instead of apps due to lower investment in m-webs. For example, Chinese retailers can freely offer a WeChat shop, which is a m-web connecting to WeChat Official Account. Is it necessary for such retailers to add an app as another purchase channel? We addresses this question by exploring whether app adoption can stimulate more purchases, and how the purchase change after adopting the app differs across customers with different characteristics (i.e., risk preference, loyalty). We collect data from China and find that customers purchasing through the m-web before, not only are more likely to purchase, but also buy more frequently and buy more in each order after adopting the newly added app than non-adopters. We also find that financial risk-averse customers have a higher order size than risk-seeking customers after adopting the app; while there is no significant differences between performance risk-averse and risk-seeking customers. Customers who are loyalty to the m-web purchase less in each order than non-loyalty customers after adopting the app. This paper contributes to the studies on multichannel and mobile marketing by considering adding a similar channel to an existing channel (compared to adding different channels in most channel addition papers, e.g., adding online websites to physical stores or adding apps to online websites), and by considering real monetary transactions in mobile channels (compared to Xu et al. 2014).

3 - Vertical Integration of Wholesale Functions Among Japanese Manufactures

Tomokazu Kubo, Chuo University, 742-1 Higashinakano, Hachioji-shi, Tokyo, 192-0393, Japan, tomokazu@tamacc.chuo-u.ac.jp

Japanese leading manufactures are likely to vertically integrate wholesale functions so that they control distributors' behavior in marketing channel. Based on transaction cost analysis (TCA) and capability approach, this research proposes a conceptual framework how Japanese manufactures integrate wholesale functions or not. Specifically, it is suggested that human asset specificity and teachability positively related with vertical integration, while outside wholesaler know-how negatively related with vertical integration. Because endogeneity would arise between vertical integration and human asset specific, customization of distribution services are used as an instrumental variable. Empirical analysis shows evidence that the decision on integration of wholesale functions are influenced by TCA and capability factors.

4 - Combining Consumers' Preferences and Attitudes in an Omnichannel Retail World: A Sequential Hybrid Channel and Modal Choice Model

Penelope Schoutteet, Vrije Universiteit Brussel, Pleinlaan 2, Brussels, 1050, Belgium, pschoutt@vub.be, Lieselot Vanhaverbeke

Over the past years, omnichannel retail has been impacting the retail landscape and providing consumers a multitude of channels to buy their products. This study aims to understand how omnichannel retail influences consumer channel and modal choice behaviour. This research entails two parts. Firstly, we adapt our conjoint measurement analysis towards a discrete choice model. Through the conjoint measurement survey, we elicited channel preferences of 825 Brussels' respondents for the following product categories: electronics, fashion and food products. The analysis shows that for the three product categories, consumers prefer a city or local high-street store, above an online store or a store in a shopping mall, to buy their products. Through a Hierarchical Bayes estimation of the attribute importances, we find that for online shopping, respondents consider the delivery cost as the most important attribute. For a store in a shopping mall, travel time is the most important attribute. For food products bought in a high-street, travel time is the most important attribute while for fashion and electronics products, the store's price/quality level is the most important attribute. Secondly, we expand our discrete choice model by including the technology acceptance survey results about attitudes, perceptions, knowledge, and social influences regarding omnichannel technology. The resulting sequential hybrid channel and modal choice model will next be used in simulations to estimate the impact of changes in channel and transport mode choice on the mobility in Brussels and the sustainability of omnichannel retail.

■ TA14

Room 607, Alter Hall

Machine Learning – Dynamic Pricing & Predictions

Contributed Session

Chair: Sebastian Gabel, Humboldt University Berlin, Germany; sebastian.gabel@hu-berlin.de, Artem Timoshenko

1 - Who Does Artificial Intelligence Benefit? An Empirical Analysis of Returns to Smart Pricing Algorithm on Airbnb

Param Vir Singh, Carnegie Mellon University, 309 Marberry Drive, Pittsburgh, PA, 15215-1437, United States, psidhu@andrew.cmu.edu, Shunyuan Zhang, Nitin Mehta, Kannan Srinivasan

Who does AI benefit? We study this question in the context of a smart pricing algorithm launched by Airbnb to help its hosts price their properties better. The tool was launched in Nov 2015 and had been adopted by approximately 30% hosts. Using a difference in difference analysis along with propensity score matching, we first demonstrate that the hosts who adopted the smart pricing algorithm, on average, earned 5% more demand in comparison to hosts who continue to price their properties on their own. These results are robust to a number of robustness checks. Second, we show that the adoption of the algorithm systematically differs significantly across subgroups. More sophisticated hosts are more likely to adopt the smart pricing algorithm. Whereas, naïve hosts who would benefit the most from the adoption of the smart pricing algorithm are less likely to adopt the algorithm. These results reveal that the systematic differences in adoption of AI are widening the divide between the sophisticated and naïve individuals instead of bridging it.

2 - An Intelligent Video Ad Display System

Li Xiao, Associate Professor, Fudan University, Room 513, 670 Guoshun Road, Yangpu District, Shanghai, 200433, China, lixiao@fudan.edu.cn, Min Ding

It is common practice in marketing nowadays to use LED screens to display ads on many occasions, e.g. the digital POS systems in retail stores, digital billboards at bus stops, and video screens installed on the seatbacks in taxis and airplanes, etc. This video ad display system usually shows a set of ads to the viewers, one after another in a predetermined sequence, and then loop back to start from the first ad. The sequence could be random in some cases. Compared with the traditional print ad display system, such system has an obvious advantage of playing multiple ads but using only one space. However, its performance is questionable since it ignores the substantial heterogeneity among people's preferences toward different ads. In this paper, we propose an intelligent video ad display system, which utilizes face-eye stream data, to overcome this problem. The face-eye stream data tracks the facial expression and eye gaze on each frame of a video that records viewer's facial responses when watching an ad. For each frame, the recognized facial expression and detected eye gaze are matched to the corresponding frame on the video ad shown at the exactly the same time. In this way, the system knows what facial expression is in response to what specific element in the ad. By doing this in real time, the system can estimate a viewer's preferences toward ads, then search the ad database, and select and play a new ad next that is more likely to attract this viewer's attention and result in positive attitudinal and behavioral consequences. We tested the proposed system in an empirical study, and demonstrated that our proposed system is able to make reasonably accurate inferences of viewers' preferences toward video ads, which performs better than the state-of-art video ad display system.

3 - Cross-category Product Choice: A Scalable Deep-learning Model

Sebastian Gabel, Humboldt University Berlin, Oderberger Str. 44, Berlin, 10435, Germany, sebastian.gabel@hu-berlin.de, Artem Timoshenko

We predict product choice across the entire assortment of a large retailer. This extends prior research that models choices of individual customers within a single or across a small number of selected product categories. We propose a scalable cross-category product choice model based on a deep neural network which leverages rich market basket data and purchase histories of individual customers. The model first estimates product representations using market basket data. It then combines purchase histories, marketing mix variables, demographics, and additional meta data (e.g., time, store) to predict product choice. Accurately predicting what customers will likely buy on their next shopping trip is the first step towards efficient target marketing. We evaluate the proposed product choice model in the context of a large retailer that operates over 40,000 products across more than 300 categories and handles up to 1,000,000 transactions per day. Individual customers are identified and targeted through the retailer's loyalty card. We illustrate the value of improved product choice prediction in the context of real-time offer engines for the personalized coupons. We evaluate the proposed approach using purchase data, and compare the model to data-driven heuristics and state-of-the-art benchmark methods including Latent Dirichlet Allocation (LDA). Our model achieves higher prediction accuracy and scalability, both in the number of products and the volume of historic purchase data.

■ TA15

Room 603, Alter Hall

Big Data – Promotions

Contributed Session

Chair: Kaushik Jayaram, University of Georgia, Athens, GA, kaushik.jayaram@uga.edu

1 - Content Engineering of Visuals: Drivers of Consumer Engagement on Instagram

Eunhee (Emily) Ko, Emory University, 201 Dowman Drive, Atlanta, GA, 30322, United States, eun.hee.ko@emory.edu, Douglas Bowman

As the marketing power of social media grows, companies have increasingly been employing social networking services (SNS's) as tools to empower their tangible products or intangible assets. Recently, image-based posts have become dominant content in social media, and users create considerable "buzz" around them. Marketers are also tuned to this emerging form of social media post, considering the promotional roles of visual content in social media. The types of visual content created by social media users are boundless, and posting about a brand is one of them; users post, share, and express their feelings and opinions about brands in SNS's. This study investigates the visual aspects of image posts, which are thus far poorly understood in marketing. In particular, the research examines the role of the social media platform as a means of consumers' self-expression, and it seeks to understand the impact of different types of self-expression in image-based posts on user engagement using brand-related social media posts. To find the various self-expression typologies in the brand-related visual content, we incorporate two semantic features from image posts—sentiments and objects—which have barely been investigated in a visual context in marketing. We use 1) a visual sentiment technique based on a convolutional neural network (CNN) pretrained from previous works and 2) an image recognition method based on a CNN with transfer learning. Based on the two semantic features, we first segment the typologies of the brand-related images and then evaluate the effects of different typologies on customer engagement. Implications for research and practice are also discussed.

2 - The Economic Value of Conversational Commerce: A Case Study of Chatbots

Kaushik Jayaram, Doctoral Candidate, University of Georgia, B325, Amos Hall, 610 South Lumpkin Street, Athens, GA, 30605, United States, kaushik.jayaram@uga.edu, Sundar G. Bharadwaj

Conversational commerce pertains to the use of chat, messaging and natural language interfaces to interact between customers and firms. These interactions are carried out using chatbots that are built on Artificial Intelligence (AI) driven technologies such as Natural Language Processing (NLP) and Machine Learning. Chatbots allow the users to interact through two-way conversations real-time on a 24/7 time frame. Chatbots are used by firms for multiple purposes such as providing customer service, financial advice, health tips, etc. A popular marketing application of chatbots is providing personalized product recommendations based on users' requirements and a strong contextual understanding. Other marketing applications include sending relevant real-time promotions, ordering products using chat, etc. While chatbots improve the speed and access to customer interactions, their impact in terms of customer service and firm value are unknown. Specifically, could the use of chatbots lower the cost of customer interactions and/or improve the returns from customer interactions thus impacting firm cash flows? The authors examine this question by exploring the short term and long-term stock market impacts of chatbots launch announcements by US firms across multiple industries. The research also compares the payoff from investing in chatbots for marketing versus other purposes. We find that the mean abnormal returns of using chatbots for marketing is 1.48% that translates to a wealth effect of $247 million in market value. There is no significant returns when firms use chatbots for non-marketing applications. We explain the variance in these returns as a function of chatbot, firm and industry characteristics.

■ TA16

Room 231, Alter Hall

2018 ISMS/MSI Gary Lilien Rehearsals

Rehearsal Session

Thursday, 10:30AM - 12:00PM

■ TB01

Room 32, Alter Hall

Healthcare Marketing: I

General Session

Chair: Sriram Venkataraman, UNC-Chapel Hill, Chapel Hill, NC, 27599, United States, venkats@kenan-flagler.unc.edu

1 - The Effects of Early and Late Stage Collaboration on Pharmaceutical Product Development: Evidence from FDA Trials

Ahmed Khwaja, University of Cambridge, Cambridge Judge Business School, Trumpington Street, Cambridge, CB2 1AG, United Kingdom, a.khwaja@jbs.cam.ac.uk, Rebeca Mendez-Duron

The decision of when to initiate a collaboration between firms in developing new products can be crucial, i.e., early or late stage collaboration can have potentially very different effects. There is a vast literature on understanding the various determinants of collaboration. However, the effects of its timing remain much less understood especially for the pharmaceutical industry, where such timing is a critical decision. Using a unique panel dataset constructed from multiple sources that documents the outcomes of all FDA trials from 2000 to 2011 we examine the effects of early and late collaboration. In particular, we study: (1) Whether early (Phase II) or late (Phase III) stage collaboration is more effective? (2) If there are any prolonged spillover effects of these two types of collaboration? (3) What are the features of partnerships that make early or late collaborations more successful? We find that early stage collaboration is more beneficial but also comes with a cost of prolonging the duration of early stage trials. This also has longer term spillovers as accumulated early stage collaboration experience improves the chances of success in future trials. In successful early stage collaborations firms seek partners with wider scope and experience with drug classes and therapeutic conditions. However, in successful late stage collaborations firms seek partners that are more focused with narrow experience in the relevant drug class. Overall, early stage in contrast with late stage collaboration experience is more critical to a firm's short run costs and long run success. Our findings also indicate that collaboration involves a trade-off between upfront short run costs and long term pay-offs. Thus, from public policy and managerial strategy perspectives collaboration should be viewed as an ``investment" decision. Provided a firm ``invests" strategically in its collaboration decisions these can create a source of competitive advantage increasing and sustaining its chances of long term success.

2 - Obesity, Health Conditions and Food Purchases

Nitin Mehta, University of Toronto, Toronto, ON, Canada, Nmehta@Rotman.Utoronto.Ca, Matthew Osborne, E. Wang, T. Jaenicke

In this paper, we investigate the impact of taxes on 'unhealthy' categories on consumers' obesity levels. We were recently granted access to a novel survey dataset on health conditions that is maintained by the US Department of Agriculture. The survey, which is conducted annually, covers issues such as health and obesity of all members of each household in the sample for a period of five years, and was administered to panelists in the Nielsen Homescan consumer panel. In the Homescan panel data, we observe the food purchases of each household in all categories in the store for each shopping trip over the same time period as the survey data. Since this survey data is linked to the Homescan panel, we can observe food purchases of panelists and link food purchases to measures of panelist obesity levels. We link the market mix variables of categories (specifically prices) from the Homescan data set to the annual obesity levels of consumers observed in the survey data as follows. Using the Homescan data, we develop a multi-category model of consumers' purchases across all food products in the store, which links the marketing mix of all categories in the store to their purchases. And using the survey data, we model the consumer's annual BMI index as a function of their annual purchases in each of the food categories. Putting the two links together links the market mix variables of categories to the obesity levels of consumers. This framework allows us to address the following two substantive issues. First, is to examine the impact of added taxes on 'unhealthy' food products on consumers' obesity levels. And second is to identify the product categories that are the best ones to tax in terms of decreasing obesity levels. To deal with the first issue, we run a counterfactual in which we induce a permanent price increase in the focal category (since an increase in taxes in the category implies an increase in its price), then examine it impact on the demand of all food products in the store (depending on the extent to which they complements/substitutes of the focal category), and then examine the impact of the purchases across all categories on obesity levels of consumers. To deal with the second issue, we run the counterfactual across all categories and identify the category in which the tax increase yields the highest decrease in obesity levels. We are currently estimating the model. Once completed, I believe it will.

3 - Technological Outsourcing May Not Fill the Gap: Investigating Reactive Licensing in the Pharmaceutical Industry

Manuel Ignacio Hermosilla, Johns Hopkins University, 100 International Dr, Baltimore, MD, 21201, United States, mh@jhu.edu

Technological innovators routinely strengthen their new product pipelines by outsourcing developing products from other companies. We argue that this strategy may backfire if carried out reactively. That is, if the firm uses outsourcing to fill the gap left by the failure of other products in its pipeline. In these cases, urgency may make the firm more vulnerable to the asymmetric information problems that plague markets for developing technologies. Supporting evidence from the pharmaceutical industry is presented. Outsourcing is operationalized by drug candidate licensing contracts in this context. Exploiting quasi-experimental variation in pipeline gaps, we show that: (i) large pharmaceutical firms engage in reactive licensing, (ii) relative to candidates licensed proactively, those licensed reactively are more likely to fail post-licensing development, and (iii) financial markets do not “distinguish” reactive from proactive licensing on a systematic basis.

4 - Service Performance and Customer Reallocation: Customer Urgency, Rationing, and Cherry Picking

Tae Jung Yoon, University College London, 604 Duckman Tower, 3 Lincoln Plaza, London, E14 9BL, United Kingdom, t.yoon@ucl.ac.uk

In this paper, I investigate three underlying mechanisms about why quality information disclosure may not be beneficial to customers in the service industry where sellers are often capacity-constrained. First, customers who are urgent and cannot wait their turns may be matched to low quality sellers. Second, if prices are regulated in the market, proactive seller rationing can reallocate unprofitable customers to low quality sellers because high quality sellers often face higher demand after information disclosure and thus can strategically seek out profitable consumers. Third, if disclosed quality measures depend on customer characteristics, sellers can cherry-pick customers who do not ruin their quality measures. Using an exogenous policy shock to disclose healthcare providers’ performance, I estimate structural models and disentangle these three mechanisms. Then I find that quality information disclosure can decrease customer welfare mainly because less urgent customers choose high quality sellers ahead of more urgent customers.

■ TB02

Room 33, Alter Hall

Digital Economy II: Customer Interactions and Product Delivery

General Session

Chair: Ron Berman, The Wharton School, Philadelphia, PA, 19104-6340, United States, ronber@wharton.upenn.edu

1 - Balancing Service Speed and Agent Utilization for an Online Insurance Platform

Andres I. Musalem, University of Chile, Beauchef 851, Santiago, 8370456, Chile, amusalem7@gmail.com, Marcelo Olivares, Daniel Yung

In this research, we study an online platform that sells car insurance policies offered by different companies. After a customer visits the platform’s website and enters vehicle, demographic and contact information, the customer is shown several car insurance quotes. Customers who do not purchase online are then contacted via telephone by the platform’s call center agents. Using data from this platform and estimating econometric models with instrumental variables we find that as the time that it takes the platform to contact a customer increases, the probability that the customer purchases one of the insurance policies decreases. This suggests that the platform might gain from improving the speed at which it contacts its website visitors. One approach to accomplish this goal is to increase the call center capacity by hiring more agents. However, doing so reduces their utilization and may hence reduce the compensation obtained by each agent. We empirically find that a reduction in an agent utilization translates a higher probability of the agent quitting her job, thus reducing the average experience of the call center agents. Since more experienced agents exhibit a better performance at converting quotes into purchases, this creates a tradeoff for the platform where on the one hand a greater call center capacity leads to better speed of contact but also reduces the incentives for experienced agents to keep their jobs at the platform. In this paper, we empirically quantify this tradeoff and provide guidelines in terms of how these capacity decisions should be made.

2 - Shipping Fees and Product Assortment in Online Retail

Donald Ngwe, Harvard Business School, Boston, MA, 02163, United States, dngwe@hbs.edu, Chaoqun Chen

We seek to measure how consumers respond to value-contingent free shipping incentives and how online retailers can use this information to design optimal shipping policies that work together with pricing and product assortment. Using historical sales data from an online fashion retailer, we document model-free evidence of purchase patterns around minimum order requirements for free shipping. Orders tend to bunch just over the free shipping minimum order value, with consumers “topping up” purchase baskets by choosing higher priced or additional items. We build a demand model that characterizes these purchase patterns in an environment with multiple product categories. This model enables us to measure sensitivity to product prices and shipping fees separately. We use this model to simulate demand under counterfactual scenarios, including alternative shipping fee schedules and product assortment decisions. We find that firms can substantially improve performance by jointly determining product attributes and shipping policies.

3 - Scarcity Rents in Car Retailing: Evidence from Inventory Fluctuations at Dealerships

Ayelet Israeli, Harvard Business School, Morgan Hall 177, Soldiers Field Road, Boston, MA, 02163, United States, aisraeli@hbs.edu, Florian Zettelmeyer, Fiona Scott Morton, Jorge Silva-Risso

Price variation for identical cars at the same dealership is commonly assumed to arise because dealers with market power are able to price discriminate among their customers. In this paper we show that while price discrimination may be one element of price variation, price variation also arises from inventory fluctuations. Inventory fluctuations create scarcity rents for cars that are in short supply. The price variation due to inventory fluctuations thus functions to efficiently allocate particular cars that are in restricted supply to those customers who value them most highly. Using transaction level data on new car sales across the US between 1998 and 2014, we find that a dealership moving from a situation of inventory shortage to an average inventory level lowers transaction prices by about 0.5% ceteris paribus. Shorter resupply times also decrease transaction prices for cars in high demand. For traditional dealerships, inventory explains 50% of the combined inventory and demographic components of the predicted price. For so-called “no-haggle” dealerships, the percentage explained by inventory increases to 62%.

4 - Using Observational Data to Increase Accuracy in Marketing Experiments

Ron Berman, The Wharton School, University of Pennsylvania, 700 Jon M. Huntsman Hall, Philadelphia, PA, 19104-6340, United States, ronber@wharton.upenn.edu, Elea McDonnell Feit

Recent research analyzing advertising experiments has shown that simple randomized controlled trials designed to measure the average treatment effect across all ad viewers are often underpowered and that unreasonably large samples are required to prove that a campaign is profitable. In this paper we show that if the advertiser can rank viewers based on their responsiveness to advertising, then the power to detect advertising response can be substantially improved by stratifying viewers into high- and low-responsiveness groups and using a post-stratified estimator of the advertising effect. Analytically, we show that past observational data about consumers can be used to rank consumers by their treatment effects, even if the past exposures were not-random. Thus firms with prior panel data on customer response to advertising (e.g. CRM data) can use this observational data to increase the power of their holdout experiments. We apply the stratification approach to re-analyze a direct mail experiment conducted at large specialty retailer. We estimate prior responsiveness for each customer based on previous CRM data describing catalog mailings, emails and transactions for individual customers and then use this information to stratify customers. In several experiments, the stratified analysis improves the accuracy of the estimator enough to determine that a campaign was effective when it was previously thought otherwise.

■ TB03

Room 34, Alter Hall

Marketing-Operations Interface

General Session

Chair: Jiong Sun, Purdue University, West Lafayette, IN, 47907, United States, jiongs@gmail.com

Co-Chair: Juncai Jiang, University of Texas-Dallas, Dallas, TX, 75252, United States, jxj072000@utdallas.edu

1 - The Impact of Wal-mart's Sales Information Disclosure on Supplier Performance

Juncai Jiang, Virginia Tech, Blacksburg, VA, United States, jcjiang@vt.edu, Chenxi Zhou, Jiong Sun

This paper investigates whether and how the stoppage of a dominant retailer's sales information disclosure affects supplier performance. Specifically, we focus on the monthly Comparable Store Sales (CSS) index that represents the retail sales growth rate for stores that have been opened up for at least one year, and empirically investigate the change in suppliers' financial performance when Wal-Mart withdraws monthly CSS. We found that the cessation of Wal-Mart's monthly CSS disclosure is associated with negative supplier abnormal returns. However, not all suppliers are hurt equally: the negative financial response is more pronounced for suppliers with higher sales volatility and suppliers who served Wal-Mart only (compared with those who supplied to both Wal-Mart and Target Inc.). Finally, the withdrawal of Wal-Mart monthly CSS is also associated with higher supplier inventory volatility for those who served Wal-Mart only.

2 - Partial Vertical Ownership in the Presence of Downstream Competition

Jiong Sun, Purdue University, 812 W State St, West Lafayette, IN, 47907, United States, sun664@purdue.edu, Fang Fang, Baojun Jiang

Partial vertical ownership plays an important role in aligning the incentives of firms involved in vertical relationships. This paper examines the impacts of partial vertical ownership on pricing decisions, firm profitability, and consumer surplus. We show that intense competition may hurt consumers when the acquiring firm is a low-value firm.

3 - Return Policy and Product Design in Direct and Indirect Distribution Channels

Buqing Ma, University of Science and Technology of China, Hefei, China, mabuqing@illinois.edu, Lu Hsiao, Yunchuan Lin

We study firms' return policy and product quality design in direct vs. indirect distribution channels. We find that contrary to conventional wisdom, sellers may offer less lenient return policy in direct distribution channels and we also characterize the market and cost conditions under which either channel offers misaligned product quality and return policy.

■ TB04

Room 35, Alter Hall

Research on Consumer and Firm Behavior

General Session

Chair: Yufeng Huang, University of Rochester, Rochester, NY, 14627, United States, yufeng.huang@simon.rochester.edu

1 - Market Segmentation and Managerial Effort

Kosuke Uetake, Yale School of Management, 165 Whitney Avenue, Room 5477, New Haven, CT, 06520, United States, kosuke.uetake@yale.edu, Kevin Williams

We document significant heterogeneity in pricing strategies both within and across firms using novel retail panel data. Some categories exhibit follow the leader strategies but there is also considerable variation in probability of response and response time across products and categories. We present a model of behavioral firms where price adjustments are costly and firms are subject to inattention. We use a moment inequalities estimator to bound managerial costs. With the model estimates, we decompose the role of inattention and effort in rationalizing observed price adjustments. Finally, our counterfactual simulations study the occurrence of uniform pricing and quantify its welfare implications in oligopoly.

2 - Price Salience and Product Choice

Sarah Moshary, University of Pennsylvania, Philadelphia, PA, United States, moshary@econ.upenn.edu, Tom Blake, Kane Sweeney, Steven Tadelis

We study the effect of price salience on product choice along two dimensions: whether a good is purchased and, conditional on purchase, the kind of good purchased. Consistent with our theoretical predictions, we find that making the full purchase price salient to consumers reduces both the quality and quantity of goods purchased. The effect of salience on quality accounts for at least one-third of the overall revenue decline.

3 - A Simple and Robust Estimator for Discount Factors in Optimal Stopping Dynamic Discrete Choice Models

Oeystein Daljord, University of Chicago, Chicago, IL, United States, Oeystein.Daljord@chicagobooth.edu, Denis Nekipelov, Minjung Park

We propose a simple two-step estimator for the discount factor in a class of dynamic discrete choice models. The estimator follows from a constructive identification result and has an intuitive interpretation: it recovers the discount factor as the sensitivity of current period choice probabilities to shifts in the continuation values. The estimator is derived as the solution to a single well-behaved moment condition which is linear in the discount factor and is independent of the utility function. The estimator is therefore easy to implement, computationally light, and in contrast to existing estimators, robust to biases from finite sample approximations to the unknown utility function. We apply the estimator to data on mortgage defaults under an identifying assumption of time homogeneity of the utility function. We compare the performance of the proposed estimator to alternative two-step estimators that jointly estimate the discount factor and the utility function. The results show that our proposed estimator's robustness to finite sample approximation bias and its computational ease do not necessarily come at material expense of precision.

4 - Retail Competition with Online Shopping

Yufeng Huang, University of Rochester, Rochester, NY, 14627, United States, yufeng.huang@simon.rochester.edu, Bart Bronnenberg

How does online shopping impact spatial competition in the retail industry? Using large individual-level panel data from the Dutch retail apparel industry, this paper directly measures the diversion ratio between retailers in their brick-and-mortar and online channels across a variety of retail formats. We find that online shopping captures high-value customers, intensifies competition between retailers but only through expanding consumer choice sets, and is complementary to the brick-and-mortar channel within a retail chain.

■ TB05

Room 232, Alter Hall

Panel Discussion on Digital Marketing Applications of AI and Deep Learning II

Invited Session

Chair: Jing Peng, University of Connecticut, Storrs, CT, jing.peng@uconn.edu, Raghuram Iyengar, Kartik Hosanagar

1 - Panel Discussion on Digital Marketing Applications of AI and Deep Learning II

Moderator: Xueming Luo, Temple University, 1801 Liacouras Walk, Philadelphia, PA, 19122, United States, luoxm@temple.edu

AI and DL algorithms will leverage big and rich data like sentiment, image, video, and diverse subtleties of human interactions in one end-to-end process, not captured by traditional marketing. Empowered by deep neural networks, new marketing applications in the industry are astonishing (academic works are lacking): smart chatbots with personality, consumer classification and unmet needs detection, user preference discovery and recommendation, social semantics and personalized content curation, digital fraud and data breaches prevention, intelligent customer service and ad targeting, omnichannel marketing and dynamic pricing, and autonomous retailing and platform ecosystems.

Panelists

Catherine Tucker, MIT, 1 Amherst Street, E40-167, Cambridge, MA, 02142, United States, cetucker@mit.edu

Anindya Ghose, New York University, New York University, New York, NY, 10012, United States, aghose@stern.nyu.edu

Puneet Manchanda, University of Michigan, Ross School of Business, Ann Arbor, MI, 48109-1234, United States, pmanchan@umich.edu

Carl F Mela, Duke University, Fuqua School of Business, Box 90120, Durham, NC, 27708-0120, United States, mela@duke.edu

■ TB06

Room 234, Alter Hall

Advertising and Effectiveness

Contributed Session

Chair: Jing Peng, University of Connecticut, Storrs, CT, jing.peng@uconn.edu, Raghuram Iyengar, Kartik Hosanagar

1 - Exploring Whether the Lifting of the Hedge Fund Advertising Ban has Resulted in Smarter Investments

Navid Mojir, Harvard Business School, Morgan Hall 141, Soldiers Field, Boston, MA, 02163, United States, nmojir@hbs.edu, Andrew Sinclair

The ban on advertising in the hedge fund industry, going back to the Securities Act of 1933, was recently lifted as part of the Jumpstart Our Business Startups Act (i.e. the JOBS Act) of 2012. While opponents of the JOBS Act argue that poor-performing hedge funds would take advantage of it by targeting less-sophisticated investors, its proponents argue that in a market largely considered as a B2B market - with most of the investors being large sophisticated institutions - allowing advertising would reduce search cost for investors and improve the allocation of funds in the market as a whole. To assess these arguments, we combine data on hedge funds from multiple sources, including Lipper TASS database, Form ADV from SEC, and the Wall Street Journal. Taking advantage of the fact that the JOBS Act affects only US-based investors, we use a difference-in-difference strategy to explore the effects of the JOBS Act. We find that: i) Hedge funds in fact do respond to the lift of the advertising ban by reducing their use of "traditional" publicity measures. ii) The JOBS Act has resulted in an increase in fund flows to hedge funds. Interestingly, the media is playing a more important role in increasing fund flows to hedge funds after the JOBS Act. iii) The lift of the advertising ban has resulted in investors paying more attention to more salient but misleading predictors of performance when making investment decisions (i.e. performance-chasing).

2 - Automation of Dynamic Marketing Attribution Models

Harpreet Singh, Kvantum Inc., 5188 Selma Avenue, Fremont, CA, 94536, United States, harpreet.singh@kvantuminc.com, Prasad Naik, Shilpi Sharma

Marketing performance tracking and optimization can be modeled as a non-linear, dynamic problem solved through ensemble Kalman filters. The key challenge in a practical marketing mix setting is to be able to initialize the Kalman filter. The use of BFGS or EM type of algorithms does not provide robust solutions when estimating the model's variance parameters. Applying MCMC techniques combined with Kalman filters, we have developed a robust reliable method that avoids manual tinkering of model estimation, thereby enabling significant automation. This method can be further extended and made computationally robust through multiple banks of filter ensembles. Our team has successfully deployed these robust innovations in real world applications for multiple CPG & Retail companies globally. We will present our methods and applications that significantly reduce computational times, thereby empowering brand managers towards agile decision-making.

3 - How Effective is Product Placement as a Marketing Tool?

Simha Mummalaneni, University of Washington, Foster School of Business, University of Washington, Seattle, WA, 98195-3226, United States, simha@uw.edu, Pradeep Chintagunta, Sanjay K Dhar, Yantao Wang

Product placement provides a way for brands to reach consumers in a more subtle way than through traditional advertising. We use data from both traditional advertising and product placement on television shows to compare how both approaches affect consumer demand for brands in the soda, diet soda, and coffee categories. Our approach is to estimate a logit demand model using store-level sales data, while accounting for heterogeneity in consumer preferences and response parameters across markets. Estimates from this model indicate that product placement is generally effective, but that the elasticities are small: average short-term elasticities are around 0.01 for the major brands in the data, which is lower than the estimated elasticities for traditional TV advertising but on the same order of magnitude. However, there is a significant amount of heterogeneity in elasticities across categories, brands, and geographical markets; in the coffee category and for Diet Coca-Cola, we find that product placement is more effective than traditional TV ads.

4 - A Novel Approach to Attribution in Decisions Influenced by Multiple Sources

Jing Peng, University of Connecticut, 2100 Hillside Road, Unit 1041, BUSN 368, Storrs, CT, 06269, United States, jing.peng@uconn.edu, Raghuram Iyengar, Kartik Hosanagar

Consumers often make decisions under the influence of multiple sources (e.g., promotions, ads, and friends) and it's important for managers to identify the contribution of each source in the decision process. Despite the obvious managerial implications of the multi-source attribution problem in consumers' decision-making process, there is limited past research primarily due to the lack of a suitable methodological framework. In this paper, we propose a general reduced-form regression model that can be easily applied to various kinds of multi-source attribution contexts. The proposed model is an extension of the popular proportional hazards model, in the sense that it allows the cause of an event to be multiple sources. Our model has several advantages as compared to past modeling efforts in multi-source attribution. First, the model does not speculate on the contribution of each channel apriori, but lets the data automatically determine the contribution of individual channel based on its characteristics. Second, it is easy to use and interpret as compared to structural-form models for attribution, and more rigorous as compared to previous rule-based attribution methods. Third, it provides unbiased estimates even if only part of the sources contributes to the conversion of consumers. We demonstrate the effectiveness of our model using both simulated and real-world datasets. Our model has implications for marketers in several areas, especially multi-channel advertising and social media marketing.

■ TB07

Room 237, Alter Hall

Retailing II

Contributed Session

Chair: Byungkee Min, PhD Student, Syracuse University, 721 University Avenue, Syracuse, NY, 13244, United States, bmin100@syr.edu

1 - A Hidden Side of Consumer Grocery Shopping Choice

Aidin Namin, Assistant Professor of Marketing, Loyola Marymount University, One LMU Drive, MS 8395, Los Angeles, CA, 90045, United States, aidin.namin@lmu.edu, Yashar Dehdashti

One of the important decisions which grocery stores' managers deal with, mostly on a daily basis, is exercising better control over store traffic on different days of the week. This issue may, then, be reflected in better handling of pricing, promotions, display, and layout decisions in the store. This study analyzes and identifies hidden classes of grocery store customers and their choice of items purchased on a grocery store trip on different days of the week. Following the literature, the three major groups of grocery shopping products are investigated in this research; these are food/drink, cleaning, and personal care. Using a rich U.S. grocery store scanner dataset, commonly purchased pair of products from each group of grocery products are selected and examined. Employing an advanced latent class analysis technique, i.e., Finite Mixture Modeling, latent classes (i.e., segments) of customers, their sizes, and customers' choice of grocery items on different days of the week are revealed and empirically validated. The developed model controls for consumer unobserved heterogeneity and accounts for inclusion of demographic variables which guide the mixing probabilities. Major findings indicate that there are two largely different-in-size latent classes for the food/drink, two relatively similar-in-size for the cleaning, and three different-in-size for the personal care group. For each latent class, descriptive demographics and buyers' choices on different days of the week are clearly identified. Unveiling such hidden patterns has meaningful managerial implications and sheds light on marketing mix, store traffic management, pricing, and promotion managerial decisions made by retail managers.

2 - Consumer Trust and Online Payment Options: Determinants of E-commerce in the Least Developed Countries

Mohamed Muse Hassan, Student, Ritsumeikan Asia Pacific University, Minamitateishi, Ikku 5-5, Yamaguchi Apartment, No. 1, Room 720, Beppu, 874-0839, Japan, mmbariise01@gmail.com

The behavior of consumers in the least developed countries (LDCs) is different than the behavior of consumers in USA or Europe, mainly due to the cultural, social, and economic contexts (Akman & Rehan, 2014). Therefore, this study investigates the impact of consumer trust and online payment options available on the awareness level and perception of e-commerce, and propensity to shop online among consumers in the least developed countries, taking Somalia as a case study since the country has achieved the second highest Internet growth in Africa after Democratic Republic of Congo between 2000 and 2017 (ITU, 2017). We developed a model with five constructs, and empirically tested the model with 500 respondents. The paper employs a survey design approach, and 500 questionnaires were distributed with 78 percent completion rate. The main findings of the study indicate that the support of mobile payment option by the e-retailers is a critical factor in Somalia as one-third of the population has mobile bank accounts, compared to less than 10% who use traditional bank methods. The study also found that awareness of e-shopping is very low, and Somali people have mixed reactions toward the perception of online shopping as this is still a new endeavor in its infancy stage. Instead, Somalis prefer cash on delivery (COD) method. The main conclusion is that Somalis would embrace e-commerce if a mobile option is allowed as part of the payment options available. The paper concludes with a discussion of the managerial implications of the study.

3 - Optimal Return and Re-sale Policies for E-tailers

Byungkee Min, PhD Student, Syracuse University, 721 University Avenue, Syracuse, NY, 13244, United States, bmin100@syr.edu, Eunkyu Lee

Due to the limited observability of product and uncertainty of product fit with consumer preference, e-tailers are encountering a large number of product returns. Combined with the widespread lenient return policies, the skyrocketing returns volume is triggering significant cost issues for e-tailers. Meanwhile, some customers have started to complain that e-tailers are selling previously returned goods as new products, even when the consumers can detect it is not truly new due to imperfect packaging. In a profit-maximizing firm's perspective, it can decide to re-sell non-defective returns. However, e-tailers should keep in mind that such re-selling practice might affect the online consumer behavior and produce adverse effects for the firm. The purpose of this study is to identify the optimal return and re-sale policy for e-tailers when re-selling returned goods is allowed. This paper develops an analytical model taking into account the current e-commerce environment, and seeks to identify optimal strategies for better product returns management. Our initial results indicate a significant impact of category-specific market environment and inventory salvage value on the firm's optimal choice of pricing and return policies.

■ TB08

Room 238, Alter Hall

CB - Social Influences

Contributed Session

Chair: Qin Zhang, Pacific Lutheran University, 12180 Park Avenue South, Tacoma, WA, 98447, United States, zhangqc@plu.edu

1 - Contagion of the Competitive Spirit: The Influence of a Competition on Non-competitors

Vincent Mak, Cambridge Judge Business School, University of Cambridge, Trumpington Street, Cambridge, CB2 1AG, United Kingdom, v.mak@jbs.cam.ac.uk, Raghabendra KC, Marcus Kunter

From customer contests to innovation awards, competitions are ever-present in social life. The recent rise in gamification strategies, in areas such as marketing and crowdsourcing, further popularizes attempts to motivate people by engaging them in competitions. However, such initiatives may not always induce full or majority participation among the target population: it is typical in a competition that the competing individuals are far outnumbered by people who do not participate in it but are aware of it. We report a series of experimental studies that investigate the influence of a competition on non-competitors who do not participate in it but are aware of it. Our first study is a large-scale field experiment involving pay-what-you-want entrance at a German zoo (N = 22,886). We find that customers who were aware of a competition over entrance payments, but did not participate in it, paid more than customers who were unaware of the competition - establishing the presence of the contagion effect. The second study finds further confirmatory evidence for the effect in a controlled laboratory setting. The third study eliminates alternative explanations and necessitates the need for competition for the contagion effect to occur. The fourth experiment provides further confirmatory and process evidence for the effect, showing that it is driven by heightened social comparison motivation due to mere awareness of the competition. Moreover, we find evidence that the reward level for the competitors could moderate the contagion effect on the non-competitors. Even if an individual does not participate in a competition, their behavior can still be influenced by it; and this influence can change with the characteristics of the competition in an intriguing way.

2 - Roles of Social Identity, Financial Leverage, and Digital Access on Households' Spending Behaviors on Education: Insights From a Sub-saharan Country

Debu Talukdar, Professor, University at Buffalo, 215 E Jacobs Management Center, Buffalo, NY, 14260, United States, dtalukda@buffalo.edu

The critical role of education in our contemporary society can hardly be exaggerated. For an individual, education is often the key to better employment and economic security. From an aggregate perspective, educational attainments of its people have huge positive externality effects on the quality of a country's human capital and thus on its long-term economic development. Not surprisingly, worldwide annual spending underlying consumption of educational services runs into trillions of dollars. Given its pivotal social and economic role, research insights into factors affecting spending on education are of keen interest to both education providers and policy makers. However, data availabilities have meant that research has mostly focused on public spending by governments. In contrast, rigorous research on private spending behavior by households remains quite limited. In fact, it is practically non-existent for African countries, even though it is here that education is currently poised to generate the most positive externality for the society. The goal and contribution of our study is to address this conspicuous research gap in the literature. Specifically, using the World Bank's data from a statistically representative survey of nearly14,000 urban households in Kenya, our study sheds systematic insights into the key determinants of household decisions on whether and how much to spend on education. We present novel findings into the roles of social identity, financial leverage, and digital access. Of particular interest are the roles played by the educational attainments of parents as well as the genders of children within a household. We discuss how and why do these roles occur, and how they can inform the broader issues faced by families, providers, and regulators.

3 - Adoption Intention of Kidney Patients for E-health Device – Mediating Effect of Social Capital

Fang Chi Chang National Chung Hsing University, Taichung City, Taiwan, rtyufj852@gmail.com, Ming Chih Tsai, Shiau-Chi Lin, Yi Shin Chen

Internet of things (IoT) has increasingly become new solutions across sectors. As the technology incessantly evolved, customer adoption becomes essential for success. In essence, IoT involves multiple-players in operations. Social issue is significant in affecting technology adoption, but it is yet well discussed in extant innovation studies. By integrating theories of social institution, social capital and technology acceptance model, this study develops an analytical model for assessing patient behavior of adopting e-health device. Taiwanese kidney patients (totally 3.2 million, ranked as 1st in terms of medical resource consumption) adopting e-self-heath control devices providing on-line health information for interaction with medical physician are targeted for empirical study. The model consists of 7 constructs investigating the social influences of kidney patient on adopting the e-health device, where social capital between patient and physician (p/p) is treated as a mediating variable and treatment length as a moderating variable. Totally 221 valid samples classified into two treatment length groups are collected through face-to- face interview with the aids of a teaching hospital in central Taiwan. The result indicates that the adoption behaviors of the kidney patients vary by treatment length. For the long-time patients, the e-health care may result in excessive social capital and thus reduce the adoption intention. Conversely the new patients would adopt the e-device as with the great benefit of increasing the p/p social capital. The study result provides important information helping hospital improve p/p social capital and the IoT developers justify marketing strategy.

4 - The Neighborhood Effect in Charitable Giving

Qin Zhang, Assistant Professor of Marketing, Pacific Lutheran University, 12180 Park Avenue South, Tacoma, WA, 98447, United States, zhangqc@plu.edu, Sang-Uk Jung

We propose a spatial autoregressive model to investigate the neighborhood effect on consumers' charity giving behavior. The empirical study uses a dataset that contains donation information of 946 consumers to a single charity organization over five years in the North Island of New Zealand. The results show a significant positive neighborhood effect on the amount of donation. This indicates that consumers' donation behaviors to a charity are interdependent and their decisions of how much to donate are influenced by others in their social network. This finding has implications on marketing strategies for non-profit organizations and suggests that a geographically concentrated approach is likely to solicit more donation than direct effort on individual consumers.

■ TB09

Room 239, Alter Hall

Personalization, Engagement & Choice

Contributed Session

Chair: James Dearden, Lehigh University, Bethlehem, PA, United States, jad8@lehigh.edu

1 - A Personalization Field Test From Industry

Richard Loa, Canadian Broadcasting Corporation, 250 Front St W,, Toronto, ON, Canada, richard.loa@cbc.ca

The Canadian Broadcasting Corporation (CBC) is performing an experiment to prolong session extension while delivering utility to the Canadian. The mechanism for delivering the utility is providing a list of reading recommendations on the CBC search page independent of search engine results. In this session we will briefly touch upon the motivation of the experiment, experiment design, results of the experiment and next steps the CBC plans to take after knowing what they know now.

2 - User Designed Products and Their Value to New Ventures

Miriam Lohrmann, GGS (German Graduate School of Management and Law), Bildungscampus 2, Heilbronn, 74076, Germany, miriam.lohrmann@ggs.de, Tomas Bayon

Across different industries, new ventures, like Threadless, mymuesli, and 5 CUPS and some sugar, have established their companies based on user designed products. Focusing on low-complexity products, these companies actively integrate their customers in the innovation process, are closer to their customers' needs and wants, and signal that potential customers are interested in their company. Prior research has shown that companies introducing low-complexity products, designed by users, are able to increase customer purchase intention and have lower failure rates than those utilizing professional designers. However this effect has been rarely discussed in a new venture context. The introduction of valuable and needed products is crucial for new ventures to enhance customer cognitive legitimacy (CCL), i.e. the customer's curiosity about the company and the product, their belief in the future existence, and the management's competence, and become established. Therefore, this research focuses on the manner in which potential customers respond to the existence of low-complexity products designed by users and on the mediating effect of CCL in a new venture context. Moreover, since positive recommendations lead to positive cognitions that will decrease the customer's uncertainty and establish confidence in the product, we suggest that positive word of mouth (WOM) will intensify the mediating effect of user designed products on customer cognitive legitimacy. We test our theory in an experimental setting, by using a 2 (user designed vs. design by designers) x 2 (positive WOM x no WOM) between-subjects design. We provide important insights to new ventures that will enhance their chance to survive.

3 - Visual Distraction as a Measure of Engagement

Moran Cerf, Professor, Kellogg School of Management, 2001 Sheridan Road, Evanston, IL, 60208, United States, informs@morancerf.com

The level of consumers' engagement with marketing communications, as well as with products and services such as television shows and movies, is attracting increased interest from marketers. Consumers who are more highly engaged can react to a communication more positively, become more loyal, and place a higher value on products. However, measuring engagement has proved challenging. Using surveys can create researcher and interviewer bias. Furthermore, consumers may not be conscious of how engaged, or disengaged, they are with communications or products, and so cannot provide useful self-report information. Finally, halting the experience to ask people to reflect on their engagement stands to interfere with the immersion itself, making the self-report flawed. Methods such as fMRI or EEG can address some of these issues given that they are measuring the experience without interfering with it, but those methods are expensive and intrusive, and sample sizes are typically limited. This research proposes a new method for measuring engagement, which proposes that engagement is negatively related to consumer's tendency to be distracted. Specifically, consumers are less likely to be distracted while viewing a communication or visually based product such as a movie. We placed small visual distractors in a participant's visual field while they were viewing content and used eye-tracking to determine their tendency to move their gaze towards the distractor. We tested this method in two experiments involving clips from a dramatic television show and from a sporting event. For each clip, we manipulated the presentation of the content to have relatively high, versus low, engagement, and then compared the tendency of viewers in each condition to move their gaze towards the distractors. We find that the tendency to be distracted is related to the level of engagement.

4 - Strategic Manipulation of University Rankings, the Prestige Effect, and Student University Choice

James Dearden, Lehigh University, Bethlehem, PA, United States, jad8@lehigh.edu, Rajdeep Grewal, Gary Lilien

We develop a multi-period theoretical model to characterize the relationship between a publication that ranks universities and the target audience for that ranking: prospective students who might view the ranking and use it to help decide which university to attend. We suggest that published rankings not only o er information about the objective quality of universities, but also have an e ect on the prestige of universities, an element in students' utility functions beyond objective university characteristics. We show that a prestige e ect can incent publications to take actions that are not in the best interest of the students, such as excessive changes to their ranking methodology, a practice U.S. News & World Report (USNWR) has been accused of. We show that if a ranking that uses an attribute-and-aggregate methodology (the ranking methodology USNWR and BusinessWeek use) creates prestige, then, to maximize profit, the publication (1) should choose attribute score weights that do not match student preferences for attribute scores and (2) should change those attribute score weights over time even if there are no changes in student preferences. If a prestige e ect is not present, the publication should choose attribute score weights that match student preferences. We use our model to characterize an all-student-optimal ranking methodology - one that maximizes the sum of the utilities of students who view the ranking and the utilities of the students who do not view the ranking. We show that the prestige created by the publication's ranking drives it to set a profit-maximizing ranking methodology that is not all-student optimal. We conclude by discussing how students should deal with published rankings in the current environment, and what types of ranking methodologies could be developed to better represent student preferences.

■ TB10

Room 605, Alter Hall

Crowdfunding

Contributed Session

Chair: Tingting Fan, The Business School of the Chinese University of Hong Kong, Room 1113, 11/F, Cheng Yu Tung Building, No. 12 Chak Cheung Street, Shatin, Hong Kong, tfan@stern.nyu.edu

1 - Novelty in Crowdfunding: Prototypicality as a Success Predictor

Jihoon Hong, University of Southern California, Marshall School of Business, 3670 Trousdale Parkway, Los Angeles, CA, 90089-0808, United States, jihoon.hong.2020@marshall.usc.edu, Dinesh Puranam, Gerard J Tellis

Previous literature suggests that the balance between novelty and familiarity increases the likelihood of success in domains such as scientific research, patent, and idea generation. In this paper, the authors examine whether the balance between novelty and familiarity affects the success of the projects in the context of projects listed on a crowdfunding platform - Kickstarter. Using text from project descriptions in 47 categories, the authors construct a semantic network of words. The distribution of the relative importance of words for each project is compared to the average distribution of the relevant category to construct a measure of balance (between novelty and familiarity). A key finding is that projects closer to the average distribution are more likely to be successful, after controlling for the project related factors such as goal, rewards, etc. Further, including this measure of balance improves models that predict the success of the project, as early as at the start of the project. These results hold in 31 categories and are potentially useful for both researchers and practitioners.

2 - Market Entry Through Crowdfunding

Peng Wang, University of Arizona, 1130 E Helen Street, Tucson, AZ, 85721-0108, United States, pengw@email.arizona.edu, Bikram Ghosh, Yong Liu

Increasingly crowdfunding has become a popular channel for entrepreneurs to start their business. This paper builds a game-theoretic model to analyze award-based crowdfunding as a market entry strategy versus the traditional market entry. The entrepreneur faces market uncertainty in both cases and has to make a pricing decision for the new product. However, the different funding procedures resolve market uncertainty differently and the pricing decision needs to be made at different times. We show that the attractiveness of crowdfunding relative to traditional funding relies on the critical tradeoff between safeguarding against poor market conditions, which is possible by crowdfunding, and pricing flexibility, which occurs in traditional funding. When the capital requirement for production cost is sufficiently high, the entrepreneur should choose crowdfunding since it is more important to safeguard the entrepreneur from investing heavily in risky projects. However, when the production cost is low, crowdfunding becomes less desirable; pricing flexibility becomes more important. We also model the entrepreneur's advertising decisions with the two market entry strategies and find that he or she should spend less on advertising when choosing crowdfunding for market entry. These results hold regardless of the situation of variable production cost. We further analyze consumer welfare and the implications of crowdfunding.

3 - Modeling Dynamics in Equity-based Crowdfunding

Chul Kim, Assistant Professor, Baruch College, City University of New York, 55 Lexington Ave, New York, NY, 10010, United States, chul.kim@baruch.cuny.edu, Pallassana K. Kannan, Michael Trusov, Andrea Ordanini

We investigate various dynamics characterizing an equity-based crowdfunding process: stagnation after friend-funding, gradual increase by crowd's participation, and acceleration in the last phase. We propose forward-looking investment behavior and social interactions as the major source of these dynamics. We develop a dynamic structural model to accommodate active social interactions among forward-looking investors to capture the contrasting dynamics within a unified framework. Methodologically, our approach can handle multiple-discrete/continuous investment decisions in a forward-looking manner with a closed-form likelihood function, thereby applicable to high-dimensional data with a large choice set. Using Bayesian estimation methods, we analyze individual-level investment and network data from a crowdfunding platform, Sellaband and find the strong evidence of forward-looking behavior and social interactions. We find that the proposed structural model shows very good prediction performance at the project level, even though it predicts on the individual level. We simulate counterfactuals to derive optimal crowdfunding policies for both fundraisers and platforms. For fundraisers, we find the largest possible goal and the smallest possible proportion of profit sharing, which maximizes both the chance of success and the outcome of fundraising. For quality measures for platforms, we suggest drop-out elasticities and discover the demand increase in response to decrease in fear of drop-out.

4 - The More the Merrier? A Study of Knowledge Quality on an Online Knowledge Sharing Platform

Tingting Fan, The Business School of The Chinese University of Hong Konog, Room 1113, 11/F, Cheng Yu Tung Building, No. 12 Chak Cheung Street, Shatin, Hong Kong, tingtingfan@baf.cuhk.edu.hk, Jia Liu, Leilei Gao

Online knowledge sharing (e.g., Quora, Zhihu, StackOverflow) has become a trending way for people to seek knowledge from each other on internet. Compared with traditional knowledge sharing organizations (e.g., schools, institutions), online knowledge sharing provides an open platform which allows knowledge to be shared and diffused in a bigger scale with a lower cost. Millions of people have contributed a huge amount of knowledge to those platforms in merely a few years and many online knowledge sharing platforms have been valued billions of US dollars. Despite the dramatic growth of online knowledge platforms, they are all facing an urging challenge: how to incentivize people to contribute high quality knowledge? Our research taps into this challenge by studying knowledge sharing behavior on Zhihu.com, one of the largest online knowledge sharing platforms in China. By collecting a panel of 132,000 users' shared knowledge (approximately 2 million answers on 1 million questions) since the first day of their registration, we investigate (1) how does the quality of shared knowledge evolve over time? (2) how is the quality of a user's shared knowledge influenced by other users' shared knowledge? (3) how is the quality of a user's shared knowledge influenced by social interactions among other users? Using a panel data model with individual user fixed effects, we find that in the first few days after a question is post online, a user contributes higher quality knowledge if other users have shared a good amount of knowledge, but afterwards as the amount of shared knowledge increases, he is likely to contribute lower quality of knowledge. We also find that the quality of shared knowledge increases as the social interactions among other users increases.

■ TB11

Room 606, Alter Hall

Machine Learning Applications in Marketing: II

General Session

Chair: Hema Yoganarasimhan, University of Washington, Seattle, WA, 98195, United States, hems_y@yahoo.co.in

1 - Measuring the Impact of Trial Period Lengths using Causal Forests: Evidence from a Field Experiment

Ebrahim Barzegary, University of Washington, 481 Paccar Hall, Foster School of Business, Seattle, WA, 98195, United States, ebar@uw.edu, Hema Yoganarasimhan

A commonly used customer acquisition strategy in the software industry is to offer consumers a limited period of time to try the product for free. However, no research has examined the issue of optimizing the length of these free-trials. Using data from a large-scale field experiment run by a leading software firm, we study the relative effectiveness of three trial lengths — 7, 14, and 30 days. We find that the shortest trial length of 7 days is the best option at the aggregate level. Next, we use the newly developed causal random forests methodology to uncover the rich heterogeneity in treatment effects and quantify effects at the individual-level. We then use our estimates to examine the returns to counterfactual treatments. When we move all consumers to the 7-day free trial, we see a 4.42% increase in subscriptions and an 8.11% increase in revenue/user. As we increase the customization of the treatment, these numbers increase, e.g., when we assign the best average trial-period for the country to all users from that country, the subscriptions increases by 4.9% and revenue/user by 9.06%. When we fully personalize trial-length at the user-level, subscriptions increase by 24.18% and revenues/user by 41%. Our results emphasize the value of combining machine-learning methods for causal inference with field-experiments to personalize marketing mix variables.

2 - When Words Sweat: Identifying Signals for Loan Default in the Text of Loan Applications

Alain Lemaire, Columbia University, New York, NY, 1027, United States, Alemaire18@gsb.columbia.edu, Oded Netzer, Michal Herzenstein

The authors present empirical evidence that borrowers, consciously or not, leave traces of their intentions, circumstances, and personality traits in the text they write when applying for a loan. This textual information has a substantial and significant ability to predict whether borrowers will pay back the loan over and beyond the financial and demographic variables commonly used in models predicting default. The authors use text-mining and machine-learning tools to automatically process and analyze the raw text in over 18,000 loan requests from Prosper.com, an online crowd-funding platform. The authors find that loan requests written by defaulting borrowers are more likely to include words related to their family, mentions of god, short-term focused words, the borrower's financial and general hardship, and pleading lenders for help. The authors further observe that defaulting loan requests are often written in a manner consistent with the writing style of extroverts and liars.

3 - Can User Generated Content Predict Restaurant Survival: Deep Learning of Yelp Photos and Reviews

Lan Luo, University of Southern California, 3660 Trousdale Parkway, ACC306, Los Angeles, CA, 90089, United States, lluo@marshall.usc.edu, Mengxia Zhang

With widespread usage of smartphones, 3 billion photos are shared on the Internet daily. Nevertheless, very few papers have examined whether and how the prosperity of a business may be affected by consumer posted photos. We use deep learning methods to analyze 795,175 photos and 1,015,825 reviews posted on Yelp from 2004 to 2015 on 17,796 restaurants. Tracking the survival of these restaurants during this time period, we find that both volume and valence of photos are strong predictors of restaurant survival. Nevertheless, when it comes to reviews, only valence (not volume) matters. Interestingly, even after controlling for the content, star rating, and length of reviews, consumer sentiment extracted from review text is still strongly associated with the survival of restaurants. We also find that chain restaurants and restaurants from larger categories have greater chance to survive. Ceteris paribus, price levels do not appear to impact restaurant survival. Our research is among the earliest attempts to introduce both photo- and text- based deep learning in marketing. We are also the first to compare and contrast managerial impacts of consumer posted photos vs. reviews. To our knowledge, this is also the first large-scale empirical research on restaurant survival.

4 - Targeting and Privacy in Mobile Advertising

Hema Yoganarasimhan, University of Washington, Seattle, WA, United States, hemay@uw.edu, Omid Rafieian

Mobile in-app advertising is growing in popularity. While these ads have excellent user-tracking properties through mobile device IDs, they have raised concerns among privacy advocates. There is an ongoing debate on the value of different types of mobile targeting, the incentives of ad-networks to engage in behavioral targeting and share user-data with advertisers, and the role of regulation. To answer these questions, we propose a modeling framework that consists of two components — a machine learning framework for predicting click-through rate and a stylized analytical framework for conducting data-sharing counterfactuals. Using data from the leading in-app ad-network of an Asian country, we show that our machine-learning model improves targeting ability by 17.95% over no targeting. These gains mainly stem from behavioral information and the value of contextual information is relatively small. Stricter regulations on user tracking substantially shrink the value of behavioral targeting. Counterfactuals show that the total advertisers' surplus grows with more granular information sharing between the ad-network and advertisers. However, there is heterogeneity among advertisers in their preferred level of data sharing. Importantly, the ad-network's revenues are non-monotonic, i.e., it prefers to not share behavioral information with advertisers. Thus, the ad-network may have natural incentives to preserve users' privacy without external regulation.

■ TB12

Room 745, Alter Hall

Marketing Strategy – Network Effects

Contributed Session

Chair: Lixian Qian, Xi'an Jiaotong-Liverpool University, International Business School Suzhou (IBSS), 215123, China, qianlixian@gmail.com

1 - Disclosure of Pricing Information in Earnings Calls – An Empirical Investigation

Alexander Edeling, Assistant Professor of Marketing, University of Cologne, Albertus-Magnus-Platz, Cologne, 50923, Germany, edeling@wiso.uni-koeln.de, Benedict Fälker

Despite Warren Buffet's statement that pricing power is the most important factor when evaluating a business, practitioners and researchers alike often neglect pricing's role in driving firm value. In contrast to other marketing action variables such as advertising, research regarding the dissemination of pricing information in corporate disclosure and the impact of pricing on firm value is scarce. We fill this research gap by analyzing the occurrence of pricing information in the corporate disclosure medium earnings calls and by investigating how this information affects firm value. We develop a conceptual framework of pricing information in earnings calls and distinguish between positive (e.g., price increases), neutral (e.g., pricing strategies) and negative pricing information (e.g., low pricing power) according to the favorability for investors. As measure of changes in firm value, we use the intra-day abnormal return around earnings calls. Based on 150 earnings calls of companies from three industries, we find that managers provide pricing information in the vast majority of earnings calls. While they frequently address price execution (e.g., price changes), they only occasionally discuss pricing objectives and strategies. We find that the provision of negative pricing information significantly decreases firm value, while the provision of positive pricing information exerts no significant effect. When we distinguish between proactive and reactive pricing information, we show that investors only respond negatively to negative pricing information when analysts explicitly request the information. These findings have several implications regarding the general power of pricing and the disclosure of pricing information in corporate communications.

2 - When Customer Spending Backfires: Customer Trade-offs Between Durable Products Replacements and Add-on Purchases

Delia-Olga Ungureanu, PhD Candidate, BI Norwegian Business School, Nydalsveien 37, Oslo, 0442, Norway, olga.d.ungureanu@bi.no, Rutger van Oest

Firms often introduce successive product versions, while also selling add-ons that enhance the base product's value. We posit there are inherent trade-offs between add-on purchases and product version replacements. Replacements often make the old product and its purchased add-ons redundant. Add-ons that are contingent on their base products may be perceived as sunk costs and hinder replacement decisions. This negative effect may decrease with time and with use, until consumers feel they have gotten their money's worth (payment depreciation). Consumers may also slow down their spending on add-ons, or refrain from them completely, in anticipation of newer product versions (waste aversion). While extant studies have considered replacements decisions, no study has examined replacement and add-on purchase decisions jointly. Understanding trade-offs between purchasing add-ons and replacement products is of great empirical importance for firms that want to maximize total sales from base products and add-ons. Within the setting of video games (data provided by Wharton Customer Analytics Initiative), we jointly model consumers' decisions of add-on purchases, game version replacements, and usage. We apply the latent class framework to control for unobserved consumer differences in terms of usage and spending. We incorporate geometrically decaying effects to capture the gradual decrease in relevance of past usage and add-on purchases on subsequent spending and usage. We find a well-balanced three-segment solution. Results indicate past replacements negatively influence add-on purchases across all segments, suggesting the presence of trade-offs between replacements and add-on purchases. Past add-on purchases have a reinforcing effect on add-on purchase probability, and the estimated decay parameter indicates that 50% of this effect decays within a month (approx. 3.6 weeks). Importantly, around half of the consumers (one segment) are averse towards buying add-ons when a new replacement is expected. The same segment is also averse towards making closely timed replacements.

3 - Structural Embeddedness and Business Partner Selection: A Network Perspective

Fereshteh Zihagh, The University of Texas at Dallas, Richardson, TX, 75080, United States, fereshteh.zihagh@utdallas.edu, Brian T. Ratchford, Xiaolin Li

In business-to-business markets, successful selling of complex and knowledge-intensive services depends heavily on how parties resolve ex-ante uncertainty and reliability concerns regarding the procurement. Both sides prefer partners that could generate higher values in the sourcing process, which is dependent on firms' perceived abilities to meet functional and technical requirements of project development process. In this paper, we build a structural two-sided matching model to quantitatively study the importance of interfirm connections and the information ensuing from them in firms' preferences for matching with certain firms. Buyers and sellers are related to each other because the existing information and resources embedded in dyads that collaborate on a project carry over to other dyads that share a buyer or seller, and this pattern of information and knowledge flow between firms creates firm social capital. To model this information flow, we use a comprehensive dataset of outsourcing contracts signed in years 1989-2013 and construct an interfirm network of buyers and sellers that transact in IT service outsourcing markets. The matching model controls for the availability of outside options and impact of firm competitiveness on selection decisions for both sides. The effect of differential firm social capital and competitiveness are ignored in extant contracting literature. Results suggest that vendors' positional embeddedness (being historically connected to central clients) and brokerage (i.e., the ability to absorb novel, nonredundant and rich information in the network) reduces the perceived contracting uncertainties, and positively affect the matching outcome, particularly by increasing match likelihood with medium- and large-sized clients. However, the positive effect of vendor social capital diminishes for small and enterprise firms.

4 - Rich or Reach? Spatial Network Effect of Battery Charging Stations in Electric Vehicles Adoption

Lixian Qian, Associate Professor, Xi'an Jiaotong-Liverpool University, International Business School Suzhou (IBSS), 215123, China, lixian.qian@xjtlu.edu.cn, Cheng Zhang, Yuxin Chen

Electric vehicles (EVs) have been proposed as a major technology to achieve substantial reduction in fuel consumption and greenhouse gas emission. Since the limited driving range is one dominant factor that constrains consumer adoption, battery charging stations play a significant role in reducing consumers' range anxiety. Using Tesla's state level data in the U.S., this study investigates the spatial network effects of focal and neighborhood states' battery charging stations in the EVs' adoption. The results suggest asymmetric and spatial network effects in several ways. While the vehicle demand in a focal state is more strongly influenced by the expansion of charging network than in the other direction, the more charging stations in neighboring states result in lower adoption of EVs in the focal state. However, the growth of registered EVs in neighboring states leads to more development of charging stations in the focal state. Further, two types of Tesla's charging stations, supercharger (SC) and destination charging (DC), present the different spatial network effects on EVs' adoption. We discuss the theoretical and policy implications of these findings.

■ TB13

Room 746, Alter Hall

Multi - Channel Strategies II

Contributed Session

Chair: Scott Andrew Neslin, Dartmouth College, Tuck School of Business, 100 Tuck Hall, Hanover, NH, 03755, United States, scott.neslin@dartmouth.edu

1 - Channel Leadership Styles as an Antecedent to Commitment and Relational Capital: The Moderating Role of Multiple Channel Complexity

Shivan Sanjay Patel, Indian Institute of Management Rohtak, MDU Campus, Rohtak, 124001, India, fpm04.011@iimrohtak.ac.in, Shivendra Kumar Pandey, Dheeraj Sharma

Organizations are operating more complex distribution channel systems to reach to the customers. The benefits realized through such multiple complex channel systems often come at the cost of difficulty in managing relationships among channel members. The present work investigates the role of channel leadership styles on relationship outcomes, specifically, relationship commitment and relational capital between the channel leader and the member in a franchise distribution system. The moderating role of multiple channel complexity is also assessed. The findings reveal supportive leadership style is the most effective in developing relational outcomes, both commitment and relational capital, whereas multiple channel complexity moderates the influence of these styles. Results indicate that participative leadership style is effective in low channel complexity environments.

2 - Store Brands and Channel Coordination

Woochoel Shin, Associate Professor, University of Florida, Department of Marketing, 212 BRY, P.O. Box 117155, Gainesville, FL, 32611, United States, wshin@ufl.edu, Wilfred Amaldoss

Store brands are common phenomenon in most retail markets. When the retailer offers its own brand, both the wholesale price contract and the traditional two-part tariff fail to coordinate the channel. In the presence of the store brand, the traditional two-part tariff contract yields even lower total channel profits than the wholesale price contract. We propose an augmented two-part tariff contract that increases the total channel profits by coordinating perfectly the pricing decisions but only imperfectly the quality decisions. We further show that the manufacturer can achieve perfect quality coordination by offering a procurement contract along with a committed allowance on top of the augmented two-part tariff. However, neither the procurement contract nor a committed allowance by itself can help attain perfect quality coordination. When retailers compete, even in the absence of a double marginalization problem, the augmented two-part tariff contract can improve the total channel profits. Furthermore, the manufacturer can improve quality coordination by supplying the store brand to the retailer. However, in contrast to a bilateral monopoly, the manufacturer need not commit to offering an allowance when retailers compete.

3 - Buyer-supplier Interactions in Times of Adversity – The Case of Bankruptcy

Vivek Astvansh, Doctoral Candidate, Ivey Business School, Western University, 684 Platt's Lane, London, ON, N6G 3B2, Canada, vastvans@uwo.ca, Kersi D. Antia, Sudha Mani

How buyer firms and their suppliers interact during adverse conditions poses critical implications for both parties, yet remains poorly understood. We investigate both destructive and constructive reciprocal actions by bankruptcy-declaring buyer firms and their supplier-creditors. The mixed motives accompanying bankrupt buyer firms' reorganization efforts drive buyers and their supplier-creditors actions during bankruptcy. We assess the effect of each of the dimensions of reciprocity - what is reciprocated, when it is reciprocated, and who reciprocates - on both parties' destructive acts. We construct a unique multi-sourced database comprising more than 38,000 constructive and destructive acts undertaken by both bankrupt buyer firms and their suppliers across 489 reorganization-related (Chapter 11) bankruptcies in three different industries between 2001 and 2014. The results of our study speak to the reciprocity exhibited by buyer firms and their suppliers under adverse conditions.

4 - The Omnichannel Deal Prone Consumer

Scott Andrew Neslin, Dartmouth College, Tuck School of Business, 100 Tuck Hall, Hanover, NH, 03755, United States, scott.neslin@dartmouth.edu, Sara Valentini, Elisa Montaguti

Today's retail promotional environment is driven by channel proliferation, consumers' channel preferences, and managers' efforts to create a unified "omnichannel" customer experience, especially across online and offline channels. This paper identifies and characterizes the deal prone consumer segments that emerge in this environment. Specifically, we investigate the existence and determinants of omnichannel deal prone segments - consumers who use online and offline channels to procure and use promotions. We use the motivations-opportunities-abilities (MOA) framework to analyze why consumers belong to various segments. We apply latent class cluster analysis to a database of over 1000 survey respondents in three product categories. We find omnichannel deal proneness dominates the consumer electronics category, but there is a strong online-focused deal prone segment in clothing and an offline-focused deal prone segment in groceries. Importantly, opportunities and abilities have more explanatory power than motivations in differentiating segments. Since opportunities and abilities are more likely to change in the future than motivations, the current size of the various deal prone segments is not in equilibrium. Simulations suggest, for example, an online, not omnichannel, deal prone segment may come to dominate the clothing category, driven by an expected increase in online shopping experience. Our results show how managers can target particular deal prone segments to achieve goals such as increasing consumption, encouraging brand/store switching, or reinforcing brand/store loyalty.

■ TB14

Room 607, Alter Hall

Machine Learning - Text Analytics & Design

Contributed Session

Chair: Alex Burnap, University of Michigan, 334 Beakes St, Apt. 3, Ann Arbor, MI, 48104, United States, aburnap@umich.edu

1 - Identifying Segment Level Key Drivers from Unstructured Online Review Data

Sunghoon Kim, Arizona State University, P.O. Box 874106, Tempe, AZ, 85287-4106, United States, skim348@asu.edu

The author proposes an integrated machine-learning algorithm to apply a classic model-based segmentation method in marketing to unstructured online review data. The proposed procedure extracts an independent variables matrix from unstructured textual reviews by developing a set of text analytics algorithms and then identifies segment-level key drivers by applying a Bayesian ordinal probit mixture regression with variable selection. With the proposed method, firms or policy makers can focus on key drivers per each segment in their marketing activities (e.g., online banner advertising, search advertising); this method will help them systematically keep track of periodic patterns of segment-level key drivers. Using online data from a large review site for rating professors, the author validates the extracted independent variables through multiple validation studies and then discuss heterogeneous key drivers for satisfaction across three derived segments. For the least satisfied segment, the proportion of reviewers is significantly higher from the Science, Technology, Engineering, and Mathematics education category than from the other two segments, indicating that professors in this segment should focus on more diverse drivers of both core academic and atmospheric attributes.

2 - Increasing Consumer Engagement with Firm-generated Social Media Content: The Role of Images and Words

Eugene Pavlov, University of Washington, 4009 15th Ave NE Apt 822, Seattle, WA, 98105, United States, epavlov@uw.edu, Natalie Mizik

As firms are embracing visual platforms in their marketing and branding efforts, little research exists on the relative effectiveness of visual versus text-based marketing efforts. We develop a quantitative framework to study how text and visual components of firm communications impact consumer engagement with firm-generated social media content. First, we quantify the emotional loading of text and imagery on Sentiment and Arousal/Motivation-to-act dimensions (Russel 1980, Model of Affect). We use existing tools for text processing and use machine learning and computer vision to develop and train Sentiment and Arousal classification models for imagery. We use basic elements of design (color, texture, shape, lines, curves, corners, edges, orientation, etc.) as inputs to predict Sentiment and Arousal of an image. Our out-of-sample and lab-based validation of classification accuracy suggest agreement in the range of 75-80%. Next, we apply the procedure to empirical analysis of engagement (retweeting) with firm-generated content based on 1,386,388 tweets of 656 brands from 11 categories, posted since 2006. We find that over the years consumers have developed resistance to persuasion attempts using high motivation-to-act text, but we do not detect the same decline in effectiveness for images. Further, we find that the effects of text and imagery are highly heterogeneous across industrial sectors (e.g., quick-service restaurants, nonprofits/charities).

3 - Employee Minimum Wages and Customer Perceptions of Service a Deep Learning Methods Analysis of Restaurant Reviews

Dinesh Puranam, Assistant Professor, USC Marshall School of Business, HOH 615, Trousdale Parkway, Los Angeles, CA, 90089, United States, dineshpuranam@yahoo.com, Vishal Narayan, Vrinda Kadiyali

We study the impact of a mandated increase in minimum wages on customer perceptions of service. The empirical application is to restaurants since they are a major employer of (front-line) minimum wage workers, labor costs are an important part of restaurant costs and front-line employee service is observable to customers. We use 372,156 restaurant reviews in the time period January 1st, 2008 and April 3rd, 2017 in the city of San Jose where city laws increased the minimum wage from $8 to $10. We use an additional 160,866 reviews from geographically proximate cities in the county as a control group to infer causality via difference-in-difference estimation. Importantly, we analyze textual data of customer reviews using deep learning methods to measure various dimensions of perceived service quality. We find discussions of observable negative service quality decreases in independently-owned restaurants. These predictions are consistent with agency-theory based predictions.

4 - Deep Learning to Predict Consumer Aesthetic Preferences and Augment Product Designers

Alex Burnap, Massachusetts Institute of Technology, Cambridge, MA, United States, aburnap@mit.edu, Artem Timoshenko, John R. Hauser

Aesthetic styling is a key driver of consumer purchase decisions in various product categories, including automobiles, furniture, and clothing. Capturing consumer preferences for aesthetic styling using a quantitative choice model is challenging due the high dimensionality of design attributes to represent realistic aesthetic styling relative to functional attributes and price. We introduce a deep learning approach that learns and predicts aesthetic preferences of heterogeneous consumers based on images of product designs. This approach is tested on the U.S. automotive market, using aesthetic preference data collected from consumer panels. We evaluate how the proposed model can enhance designers' understanding of the customer preferences by comparing prediction from (1) the deep learning approach, (2) human experts, and (3) human experts with the deep learning inputs. Deep learning has the potential to successfully predict aesthetic preferences and offers improvements to the conventional product design workflow.

■ TB15

Room 603, Alter Hall

Brand Extensions and Image

Contributed Session

Chair: Yewon Kim, University of Chicago, Booth School of Business, Chicago, IL, United States, yewon.s.kim@gmail.com

1 - Dimensions of Brand Extension Fit

Paul R. Messinger, University of Alberta, Faculty of Business, 3-20e Faculty Of Business Bldg, Edmonton, AB, T6G 2R6, Canada, paul.messinger@ualberta.ca, Qian (Claire) Deng

A sizable literature on brand extensions argues that the congruity between a parent brand and an extension category has a positive effect on consumer reception of the extension. But the application of this literature is limited because of a lack of understanding of what "brand-extension fit" really is. The current paper develops a measurement scale of Brand Extension Fit (the BEF scale) consisting of two core underlying dimensions, engineering-based and market-based congruity, each formed by three items. Our proposed scale represents a synthesis and extension of the various formative items of congruity used in papers in the literature that consider multi-dimensional measures of fit. We validate the model with two separate datasets obtained from general consumers consisting of judgments about extensions for (a) fictitious parent brands and (b) real parent brands, providing excellent sample-resample reliability. We provide various analyses using SEM (structural equation modeling) techniques to provide evidence of nomological validity. Unlike uni-dimensional measures of fit - such as similarity, fit, consistency, or "makes sense" - used in most of the brand-extension literature, our scale provide guidance for opportunity identification, idea generation, the building of a marketing plan around a chosen alterative, and understanding the pros and cons of various alternatives.

2 - On the Dynamics of Brand Extensions: The Case of Movies

Sridhar Moorthy, Manny Rotman Chair in Marketing, University of Toronto, 105 St Georges Street, Toronto, ON, M5S 3E6, Canada, moorthy@rotman.utoronto.ca, Masakazu Ishihara

In movies, brand extension takes the form of sequels. This paper compares the sales dynamics of movie originals and their sequels. We find that sequels diffuse faster than originals—their sales are more front-loaded. This difference in diffusion speed is moderated by several movie characteristics. Our econometric methods take into account the endogeneity of the sequeling decision: only successful movies spawn sequels, not all movies. We interpret these findings in light of what they say about the different "information processes" underlying original brands and their extensions.

3 - Proposal Method to Evaluate Brand Image by using Psychophysical Function

Masao Ueda, Waseda University, 3-4-1 Okubo, Shinjuku-ku, Tokyo, 169-8555, Japan, m_ueda@aoni.waseda.jp

In order to maintain a brand power, brand managers want consumers to have a good brand image in consumers' memory for a long time. Nowadays, it is difficult for consumers to keep a particular brand image, since brand image is more affected by social media. To keep a good brand image, the brand managers should examine consumers' brand image if necessary. For this purpose, a new research method is required to equip easiness of implementation and to have enough amount of information for decision making. It is needed to satisfy this requirement, in the present study, in addition to the reaction to the item, the reaction time was also collected and the obtained data was analyzed using a model applying a function of psychophysics. In the empirical analysis, the author investigated the brand image of a certain automobile manufacturer A in Japan and analyzed obtained data from about 1,000 respondents. It is assumed that the model had random effects for the intensity of each brand image. The random effect parameters in this model was estimated by Markov Chain Monte Carlo method and estimated results indicated that the proposed method is effective for understanding brand images.

4 - Natural Experiment on Co-branding: The Case of Museum Membership Demand

Yewon Kim, University of Chicago Booth School of Business, 5807 S. Woodlawn Avenue, Chicago, IL, 60637, United States, yewonkim@chicagobooth.edu, Sanjog Misra, Bradley Shapiro

We study the effect of co-branding on consumer demand in the market for museum memberships in California. Over the course of our sample, one major museum with a highly recognized brand closed. During the closure, it sequentially co-branded with two established local museums. With individual panel data on museum memberships, we measure the effect of co-branding on demand. The results provide two major insights. First, co-branding with the closed museum lifts demand for the partner museum. Second, the increased demand is the product of two counter-acting forces: first, customers with no history of buying membership from either museum enter the market, consistent with the brand providing a quality signal, and second, a sub-group of customers who previously purchased from either or both of the museums display decreased demand consistent with brand dilution. These results have implications for the treatment of brand intercepts in counterfactuals for co-branding and merger analysis.

■ TB16

Room 231, Alter Hall

2018 ISMS/MSI Gary Lilien Rehearsals

Rehearsal Session

■ TB17

Room 31, Alter Hall

ISMS Doctoral Dissertation Proposal Competition Winners

General Session

Chair: Olivier Toubia, Columbia Business School, New York, NY, 10027, United States, otoubia@yahoo.com

1 - Letting Logos Speak: A Machine Learning Approach for Data-Driven Logo Design

Ryan Dew, Columbia University, 521 W 112th Street, Apt 62, New York, NY, 10025, United States, RDew18@gsb.columbia.edu, Asim Ansari, Olivier Toubia

Logos serve a fundamental role in branding as the visual figurehead of the brand. Yet, due to the difficulty of using unstructured image data, prior research on logo design has been largely limited to non-quantitative studies. In this work, we explore logo design from a data-driven perspective. In particular, we aim to answer several key questions: first, to what degree can logos represent a brand's personality? Second, what are the key visual elements in logos that elicit brand and firm relevant associations, such as brand personality traits? Finally, given text describing a firm, can we suggest features of a logo that elicit the firm's desired brand identity? To answer these questions, we develop a novel logo tokenization algorithm, that uses modern image processing and computer vision tools to decompose unstructured pixel-level image data into theory-based, human-meaningful, visual features. We then apply this tokenization algorithm in conjunction with methods from the machine learning literatures on dimensionality reduction and transfer learning, to a dataset of hundreds of logos. In our unique dataset, the logos are matched with textual descriptions from firms' websites, third party descriptions of the firms, and consumer evaluations of brand personality, which represent many distinct views of the brand: visual, textual, and consumer-level. By learning mappings across these distinct views, our approach uncovers links that exist between a brand's logo, description, and personality, and thereby helps us understand the underpinnings of good design, and inform the design of new logos.

2 - Automation, Decision Making and B2B Pricing

Yael Karlinsky Shichor, Columbia Business School, New York, NY, United States, yk2543@columbia.edu, Oded Netzer

In the past century, automation has changed the labor market by consistently replacing repetitive and predictable human tasks. More recently, automation has tapped into tasks that require judgment and soft skills and involve business acumen. We investigate the potential impact of automating experts' decisions in one of the most complex and knowledge intensive jobs in marketing - sales. We explore the tradeoff between the possible improvement in decisions making as a result of automation and the loss of soft skills in the context of salespeople making pricing decisions in a business to business (B2B) environment. The B2B market is estimated at $8 trillion in transactions and is largely lagging behind the B2C market in adoption of information technology and automation. Consequently, and in light of increasing demand from business client for digital business channels, the potential for automation is immense. Using secondary data from a B2B retailer We find that a bootstrap pricing model of the salesperson generates expected profits equal to those of the salesperson, despite the loss of noncodeable information available to the salesperson but not to the model. Furthermore, we find that a hybrid pricing policy that follows the model's prices in most cases, but the salesperson's prices in cases where crucial non-codeable information exists, leads to a significant increase in profits to the firm. We then conduct a high-stakes field experiment with the B2B retailer and find that providing salespeople with their own model's prices, in real time, via the CRM system, increases gross profit to the company by over 10%, which translates to an increase in profits of $40k over the eight days of the experiment and a projected increase of approximately $2.2 million in yearly profits. We find that the hybrid model should use the salesperson and her expertise in pricing complex orders (e.g., special processing is required or the order has many lines) and orders by infrequent clients, and that automation is particularly beneficial for low-expertise salespeople. Overall, our findings suggest, that automation of experts' pricing decisions in B2B settings is not only feasible but can also lead to increased profitability. We show empirically and through a pricing field experiment, that adopting a hybrid automation approach for B2B retail harnesses benefits of sales people expertise as well as benefits of automation, depending on the characteristics of the transaction and the client, and leads to significant increase in profits. By automating the decision of when to use the expert salesperson and when to use automatic pricing, issues of algorithm aversion and misuse could be avoided, leading to further increase in profits to the company.

3 - Counter-Cyclical Price Promotion: Capturing Seasonal Category Expansion under Endogenous Consumption

Minjung Kwon, NYU, 40 West 4th Street, New York, NY, 10012, United States, mkwon@stern.nyu.edu, Tulin Erdem, Masakazu Ishihara

This paper provides a new and complementary explanation for a pricing puzzle for seasonal products, namely, counter-cyclical pricing, drawing on the category-expansion effects of price promotions. Our study emphasizes the seasonal fluctuation in promotion frequency rather than the change in aggregate mean price across seasons, which motivates most existing studies. We propose a rationale for the counter-cyclical price promotions: consumers are more likely to increase category demand in response to promotions during periods of high demand, causing seasonally varying promotion effects on category expansion. We show promotion effects are amplified during high-demand periods if the product category is subject to stockpiling and endogenous-consumption behavior; that is, consumption is a function of inventory and future-price expectations. Using scanner-panel data on the canned-soup category, we find households' purchase patterns are consistent with the endogenous-consumption hypothesis. Examination across multiple product categories also suggests counter-cyclical pricing is often associated with the categories for which households exhibit endogenous consumption. We investigate the seasonally varying promotion e_ects using the framework of a dynamic inventory model with forward-looking consumers (Erdem, Imai, and Keane, 2003; Hendel and Nevo, 2006a) by allowing the consumption rate to be endogenous to household inventory and subject to the exogenous seasonal fluctuation in category preference. Our results indicate the long-run promotion effects are underestimated by 32% during periods of high demand if endogenous consumption is ignored, and that with endogenous consumption, the long-run promotion effects increase by 24% across seasons, implying a larger gain of promotions during high-demand periods, which is a motivation for the counter-cyclical price promotions.

4 - Marketing Strategies with Endogenous Reference-Dependent Preferences

Zuhui Xiao, University of Minnesota, 3-150 CSOM, UMN, 321 - 19th Avenue South, Minneapolis, MN, 55455, United States, xiaox169@umn.edu

Price and compensation schemes used in practice are often much simpler than those predicted by neo-classical economic models; quite commonly, some friction cost is invoked to explain this relative coarseness. My two essays show that reference-dependent preferences provide a more robust, parsimonious explanation. In Essay 1, I examine class pricing, which "divides a large set of goods or service into [a smaller number of] classes, and assign a single price to any element of a class" (Wernerfelt, 2008), even when the costs and demands of the individual items are self-evidently quite different. Wernerfelt (2008) invokes costly price setting activities (e.g., printing price labels, etc.) as the friction-based explanation. However, class prices are still observed in settings where such frictions are much smaller (e.g., online). I model a firm selling multiple products to a continuum of heterogeneous consumers, and extend Koszegi and Rabin (2006)'s framework to depict customers' credible reference beliefs as endogenously determined via matching their optimal choices to their expectations about consumption outcomes. Class pricing emerges when there are relatively small gaps in consumers' tastes across the individual products and relatively small differences in products' marginal costs, both of which are typical features of many product categories with large numbers of SKUs. Also, lower-end products tend to be aggregated into larger sized classes, and the upper bound of numbers of classes decreases in consumers' loss aversion, but increases in quality gaps.

Thursday, 1:30PM - 3:00PM

■ TC01

Room 32, Alter Hall

Machine Learning and Marketing

General Session

Chair: Eric Schwartz, University of Michigan, Ann Arbor, MI, 48109-1234, United States, ericmsch@umich.edu

1 - Bandit Adaptive MaxDiff: Cost-Effective Scalable Idea Screening

Eric Schwartz, University of Michigan, Ann Arbor, MI, 48109-1234, United States, ericmsch@umich.edu, Alexander Zaitzeff, Kenneth Fairchild, Bryan Orme

Marketing research often measures consumers' preferences in order to identify their most preferred items among a set of candidates, such as product benefits, innovative features, or message appeals. Common techniques are idea screening, including conjoint analysis and maximum-difference (MaxDiff) scaling. These methods, however, are not built for large-scale problems. For large MaxDiff studies whose main purpose is identifying the top few items for the respondent population, we propose a new approach, Bandit Adaptive MaxDiff, which can increase efficiency between two- and four-times over current MaxDiff practices by accurately identifying the best items with fewer respondents. Our proposed solution leverages information from previous respondents, so later respondents receive designs that oversample the items that are most likely to turn out to be the in the overall most-preferred set. Instead of learning all preference parameters with equal precision, Bandit Adaptive MaxDiff more precisely estimates the parameters of most interest to the manager. And we find it performs even better as the problem increases in size. Drawing on the classic multi-armed bandit literature and the newer best-k-arm identification literature, the work is a collaboration between academics, Sawtooth Software, and Proctor & Gamble (P&G). We validate our proposed methods empirically using a variety of approaches: simulation, an existing MaxDiff survey results from P&G, and a live in-market randomized test with different target customer respondents with P&G and Sawtooth. We introduce components to resolve practical issues with implementing bandit algorithms, such as, controlling robustness to a changing and faster approximations to full posterior sampling.

2 - Bingeability and Ad Tolerance: New Metrics for the Streaming Media Age

Prashant Rajaram, Ross School of Business, University of Michigan, 2016 Medford Road, Apt 29, Ann Arbor, MI, 48104, United States, prajaram@umich.edu, Puneet Manchanda, Eric Schwartz

Binge-watching TV shows on streaming services is becoming increasingly popular. However, there is a paucity of comprehensive metrics to effectively summarize such media watching behavior. We address this gap by presenting two new metrics—Bingeability and Ad Tolerance—to quantify key aspects of watching streaming TV interspersed with ads. Bingeability captures the number of completely viewed unique episodes in a sitting, and Ad Tolerance captures the effective amount of content viewed after each ad exposure in a sitting. These metrics are motivated by managerial concerns, consumers' media consumption patterns, and the consumer psychology literature on hedonic adaptation. Using machine learning methods, including ensembles of regression trees, we predict the value of these metrics for a user's viewing session based on their previous one-week activity on the streaming platform. We also identify the key predictors of these metrics, study non-linear effects and rank the predictors in order of predictive power. Then the predicted values of the metrics are used as inputs to a novel optimization procedure that recommends improvements in ad delivery. Our focus is on improving two levers—spacing between ads and the duration of each ad. The performance of our optimization procedure is compared with standard practice and other ad delivery heuristics, and the implications of our findings are discussed.

3 - Focused Concept Miner(FCM): an Interpretable End-to-End Deep Learning Approach to Mine Text for Prescriptive Policy Exploration

Dokyun Lee, Carnegie Mellon University, 5000 Forbes Avenue, Posner Hall, Room 348E, Pittsburgh, PA, 15213, United States, dokyun@cmu.edu, Emaad Ahmed Manzoor, Zhaoqi Cheng

We introduce the Focused Concept Miner (FCM), an interpretable end-to-end deep learning based text mining algorithm to (1) automatically extract interpretable "concepts" from text data, (2) "focus" the mined concepts to explain any user-provided business outcome, such as purchase conversion or project success, and (3) quantify the relative importance of each mined concept for the business outcome, along with their relative importance to other user-derived explanatory variables. We build into the algorithm an easy way for managers to interpret extracted concepts to draw actionable insights or to inform prescriptive policy strategies. Applications can be found in any settings with text and structured data tied to a business outcome of interest. For example, consumer browsing behavior and review reading behavior connected to purchase conversion, or project management emails and minutes connected to project success or failure. To demonstrate the efficacy of our algorithm, we evaluate its performance on two proprietary datasets: (1) product reviews and purchase outcomes obtained from a leading review platform, and (2) project management data and success outcomes from a Fortune 500 pharmaceutical company. We discuss managerial implications and future development ideas.

■ TC02

Room 33, Alter Hall

Digital Economy III: Reviews and Reputation

General Session

Chair: Georgios Zervas, Boston University, Boston, MA, United States, zg@bu.edu

1 - Does Occupational Licensing Matter in an Online World?

Andrey Fradkin, Massachusetts Institute of Technology, 179 Prospect Street, Cambridge, MA, 02139, United States, Afradkin@gmail.com, Chiara Farronato, Erik Brynjolfsson

This paper examines how consumers' choices of service professionals are related to the occupational licensing status of service providers. The setting is a large, US online labor market platform, where professional service providers bid on consumers' projects. We outline an econometric approach to estimate the causal effect of a professional's licensing status and reputation on the consumer's choice of whom to hire. Our findings suggest that a professional's digital reputation matters more than the professional's licensing status for customer choice. We also study the market wide effects of occupational licensing stringency on competition and service quality.

2 - Revealed Preference Heterogeneity Through Online Ratings

Brett Hollenbeck, University of California-Los Angeles Anderson, 1317 S Westgate Avenue, Apt 204, Los Angeles, CA, 90025, United States, brett.hollenbeck@gmail.com, Yufeng Huang

Consumers often rely on product reviews to make purchase decisions, but how consumers use review content in their decision making has remained a black box. In the past, extracting information from product reviews has been a labor intensive process that has restricted studies on this topic to single product categories or those limited to summary statistics such as volume, valence, and ratings. This paper uses deep learning natural language processing techniques to overcome the limitations of manual information extraction and shed light into the black box of how consumers use review content. With the help of a comprehensive dataset that tracks individual-level review reading, search, as well as purchase behaviors on an e-commerce portal, we extract six quality and price content dimensions from over 500,000 reviews, covering nearly 600 product categories. The scale, scope, and precision of such a study would have been impractical using human coders or classical machine learning models. We achieve two objectives. First, we describe consumers' review content reading behaviors. We find that although consumers do not read review content all the time, they do rely on review content for products that are expensive or of uncertain quality. Second, we quantify the causal impact of content information of read reviews on sales. We use a regression discontinuity in time design and leverage the variation in the review content seen by consumers due to newly added reviews. To extract content information, we develop two deep learning models: a full deep learning model that predicts conversion directly and a partial deep learning model that identifies content dimensions. Across both models, we find that aesthetics and price content in the reviews significantly affect conversion across almost all product categories. Review content information has a higher impact on sales when the average rating is higher and the variance of ratings is lower. Consumers depend more on review content when the market is more competitive, immature, or when brand information is not easily accessible. A counterfactual simulation suggests that re-ordering reviews based on content can have the same effect as a 1.6% price cut for boosting conversion.

3 - Large-Scale Cross-Category Analysis of Consumer Review Content on Sales Conversion Leveraging Deep Learning

Xiao Liu, New York University, Stern School of Business, 44 W 4th Street, New York, NY, 10013, United States, xliu@stern.nyu.edu, Dokyun Lee, Kannan Srinivasan

Consumers often rely on product reviews to make purchase decisions, but how consumers use review content in their decision making has remained a black box. In the past, extracting information from product reviews has been a labor intensive process that has restricted studies on this topic to single product categories or those limited to summary statistics such as volume, valence, and ratings. This paper uses deep learning natural language processing techniques to overcome the limitations of manual information extraction and shed light into the black box of how consumers use review content. With the help of a comprehensive dataset that tracks individual-level review reading, search, as well as purchase behaviors on an e-commerce portal, we extract six quality and price content dimensions from over 500,000 reviews, covering nearly 600 product categories. The scale, scope, and precision of such a study would have been impractical using human coders or classical machine learning models. We achieve two objectives. First, we describe consumers' review content reading behaviors. We find that although consumers do not read review content all the time, they do rely on review content for products that are expensive or of uncertain quality. Second, we quantify the causal impact of content information of read reviews on sales. We use a regression discontinuity in time design and leverage the variation in the review content seen by consumers due to newly added reviews. To extract content information, we develop two deep learning models: a full deep learning model that predicts conversion directly and a partial deep learning model that identifies content dimensions. Across both models, we find that aesthetics and price content in the reviews significantly affect conversion across almost all product categories. Review content information has a higher impact on sales when the average rating is higher and the variance of ratings is lower. Consumers depend more on review content when the market is more competitive, immature, or when brand information is not easily accessible. A counterfactual simulation suggests that re-ordering reviews based on content can have the same effect as a 1.6% price cut for boosting conversion.

4 - Consumer Reviews and Regulation: Evidence from NYC Restaurants

Georgios Zervas, Boston University School of Management, Boston, MA, United States, zg@cs.yale.edu, Chiara Farronato

We investigate complementarities between two signals of restaurant quality: health inspections and online reviews. To protect consumers, health inspectors periodically evaluate restaurant hygiene, and assign health grades to restaurants. Consumers are also able to rate restaurant quality online, through review platforms like Yelp. We investigate whether consumer reviews can predict hygiene violations. To do so, we implement we use machine learning to predict individual restaurant violations from the text of Yelp reviews. We find that consumer reviews are good predictors of food handling violations, but are poor predictors of facilities and maintenance violations. We then investigate how the hygienic information contained in online reviews affects demand and supply. On the demand side, we find that conditional on hygiene related information contained in online reviews, consumers still take health grades into account when choosing restaurants. On the supply side, we find that review platforms create reputational incentives for restaurants to reduce hygiene violations that are predictable by Yelp reviews. Specifically, we find that relative to restaurants not on Yelp, restaurants on Yelp score better on hygiene dimensions detectable by consumers than on dimensions not detectable by consumers. Our results have implications for the design of government regulation in a world where consumers rate their service experiences online.

■ TC03

Room 34, Alter Hall

When Fashion Meets Marketing Science

General Session

Chair: Yu-San Lin, Penn State University, University Park, PA, 16802, United States, yusan@psu.edu

Co-Chair: Tavy Ronen, Rutgers University, Bridgeton, NJ, United States, tronen@gmail.com

Co-Chair: Tawei (David) Wang, DePaul University, Chicago, IL, 60604, United States, david.wang@depaul.edu

1 - The Role of Imagery in Equity Crowdfunding

Yusan Lin, Penn State University, State College, PA, United States, yusan@psu.edu, Miwako Nitani, Tavy Ronen, Tawei Wang

This paper examines the role of imagery in crowdfunding from 2014-2016. While previous papers have documented the correlation between entrepreneurs' social networks and the probability of campaign success, the underlying mechanism has not been fully investigated. This paper addresses this gap in the literature by exploring the role of images originating from social media networks in crowdfunding campaigns. We focus on fashion and beauty related companies and argue that the probability of campaign success depending on reliable imagery. By leveraging deep learning neural networks to understand the contents of imagery, we show that by transmitting reliable imagery regarding the main product line, fundraising campaigns on crowdfunding platforms are more likely to be successful. Finally, we document how crowd investors interpret those signals and use for their investment decisions.

2 - Social Competition of Fashion Brands on Instagram

Tawei (David) Wang, DePaul University, Chicago, IL, United States, david.wang@depaul.edu, Yusan Lin

Since Instagram started its service about 7 years ago, it has been a popular social media outlet for all kinds of fashion brands. For instance, Nike, Victoria's Secret, H&M, and Louis Vuitton all have more than 20 million followers on Instagram in 2017. Another example, in the month before the London Fashion Week in 2016, there were more than 5,500 posts with #LFW2016 on Instagram compared to only about 1,100 Twitter mentions in the same period. These pieces of anecdotal evidence suggest that Instagram has become a crucial part of fashion brands' competing fields. In this study, we explore (1) the information posted by fashion brands and (2) the competitive actions (both action timing and types of actions) taken by fashion brands in the context of Instagram. We collected Instagram posts by 480 fashion companies across a two-year period, and find that the more consumers two fashion companies share, the more frequently they take actions to respond each other's signals. Our preliminary findings would sketch the competitive landscape on Instagram for fashion brands and provide managerial implications when forming social media strategies.

3 - A Recurrent Neural Net for Modeling Dependency in Instagram Images

Ashwin Malshe, University of Texas at San Antonio, 1 UTSA Circle, Suite BB 4.06.20, San Antonio, TX, 78249, United States, ashwin.malshe@utsa.edu, Yu-San Lin

The last decade witnessed a rapid emergence of image sharing platforms such as Instagram as essential social networks for luxury and fashion brands. A key challenge for these brands is to choose images for a fixed-duration campaign (e.g., a week) so as to maximize customer engagement (e.g., likes and comments). Prior literature in computer vision has attempted to predict number of likes for an image using convolutional neural net. However, these models don't apply well to Instagram campaigns because consumers evaluate images in the context of the entire campaign rather than in isolation. In this research, we build upon recent advances in recurrent neural nets and model Instagram campaigns as a sequence of interconnected images. We train the model on thousands of Instagram images pertaining to 15 luxury brands. We compare the results of our model to that of existing models and find that our model has a superior prediction performance. An important managerial implication is that luxury brands can use an automated image selection tool based on our model.

4 - Personalized Garment Recommendations via Heterogeneous Traits Inferred Fashion

Julian Eison, Eisonomics, San Francisco, CA, United States, jeison@eisonomics.com, Yusan Lin

Personalized recommendation has been a highly demanded and broadly studied topic in e-commerce, in particular the fashion retail industry. However, common approaches of personalized recommendations made by retailers have been heavily relying on internal information such as customers' browsing and purchase history. Such approach often suffers from data sparsity, and leads to undesirable recommendations. In this work, we connect individuals tastes in fashion and other external information and preferences to conduct a new personalized garment recommendation system, which is deployed on a premium made-to-measure platform. In particular, we leverage the individuals' demographic information and their music preferences. Through A/B testing, we find that our proposed approach outperforms recommendation without external information. We also leverage the system to find unexpected correlation between different traits of tastes.

■ TC04

Room 35, Alter Hall

Machine Learning Applications in Marketing: I

General Session

Chair: Daria Dzyabura, MIT, Cambridge, MA, 02142, United States, ddzyabur@stern.nyu.edu

1 - Combining Machine Learning and Human Judgment to Identify Customer Needs—New Tests and Applications

Artem Timoshenko, PhD in Marketing Student, MIT Sloan School of Management, Cambridge, MA, United States, timoshenko.artem@gmail.com, John R. Hauser

We build on our earlier research on identifying the abstract context-dependent customer needs from user-generated content (UGC), such as online reviews, social media and call-center data. Traditional methods for identifying customer needs are neither efficient nor effective when applied to large UGC corpora because much content is non-informative and repetitive. We combined machine learning to select the efficient content for review and human judgement to formulate customer needs. We evaluated the approach using a custom dataset matching Amazon reviews for oral care products to the customer needs identified from the experiential interviews by professional analysts. We showed that (1) Amazon reviews are at least as valuable as a source of customer needs for product development as the conventional methods, and (2) machine-learning methods improve efficiency of identifying customer needs from UGC. This research extends earlier work by examining the ability to identify rarely mentioned customer needs (often called unarticulated needs). We test whether frequency counts and helpfulness scores help identify important customer needs and/or unarticulated needs. We examine the feasibility of using Amazon Mechanical Turk to train the machine-learning algorithm, and we describe industry's applications of our methods to new product categories beyond those tested in our paper.

2 - The Summarization of Creative Content

Olivier Toubia, Columbia Business School, 3022 Broadway, Room 522, New York, NY, 10027, United States, otoubia@yahoo.com

We develop a topic model that quantifies how humans summarize creative documents (e.g., from movie scripts to synopses). Our topic model, inspired by the creativity literature, relies on Poisson Factorization to link the text in a summary to the text in the original document, in any domain of interest. Traditional Poisson Factorization approximates documents as positive combinations of topics, i.e., as points in the cone defined by a set of topics (in the Euclidean space defined by the words in the vocabulary). Our model captures not only this "inside the cone" portion of a document, but also the "outside the cone" portion that is not explained by a combination of common topics. The model captures how these two types of content are weighed in summaries as compared to full documents. In addition, it captures writing norms that influence the extent to which each topic appears in summaries compared to full documents in the domain of interest. We apply this model to a dataset of marketing academic papers and their abstracts, and to a dataset of movie scripts and their synopses. We illustrate a practical application of our research by creating a public, online interactive tool meant to assist users interested in writing summaries of creative documents.

3 - Temporal Sequencing of Ads in Mobile In-App Advertising

Omid Rafieian, University of Washington, Seattle, WA, United States, rafieian@uw.edu, Hema Yoganarasimhan

Mobile in-app advertising is now a major source of revenue for many app developers. In this paper, we focus on a unique aspect of in-app advertising — sequential ad placement. In this form of advertising, users are exposed to a sequence of potentially different ads within a session. This gives rise to a series of questions related to the effects of temporal sequencing of ads. We use data from the leading in-app ad-network of an Asian country to answer these questions. A unique feature of our data is the use of probabilistic auction for ad placement that has created great variation in the sequence of ads users are exposed to within the session. We find that when exposed to a higher variety of previous ads, users are more likely to click on the subsequent ad. This finding is in line with behavioral literature on categorization. However, we also show that such strategies for temporal sequencing of ads can negatively affect app usage, leading to a challenge for publishers when deciding to allocate their ad inventory. Given the detailed set of covariates in our data, we address this issue by obtaining personalized estimates of the effect for each individual using Generalized Random Forest. We show that the percentage of population for whom the conflicting effect exists amounts to a negligible portion of the total population. Finally, we propose an adaptive framework based on Causal Forests that helps publishers make real-time decisions.

4 - Product Return Management in Omnichannel Retail: Predicting Return Rates from Product Images

Chair: Daria Dzyabura, NYU Stern School of Business, New York, NY, ddzyabur@stern.nyu.edu, Marat Ibragimov, Siham El Kihal

Most omnichannel retailers sell all products online and only a subset offline due to space constraints associated with the offline channel. However, selling all products online might be suboptimal since many products have high return rates and result in net loss to the firm (~18% in our data), due to return costs. The question that remains unresolved in omnichannel retail is therefore: which products should be sold via which channel? Based on the sales and return data of a large European apparel brand in the online and offline channels, we use the product images to train machine learning models to predict demand, in both channels, as well as returns, for completely new products. We demonstrate that first, consumers purchase different products online and offline, such that some products attain higher market shares online than offline. Second, we find that items more likely to be returned are those that sell more online and less offline. This finding suggests that, when shopping online, consumers make their purchase decision based on their online evaluation of the product. Once they receive the product, they rely on their offline evaluation of the product to decide whether to keep or return it. Third, we demonstrate that images considerably improve predictions of product returns rates. Using our models, retailers are able to decide on which products should be sold via which channel to generate large demand, and also identify which products will be unprofitable if placed in the online channel, due to product returns.

■ TC05

Room 232, Alter Hall

Panel Discussion on Digital Marketing Applications of AI and Deep Learning III

Invited Session

1 - Panel Discussion on Digital Marketing Applications of AI and Deep Learning III

Moderator: Xueming Luo, Temple University, 1801 Liacouras Walk, Philadelphia, PA, 19122, United States, luoxm@temple.edu

AI and DL algorithms will leverage big and rich data like sentiment, image, video, and diverse subtleties of human interactions in one end-to-end process, not captured by traditional marketing. Empowered by deep neural networks, new marketing applications in the industry are astonishing (academic works are lacking): smart chatbots with personality, consumer classification and unmet needs detection, user preference discovery and recommendation, social semantics and personalized content curation, digital fraud and data breaches prevention, intelligent customer service and ad targeting, omnichannel marketing and dynamic pricing, and autonomous retailing and platform ecosystems.

Panelists

Oded Netzer, Columbia Business School, New York, NY, 1027, United States, onetzer@gsb.columbia.edu

Arun Sundararajan, New York University, Stern School of Business Info Sys Dept, 44 West 4th Street KMC 8-93, New York, NY, 10012, United States, arun@stern.nyu.edu

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Kannan Srinivasan, Carnegie Mellon University, Pittsburgh, PA, 15213, United States, kannans@andrew.cmu.edu

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■ TC06

Room 234, Alter Hall

Advertising Strategies

Contributed Session

Chair: Sreyaa Guha, IE Business School, IE University, Calle Maria De Molina 12, Madrid, 28004, Spain, sreyaa.guha@student.ie.edu

1 - Using Advertising Disclosure Choices to Predict Firm Demand Evolution

Simone Wies, Goethe University Frankfurt, Theodor-W-Adorno Platz 3, Frankfurt, 60323, Germany, wies@econ.uni-frankfurt.de

Firms have considerable leeway in deciding whether they report advertising expenses or not. We argue that the reporting of advertising expenses can reveal a firm's expected demand evolution. Specifically, we theorize that firms might stop disclosing advertising spending when they seek to disguise reduced demand for its products. That is, if the firm sees its demand eroding, it might boost advertising spending in an effort to buffer demand shortcomings. We also examine whether investors understand these motivations and interpret ceased advertising disclosure as a firm's signal of despair to secure sales. To test our predictions, we estimate forecasting models for size-adjusted advertising series to identify the difference between actual and expected advertising levels and to determine whether the firm reports above- or below-normal advertising. We then link the firm's reporting choice and advertising deviations to actual and future performance. Using both an event study and a calendar time portfolio approach, we finally test to which extent the stock market understands and assesses the signal of demand evolution. Our study contributes to the ongoing discourse of whether and how to report marketing investments, and outlines how advertising reporting can serve as (unintentional) signal of a firm's demand evolution.

2 - Integrated Marketing Channel Selection Mechanism of Automotive Lubricant Industry in India- An Exploratory Study

Meenakshi Tomar, O P Jindal Global University, Sonepat Narela Highway, Village:Jagdishpur, Sonepat, 131001, India, mtomar@jgu.edu.in

In Indian context the Automotive Lubricant Marketers have been relying on traditional mediums for promotional aspects, creating awareness, building brands and approaching new markets. They now need to study the modern mechanism used by people in their daily lives to communicate with each other. The Automotive Lubricant companies in India continue to witness a static growth which has proved to be a hurdle to increase their market share because of their reliability on traditional mediums. Therefore an attempt has been made to arrive at the channel selection mechanism of Integrated Marketing Communications currently employed by Automotive Lubricant companies in India. This research is exploratory in nature and its scope is to find out the existing process of devising an integrated marketing communication channel strategy currently in practice by Indian Automotive Lubricant companies. The question broadens its scope to understand the selection of the available mediums currently employed by Automotive Lubricant Companies.Qualitative Research Method involving Case Study Method have been used to address the subject. The question broadens its scope to understand the selection of the available mediums currently employed by Automotive Lubricant Companies. The two major steps for the data analysis in this research include Within Case Analysis and Multi Case Analysis.The data analysis using grounded theory has been done involving several iterations between interview data, existing theory and observation data.In the multi case analysis, replication logic is used. This analysis is done to seek comparison and explain common, different and complimenting findings in the study of channel selection mechanism of marketing communication by automotive lubricant companies in India. The findings across cases are integrated to form common analysis background. Five relevant stages have been found from the empirical data in this research study which includes the new dimensions under which the processes were carried out.

3 - Intra-firm and Inter-firm Spillover Effects in Display Advertising:implications for Multi-brand Portfolio Firms

Lin Boldt, Clark University, 950 Main Street, Worcester, MA, 01610, United States, lboldt@clarku.edu, Neeraj Arora

Advertising spillover effect refers to the phenomenon that the advertising of one brand could not only benefit brand being advertised, but also increase demand for other brands. In this paper, we examine the spillover effect of online display advertising for firms that own a portfolio of brands in a category. First, who benefits from online display advertising? The advertising brand? The other brands in the firm's portfolio? Or the brands from a competing firm? Second, how should a multi-brand firm accurately attribute the effect of each brand's advertising and optimally allocate the advertising budget across a portfolio of brands? Third, what are the moderators of spillover effects? In particular, we focus on intra-firm and inter-firm product feature and price similarity. We address the questions using a unique household-level panel data, which include each household's exposure to randomized display ads from multiple advertisers on media websites and the household's browsing behavior on e-commerce websites. Our findings contribute to the literature in the following ways. First, we provide evidence of the display advertising effect not only on the advertised brand, but also on the other brands in the firm's portfolio and competing brands offered by other firms. Second, we propose an attribution and allocation strategy for multi-brand companies in the face of the intra-firm and inter-firm advertising spillover effect. Third, this paper is the first in the literature to understand the role of feature similarity and price similarity on the advertising spillover effect for a multi-brand firm. Our proposed framework provides guidance for multi-brand companies on how best to spread its advertising dollars across the brands in its portfolio.

4 - The Debate over Loyalty Program Performance: Identifying Factors that Drive Success of Coalition Loyalty Programs

Sreyaa Guha, PhD Candidate, IE Business School, IE University, Calle Maria De Molina 12, Madrid, 28006, Spain, sreyaa.guha@student.ie.edu, Shameek Sinha

Loyalty programs are valuable relationship building tools, especially since the associated customer datasets can be used for targeted marketing. However, the performance of standalone loyalty programs is debatable with issues of self-selection, competition and diverse customer requirements. Coalition loyalty programs with extensive category partnerships, variety of rewards and enhanced customer experience provide a viable alternative. In this research we analyze strategic dimensions of customer involvement in such programs and identify tactical drivers, which if implemented, facilitates program success. The three strategic behavioral metrics we analyzed were transactions with partners across categories, responses to promotional campaigns and redemption of rewards. With access to an unique customer panel from a coalition loyalty program, we used panel estimation techniques on euros spend on transactions and points used for redemptions (continuous) and choice of store format in transactions, choice of channels for reward redemptions, choice of response mode in campaign responses and likelihood of campaign impact (discrete) to investigate the tactical drivers that increase customer involvement. We find that not only managing the point offers on transactions and reward offers for redemptions are critical, but also understanding the customer profile plays an important role. Promotional strategies and their timing need consideration. Firms should analyze the partners and channels where customers transact, respond and redeem. The managerial insights from this research will help firms efficiently retain and acquire customers under coalition loyalty programs. This research also provides theoretical support for investigating all three behavioral metrics simultaneously.

■ TC07

Room 237, Alter Hall

Sales & Salesforce Management I

Contributed Session

Chair: Junhong Chu, National University of Singapore, Nus Business School, 15 Kent Ridge Drive, Singapore, 119245, Singapore, bizcj@nus.edu.sg

1 - Free Riding Effect Between Sales People in Adoption of a Complex New Product

Vahideh Sadat Abedi, Cal State Fullerton, 3099 W Chapman Ave, Apt 259, Orange, CA, 92868, United States, vabedi@fullerton.edu, Rahul Bhaskar

Purchase of complex new products (e.g. insurance plans) typically depends on both customer word-of-mouth about the product and about the service offering brokers. We show that this leads to a free-riding effect between the brokers. We model this sales process, and validate it from data for an insurance product. We measure the free-riding effect, and show how the resulting model can facilitate decision making in managing the sales force.

2 - Effect of Sales Momentum on Salesperson Performance

Irene Nahm, Doctoral Student, University of Houston, 4750 Calhoun Road, Houston, TX, 77204, United States, iynahm@uh.edu, Michael Ahearne, Seshadri N Tirunillai, Nick Lee

Inside sales force are agents that mostly reach customers remotely, usually aided by technology. This research examines the role of momentum in managing individual sales performance for inside sales force. We argue that salesperson experience periods of increased (or decreased) performance, when compared with their expected performance. We refer to this short-term persistence in a salesperson's performance as (sales) momentum. We examine momentum using a novel, high-frequency transactional dataset from a large European call-center firm. The results provide a strong evidence for the existence of momentum and indicate that momentum is not an inherent trait of a salesperson that makes a specific salesperson prone to clumps of successful (or failed) outcomes. Rather, momentum is a state some salespeople transition into under appropriate conditions. We also examine how momentum influence individual salesperson's performance over time and how social factors moderate this relationship. We exploit the variation across the two call-center locations to understand the importance of social factors in sustaining the momentum in sales performance and find that accounting for both social effects and momentum is important in explaining salesperson performance. The results suggest an asymmetry in the influence of social factors on momentum. While social factor has a strong influence in negative momentum, it does not help sustain positive momentum. These findings suggest that managers can enhance salesperson performance by detecting momentum. Further, managers could significantly alter the win rates by using timely intervention to break the negative momentum of a salesperson.

3 - A Holistic View of Sales Effectiveness an Empirical Investigation

Srinath Gopalakrishna, Professor of Marketing, University of Missouri, Trulaske Sr. College of Business, 434 Cornell Hall, Columbia, MO, 65211, United States, srinath@missouri.edu, Ashutosh R Patil, Andrew Crecelius

Researchers and practitioners agree that customer acquisition and retention are critical aspects of sales success. Salespeople spend considerable time across these two activities which are respectively known as "hunting" and "farming" in the sales literature. There is general agreement that the effectiveness with which each activity is performed varies considerably across salespeople. Some are better at acquisition, others are better at retention, while still others are effective at both activities. We develop a composite sales effectiveness metric and undertake a systematic empirical investigation of the drivers of each component as well as the drivers of overall sales effectiveness. We find that such an investigation that examines the comprehensive effectiveness at both these activities is missing in extant literature. Based on reviewing relevant theories, we develop a bivariate model of hunting and farming effectiveness. We propose and test several hypotheses involving the drivers - notably we consider impersonal communication, operationalized by advertising spending and personal contact, operationalized by number of customer service personnel. We assess the impact of these two variables, among others, and highlight the trade-off that occurs between these two activities as salespeople balance acquisition and retention efforts. We offer several managerial implications from our research that can help managers understand the impact of salesperson, territory, and marketing variables on hunting, farming and overall sales effectiveness and offers some insights into how they can deploy resources in an effective manner.

4 - Agent Network Structure and Performance in the Second-hand Property Market

Junhong Chu, National University of Singapore, Nus Business School, 15 Kent Ridge Drive, Singapore, 119245, Singapore, bizcj@nus.edu.sg, Xianling Yang, Li Wang

We study how agent network structure affects the outcomes of second-hand properties, including the probability to sell, time on market, and sale price, using proprietary data from Lianjia, one of China's largest real estate platform agencies that specializes in second-hand property trading. An agent network is formed around a specific property that includes multiple agents of different roles on the homeowner side and multiple agents of different roles on the homebuyer side. The structure of the agent network is dynamic, constantly changing with the arrival of a new potential buyer and her associated agents. To overcome the endogeneity concern that is typical of agent network formation, we take advantage of the real estate platform's special policy and the exogenous arrival of property buyers. Lianjia has been practicing the "gong-fang-si-ke" ("public-property-private-customer") policy that stipulates (1) all properties, regardless how they are acquired and who acquires them, are the company's public resources (or "commons") and managed by the specific trading zone's storefront and can be accessed by all buyers' agents, and (2) a property buyer is the private customer of the agent who acquires the buyer. Both the arrival of a property buyer and her preferred location for a property are exogenous to Lianjia and its agents, which help generate exogenous agent networks. Further, the same agent can play different roles in different properties acting on both the buyers and the homeowners. These special data structure and institutional arrangements enable us to separately measure the effects of agent network structure, different agent roles, and each agent on the outcomes of a property, and identify the optimal agent network size to maximize the sales outcome.

■ TC08

Room 238, Alter Hall

CB - Time, Tourism & Culture

Contributed Session

Chair: Ozum Zor, Rutgers Business School, Piscataway Township, NJ, 0885, United States, ozum.zor@rutgers.edu

1 - Time Use and Purchase Behavior

Yan Xu, Assistant Professor, The Hong Kong Polytechnic University, Hong Kong, China, yan-xy.xu@polyu.edu.hk, Bart Bronnenberg, Tobias Klein

Consuming goods not only costs money to buy market goods, but also time spent on home production broadly defined, i.e., on shopping, evaluating products, preparing meals, and consumption. Consequently, time availability affects how a household uses the market and which bundle of market goods it chooses. Using a unique individual level data set combining purchase records, household characteristics, and home production preferences, this paper studies how plausibly exogenous shocks on time-availability impact purchasing behavior. We classify a subset of products according to the time it takes to turn them into consumption experiences. Controlling for household fixed effects, we show that increases in the availability of time from, e.g., retirement lead to more shopping trips, a more diverse set of stores, more overall spending on groceries, and more variety purchased. In line with our main hypothesis, time availability also shifts a household's shopping bundle into more time-intensive goods. Therefore, it is important to account for the availability of time when analyzing consumer purchase behaviors. Firms can make their products attractive to the consumer not only by lowering the price but also by making products more convenient to use.

2 - The Impact of Inbound Tourist Lifestyles on Travel Behaviors

Yusuf Erkaya, International Burch University, Sarajevo, Bosnia and Herzegovina, yusuf.erkaya.yusuf@gmail.com, Teoman Duman, Omer Topaloglu

Despite the fact that understanding tourist motivations and lifestyles is important in devising marketing strategies for tourism service providers, research in these areas with respect to inbound tourism is very limited. Overwhelming majority of recent research studies on tourist motivation, lifestyles, and behavior have focused on demand for mass tourism vacations. Relying on the lifestyle theory, this paper focuses on inbound tourism where local and regional tourism activities have been analyzed to formulate marketing strategies for tourism service providers based on an investigation of inbound tourists' motivations and lifestyles. Data for this study include 575 self-administered surveys completed by inbound tourists in Vienna, Austria. Austrian inbound tourism provides a typical context that is present in few European destinations. As an inbound tourism destination, Austria serves as an ideal setting because of its location and its ability to satisfy various types of touristic motivations, such as historic, family, summer vacation, etc. The data is analyzed by structural equation modeling. The results reveal twelve main types of tourists in the inbound tourism sector. Local food and local life-motivated tourists emerged as the most prevalent tourist types. Besides, relaxation-pleasure seeking, romance seeking, novelty-adventure seeking, and peer acceptance seeking are the other four most dominant types of tourists. In addition, this study shows that the motivational lifestyle characteristics depend on travel frequency, household income, time spent for travel, the latest vacation, average vacation period, accommodation preferences as well as demographic characteristics of inbound tourists. Managerial and theoretical implications of the findings are discussed.

3 - National Culture and Consumption of Technological Products: A Meta-analytical Review

Bipul Kumar, Assistant Professor, Indian Institute of Management Indore, Prabandh Shikhar, Rau-Pithampur Road, Indore, 453556, India, bipulk@iimidr.ac.in, Ajay K Manrai, Lalita A. Manrai

This papers discusses the role of national culture on consumption of technological products. Using Hofstede's cultural dimensions and drawing from the literature on consumer behavior for technological products, the study develops a comprehensive framework that elaborates the antecedents of consumption of technological products under the influence of various mediating and moderating variables. The proposed framework shows that the various dimensions of national culture such as Individualism-Collectivism dimension has moderating effect on the consumption of technological products. The study also proposes that in individualistic societies, there is higher preference for technological products and members of these societies may chose products which are technically sophisticated in nature. Such findings are in line with their cultural preference for independent and achievement oriented motivation. Next, we tested the proposed framework using a meta-analytic approach. We also meta-analytically tested the effect of mediators and moderators. After an extensive literature search based on multiple selection criteria, we use data from 41 independent research studies to test hypotheses. To the best of our knowledge, this study is first of its kind to provide a holistic framework on the subject, thus contributing to the literature. This study also has some important implications for marketers. It concludes that the cultural factors signal characteristically different line of approach for marketers to respond to the needs of the consumers belonging to a particular cultural setting.

4 - Time-of-day Effects on Consumers' Engagement on Social Media

Ozum Zor, Doctoral Candidate, Rutgers Business School, Newark and New Brunswick, NJ, United States, ozum.zor@rutgers.edu, Kihyun Hannah Kim, Ashwani Monga

With the growing engagement of consumers on social media, marketers are increasingly concerned with the variables that determine such engagement. The variable we examine is the time at which consumers engage with social media during a given day (i.e., morning vs. evening). We show not only that time-of-day has an influence, but that such influence depends on the social media content that consumers engage with (i.e., virtue vs. vice). Our theory follows from the literature of self-control, which suggests that self-control is strongest in the morning, making it relatively easier to resist vices; but weakest in the evening, making one succumb more easily to vices. Consequently, the release of social media content by marketers and the corresponding engagement of consumers ought to follow a pattern: a shift away from virtue content and toward vice content as the day progresses. We observe such a pattern in data that we collected on Twitter for several virtue and vice magazines. To the best of our knowledge, this is the first research investigating this novel effect of time-of-day effects on engagement with social media. Implications arise for marketers who, depending on the nature of the social media content, may want to release different content at different times during the day.

■ TC09

Room 239, Alter Hall

Price Perceptions

Contributed Session

Chair: Ushio Dazai, Fukuoka University, 8-19-1 Nanakuma, Jonan Ward, Fukuoka, 814-0180, Japan, udazai@fukuoka-u.ac.jp

1 - Reference Price Effects in Vacation Rental Markets

Shrabastee Banerjee, PhD Candidate, Boston University, 595 Commonwealth Avenue, Boston, MA, 02215, United States, sban@bu.edu, Anita Rao, Georgios Zervas

Do consumers respond to prices irrelevant to the purchase price? A large literature on reference prices has shown this to be true in lab experiments. However, measuring the effect of reference prices in the field is challenging because consumers' internal reference prices are not observable. We solve this problem by exploiting the fact that travel websites often advertise a minimum price for each property. The minimum price can plausibly serve as a reference price for consumers. Moreover, minimum prices have no direct bearing on the price paid by the consumer. Using a panel dataset from Airbnb covering approximately 17000 hosts, we investigate whether consumers respond to minimum prices, and whether increases in minimum price result in more bookings. Our preliminary results indicate that demand is positively correlated with minimum price, suggesting that consumers use minimum prices reference prices.

2 - Does the Secondary Market Foster Biases in Purchase Behaviors?

Adithya Pattabhiramaiah, Assistant Professor of Marketing, Georgia Institute of Technology, Scheller College of Business, 800 West Peachtree Street NW, Atlanta, GA, 30308, United States, adithyap@gatech.edu, Cheng He, Necati Tereyagoglu

In this paper, we leverage detailed transaction data from the Collegiate Athletics marketplace and combine them with ticket resale activities on the secondary market (such as StubHub) to document how losses incurred from ticket resale on the secondary market can lead to suboptimal re-purchase behaviors in the following season. Our data span both season and individual-game ticket purchases. We utilize a unique aspect of the firm's pricing strategy wherein it requires a mandatory donation (in support of the University's Athletics program) for season ticket purchases in certain sections of the stadium, but not for individual-game ticket purchases. Our primary objective is to - a) document the impact of possible gains/losses incurred during ticket resale on ticket (re)purchase activities (and consequently ticket revenues) for the University's football games, and b) characterize the extent of heterogeneity in this impact, with a view of offering implications for the firm's pricing decisions.

3 - Price Response in Multiple-item Choice: Spillover Effects of Reference Price

Kyuseop Kwak, University of Technology Sydney, Marketing DG, UTS Business School, P.O. Box 123, Broadway NSW, 2007, Australia, kyuseop.kwak@uts.edu.au, Sri Devi Duvvuri, Gary J. Russell

We develop a SKU level market basket model and apply the model to investigate cross-category reference price effects. This research extends previous work on the category-level multivariate logit model (Russell and Petersen 2000). Our model is a generalization of the multivariate logit model which allows for both complementarity and substitution effects at the brand level. We use this model to investigate how consumers' responses to reference prices within a category spillover into their choices across multiple categories. The notion is that a consumer's subjective judgment of the fairness of the price levels in one category influences the choice decisions of related items in other categories. We begin with building within-category SKU-level model based on previous findings from single category reference price models (i.e., internal versus external reference prices, asymmetric response due to loss aversion, and heterogeneity in response across consumers). We then develop four alternative model specifications for cross-category spillover effects and test competing theories about those effects. Using scanner panel data for detergent and softener categories, we discover valuable implications for reference price effects. First, SKU-level reference price effects exist and improve forecasting ability. Second, those reference price effects influence category attractiveness, but do not spillover across categories.

4 - Segmenting Low Price Conscious and Discount Conscious Consumers

Ushio Dazai, Associate Professor, Fukuoka University, 8-19-1 Nanakuma, Jonan Ward, Fukuoka, 814-0180, Japan, udazai@fukuoka-u.ac.jp

In this exploratory study, the author tried identifying two price sensitive segments, Discount-Conscious segment and Low-Price-Conscious segment. Previous research defines cherry pickers as those shoppers who visit a target retailer infrequently and move from one store to another. However, there is a segment who visit a EDLP chain frequently and does not switch chains. There are some previous researches focusing on Cherry-Picking or store choice behavior. However, these researches have a same limitation to using ID-POS data from one, or a few stores (e.g., Bell, Ho, and Tang 1998; Fox and Hoch 2005; Leigh, George, and Chien 2009.) In this study, using single-source panel data of Japanese milk category that is assumed to be a loss leader, the author calculated the discounts and switching of brand and channel. For the purpose for identifying two segments, the author uses the average unit price and the standard deviation of each individual. If the average unit price and standard deviation are both low, these denote price-conscious consumers. If the average unit price is low and the standard deviation is high, these denote discount-conscious consumers. Low-Price-Conscious consumer buys routinely from EDLP chains. A Discount-Conscious consumer buys something when the price is lower than it normally is. Furthermore, the author discusses the demographic and psychographic characters of each of these segments. In addition, the author offers suggestions for future research on discounting and pricing.

■ TC10

Room 605, Alter Hall

Corporate Social Responsibility I

Contributed Session

Chair: Chandra Srivastava, University of Texas-Austin, 4711 Avenue G, Austin, TX, 78751, United States, cnsrivastava@utexas.edu

1 - Forced to do Good: Economic Consequences of CSR Mandates

Nandini Ramani, University of Texas-Austin, 800 West 38th Street, Unit 4206, Austin, TX, 78705, United States, Nandini.Ramani@mccombs.utexas.edu, Raji Srinivasan

While firms' corporate social responsibility (CSR) initiatives are, for the most part, voluntary and government intervention in CSR initiatives may seem antithetical, in an attempt to achieve inclusive development, some governments (e.g., China, India, and the United Kingdom) are enacting policy to encourage firms to engage in CSR initiatives and even, going so far as to mandate firm CSR spending. A priori, it is not clear what the effects of such government intervention in CSR spending are on firm behavior and performance. Does government intervention in CSR spending alter a firm's strategy? How can firms make strategic use of CSR mandates? In this paper, we examine how firms can use marketing to strategically improve their performance in the light of mandated CSR spending. Combining developments in stakeholder theory and agency theory, we hypothesize heterogeneous effects of mandated CSR spending on firm performance based on firms' consumer orientation and ownership structure for two groups of firms - those who were already spending on CSR before the mandate, and those who are spending on CSR for the first time after the mandate. We exploit a 2013 CSR mandate in India which required some firms to spend two percent of profits on CSR to identify the effects of mandated CSR spending on performance. Our findings indicate that increasing CSR spending following the mandate improves performance for firms' with high spending on advertising, R&D, and distribution. Further, increasing CSR spending following the mandate improves performance for firms belonging to business groups. Our findings suggest that marketing can help firms strategically use mandated CSR spending to improve performance, and provide guidance to firms on optimal CSR and marketing spending levels to maximize shareholder value.

2 - Corporate Social Responsibility and Product Quality: The Role of Social Comparison Effect

Moein Javadian, Rotman School of Management, University of Toronto, Toronto, ON, Canada, moein.javadian14@rotman.utoronto.ca

The genesis of CSR as an instrument to attract consumers and increase market power has raised a question on how it interacts with conventional components of marketing strategy. In particular, the relationship of product or service quality is critical because brand managers need to allocate limited resources across these two levers to optimize profitability. In a nutshell, it is critical for the manager to understand the relationship between CSR and quality in order to deliver the correct combination to the marketplace. CSR is not simply another dimension of quality, but they differ in the sense that CSR can have a strong impact on a person's image in social context. The extent to which social comparisons influence preferences for CSR is then controlled by consumption visibility. In this context, I look at the impact of consumption visibility on the relation between CSR and quality. More specifically, the question is whether quality and CSR are substitutes or complements when the strength of social comparison effect due to consumption visibility is low or high.

3 - Balancing Act: Effect of Female Power in the Top Management Team on Investments in Marketing

Chandra Srivastava, University of Texas at Austin, 4527 North Lamar Blvd., Apt. 5139, Austin, TX, 78751, United States, cnsrivastava@utexas.edu, Saim Kashmiri, Vijay Mahajan

A substantial body of work has illuminated the effect that marketing has on firm performance. However, less research has investigated marketing's antecedents and what factors make firms more likely to invest in marketing in the first place. The authors build on upper echelons theory and agency-communion theory to hypothesize that gender balance in the top management team (TMT) positively influences a firm's attention to customer relationships and its investments in the marketing function. A longitudinal analysis of 221 publicly traded U.S. Fortune 500 firms from 2007 to 2013 supports the authors' hypotheses that a relative increase in female power in the TMT is positively associated with CMO presence, advertising intensity, and corporate social responsibility (CSR), and that advertising intensity and CSR, in turn, mediate the positive relationship between female power in the TMT and firm performance.

■ TC11

Room 606, Alter Hall

Digital Marketing III

Contributed Session

Chair: Jungju Yu, Yale University SOM, 186 Edwards St, Apt 2r, New Haven, CT, 06511-3780, United States, jungju.yu@yale.edu

1 - On the Choice Between Open and Private Ad Exchanges in Online Display Advertising

Amin Z Derakhshi, University of Washington, 840 E Denny Way Apt 206, Seattle, WA, 98122, United States, aminz@uw.edu, Amin Sayedi

Display advertising impressions in real-time bidding are bought and sold in two types of marketplaces: open ad exchanges and private ad exchanges. An open ad exchange is accessible to all advertisers and publishers who want to buy and sell impressions. However, only a prescreened set of advertisers and publishers have access to a private ad exchange. We investigate the pros and cons of the two ad exchange types and realize that open exchanges pose a bilateral adverse selection problem, whereas private exchanges soften the competition among advertisers. We identify the heterogeneity among advertisers and the heterogeneity among publishers as the two key market factors that could impact the choice of an ad exchange type in equilibrium. We build a game-theoretic model to investigate the strategies of vertically differentiated advertisers and publishers in the market. We find that, in equilibrium, publishers set a relatively high reserve price in the private exchange and sell an impression to the winner of an open exchange only if the impression is left unsold in the private exchange. We also find that when the heterogeneity among the publishers is high and that among the advertisers is low, all advertisers bid in the open exchange. Conversely, when the heterogeneity among the publishers is low and that among the advertisers is high, different advertisers bid in different types of ad exchanges. Implications for the auditing and monitoring practices in the display ad industry are discussed.

2 - Can Bad-quality Images Lead to Greater Demand on Airbnb?

Nitin Mehta, University of Toronto, 105 St George Street, Room 5072, Rotman School of Management, Toronto, ON, M5S3E6, Canada, nmehta@rotman.utoronto.ca, Shunyuan Zhang, Param Vir Singh, Kannan Srinivasan

This study answers the question of 'Why are Airbnb hosts using low-quality property images?". Existing studies on Airbnb show that high-quality images, compared to low-quality images, generate more demand for the Airbnb properties. However, a large number of Airbnb hosts use low-quality images—even when Airbnb offered a professional photography program for free. This is because high-quality images come with a risk of creating a high expectation on the delivered lodging experience for the guests. As a result, high-quality images increase the 'gap' between the images-induce expectation and the realization, and hence reduce the likelihood that a consumer leaves a review. High-quality images, though boost demand in the short-run, may hurt hosts in the long-run, if the hosts cannot deliver a lodging experience that meets the expectation and grow the reviews. Hence, a host may not want to have (free) high-quality images, if his marginal cost of providing high-quality service (e.g., respond to guest promptly) is high. We build a structural model on both the demand and the supply side of the platform. On the demand side, leveraging GPU parallel computing, we estimate a random-coefficient logit aggregated-demand model, with heterogeneous consumers choose from over 2,000 differentiated lodging alternatives. On the supply side, we build a dynamic game model, with heterogeneous Airbnb hosts dynamically choose the optimal quality of images and effort of service to maximize their expected long-term profits. Our analysis reveals interesting (reviews-induced) separating equilibrium, where hosts who are able (unable) to provide good lodging experience choose high-quality images and serve 'high-type' ('low-type') consumers. Counterfactual analysis recommends an image program for Airbnb to improve the revenues. The proposed policy outperforms Airbnb's current photography program, by providing images with medium quality to hosts who would use low-quality images under the current policy. The medium-quality images generate more demand for the hosts, without creating a big dissatisfaction.

3 - The Optimal Targeted Advertising Throughout Consumer Search Process

Jiwoong Shin, Yale School of Mangement, 165 Whitney Avenue, Room 5520, New Haven, CT, 06520, United States, jiwoong.shin@yale.edu, Jungju Yu

We consider a new product category in which consumers are uncertain about their valuation for the category, as well as each firm's quality. Firms can send costly targeted advertising using consumer data. Consumers make inferences from advertising and decide whether to search across firms in the category. Each firm can benefit from delivering an advertising at an initial stage as it makes the firm prominent for the consumer. However, other firms in the category can free-ride on its efforts to help consumer learn about the category. In this paper, we investigate the optimal advertising strategy throughout the consumer journey. We find that in a category whose valuation of consumers is large enough (mass product) high quality firms have more incentives to invest in advertising in the early stage. Otherwise, for a niche product category, low quality firms become more invested. We identify the value of customer data to firms and examine implications of targeting accuracy on firms' advertising strategy and consumers search.

4 - A Model of Brand Architecture Choice: A Branded House vs a House of Brands

Jungju Yu, Yale University SOM, New Haven, CT, 06511-3780, United States, jungju.yu@yale.edu

Some firms use the same brand (umbrella branding) for different product categories, while others use different brands (independent branding). In this paper, we investigate for which product categories a firm should use the same or different brands. To answer this question, we propose a framework of market-relatedness to characterize the relationship between product markets through supply-side (similar production technology) and demand-side (similar target customers). We apply this framework to a model of reputation in which a brand conveys information about both the firm's unobserved capability type (adverse selection), as well as its unobserved effort decision (moral hazard). We show that umbrella branding is optimal if the product markets are closely related on either supply-side or demand-side. However, we find that independent branding is optimal if product markets are closely related on both dimensions. Our findings provide implications for a firm's brand architecture choice between a branded house (umbrella branding) and a house of brands (independent branding) strategy and identify boundaries of an umbrella brand. We also discuss effects of category-wide innovation in quality on the optimal branding decision. We further provide an implication for an umbrella brand's optimal customer targeting.

■ TC12

Room 745, Alter Hall

Marketing Strategy – Creating Firm Value

Contributed Session

Chair: Shuba Srinivasan, Boston University, School of Management, 595 Commonwealth Ave, Boston, MA, 02215, United States, ssrini@bu.edu

1 - Activist Investor Intervention, Marketing Spending, and Firm Performance

Hooman Mirahmad, Texas A&M University, 1001 Harvey Road Apt 77, College Station, TX, 77840, United States, hmirahmad@mays.tamu.edu, Venkatesh Shankar

In recent years, activist investors and the firms they target have attracted considerable attention from media, academia, and legal communities. During the past 15 years, the number of activist investor campaigns has increased more than five-fold. While finance, accounting, and management scholars have examined the impact of activist investors on several financial and managerial outcomes such as stock price, corporate governance, and analysts' recommendations, the impact of activist investors on marketing spending and marketing capabilities of firms has been unexplored. In this research, using a sample of 718 firms targeted by activist investors over 15 years (2000-2014), the authors examine the impact of activist investor intervention on marketing spending, marketing capabilities, and firm value through a differences-in-differences (DIFF-IN-DIFF) approach. They further explore the moderating role of CEO's marketing experience on the impact of activist investor intervention on these outcomes. Preliminary analyses using propensity score matching (PSM) show that firms with activist investor intervention have lower advertising expenditures and firm value measured by Tobin's q than matched firms without activist investor intervention. Furthermore, the effect is moderated by CEO's marketing experience. These results suggest that activist investor intervention has a detrimental effect on not just advertising spending but also firm value, but CEOs with marketing experience can mitigate the deleterious effect.

2 - The Dark Side of Warranty Payments and Firm Value

Shuba Srinivasan, Adele and Norman Barron Professor of Management, Questrom School of Business Boston University, 595 Commonwealth Ave, Boston, MA, 02215, United States, ssrini@bu.edu, Didem Kurt, Ahmet Kurt, Koen Pauwels

The authors examine how the stock market reacts to unanticipated changes in firms' warranty payments. They propose two competing hypothesis: the customer relationship management hypothesis and the product quality hypothesis. The former argues that increasing warranty payments signal responsiveness to customers' needs and claims, predicting a positive relation between warranty payments and stock returns. The latter makes the opposite prediction by highlighting that rising warranty payments may indicate product quality issues and hidden operational problems. The authors also propose a contingency model of the warranty payment-stock return relationship and identify three important moderators: (1) marketing intensity, (2) research and development (R&D) intensity, and (3) financial leverage. Using a large, novel data set covering the period 2010-2016, the authors document a negative relation between unanticipated changes in warranty payments and stock returns, which is robust to the use of an instrumental variable. This finding supports the product quality hypothesis. The negative effect of increased warranty payments on stock returns decreases with an unanticipated rise in marketing spending, whereas it increases with an unanticipated rise in R&D spending. A deterioration in financial flexibility as measured by an unanticipated increase in financial leverage also magnifies the adverse impact of increasing warranty payments on stock returns.

3 - The Spillover Effect of Product Recalls on a Non-recalling Firm's Financial Value

Dong Liu, University of South Florida, 4202 E Fowler Ave. BSN 3403, Tampa, FL, 33620, United States, dongliu@mail.usf.edu, Sajeev Varki

Although product recalls hurt the recalling firm's revenue, market share, and brand equity, little is known about how this hurts a non-recalling firm's financial value (spillover effect). Drawing from assimilation-contrast theory, this paper examines the factors that affect the spillover effect on non-recalling firms' financial value. Based on an analysis of auto recall data from 2010 to 2016, the authors find that a non-recalling firm with moderate brand reliability has the highest idiosyncratic risk when a firm in the industry undertakes a product recall. Interestingly, when the last two recalls are from different firms within the industry, the current recall has a negative spillover effect only on the financial value of the non-recalling firm with moderate brand reliability. That is, non-recalling firms with moderate brand reliability experience a greater negative spillover effect compared to firms with high and low brand reliability. The severity of the current recall strengthens the negative spillover effect.

4 - Value Drivers in Brand Acquisitions

Sundar Bharadwaj, Professor, University of Georgia, Georgia Athens, GA, 48824, United States, Sundar@uga.edu, Hang Nguyen, Ranjani Krishnan

Despite the popularity of acquiring brands of alliance partners, little is known about the financial implications to the buyer. An empirical test on a sample of 1,858 brand acquisitions over a 25-year period shows that while the short-term and long-term returns from acquiring a partner brand to the buyer are positive, the long-term returns are larger. We find support for hypotheses based on organizational learning and network theories. Buyer returns are an inverted U function of the quantity and the duration and linearly positive with diversity of pre-acquisition partner brand alliances. Exploration alliances (new product) enjoy higher returns than exploitation alliances (marketing, distribution, and licensing alliances). While the buyer's network centrality attenuates the alliance effect on buyer returns, the seller's network centrality accentuates this effect. Consistent with learning benefits of lower information asymmetry and adverse selection mitigation, partner brand acquirers pay a lower premium and complete the acquisitions faster compared to non-partner acquisitions. The results are robust to endogeneity, alternative measures and methods. Together, the findings offer new insights into the drivers of brand acquisition success.

■ TC13

Room 746, Alter Hall

Multi-Channel Marketing I

Contributed Session

Chair: Vibhanshu Abhishek, Carnegie Mellon University, 4800 Forbes Avenue, 3024 Hbh, Pittsburgh, PA, 19104, United States, vibs@cmu.edu

1 - For Better or for Worse: The Halo Effects of Online Marketplaces on Entrenched Brick-and-Mortar Stores

Zhiling Bei, University of North Carolina at Chapel Hill, McColl Building Suite 5103, 300 Kenan Dr, Chapel Hill, NC, 27599, United States, bei@unc.edu, Katrijn Gielens

Traditionally, consumer packaged goods (CPGs) manufacturers have no direct gateway to consumers but have to rely on retailers. With the advent of online marketplaces, direct access to consumers is becoming a truly realistic option for CPG manufacturers. Online marketplaces seems a winning proposition to manufacturers at first glance. Not only can they create additional consumer demand, they also work as a bargaining chip and reduce dependencies on retailers. However, in the context of CPG categories where retailers typically have the exclusive control over retail price, promotion, and shelf space allocated to each brand in the brick-and-mortar stores, the brand's performance implications of complementing entrenched reselling channels with online marketplaces are less straightforward. The question remains whether and to what extent retailers and all brands within the category stand to lose or win. To address this question, online marketplace entries by 195 national brands (NBs) across 45 CPG categories between 2011 to and 2014 are analyzed using a seemingly unrelated regression (SUR) model that quantifies the impact of online marketplaces on category sales, focal NB share, rival NB share, and rival private label (PL) share. Drawing on empirical generalizations, the authors find that, on average, entries by NBs, especially leading NB, boost categories sales in entrenched offline stores. Moreover, entries by secondarily leading and weak NBs are more likely to boost own share. With respect to the competitive impact, entries by NBs tend to hurt rival PLs. In contrast, entries by leading and weak NBs boost the share of rival NBs.

2 - Interrelated Visits and Sales in an Omni-channel System: An Empirical Dynamic Modelling Approach

Florian Dost, Lancaster University Management School, Lancaster, LA14YX, United Kingdom, f.dost@lancaster.ac.uk, Erik Maier, Tammo H A Bijmolt

Today's retail environment is characterized by an increasingly complex and interrelated set of channels across which consumers move freely. These movements include visits to one channel and sales in another, referred to as research shopping, as well as post-purchase experience effects that create feedback within the omni-channel system. As a result, channels become causally interrelated, depending endogenously on each other. The emerging omni-channel system may exhibit non-linear and state-dependent behavior rather than linear behavior in equilibrium. To assess these channel interrelations based on the movements of consumers, often only aggregate time series data are available (e.g., online visits per time period). The authors introduce empirical dynamic models (EDM), a nonlinear methodology used in research on biological eco-systems, to capture different types of channel interrelations and non-linear behaviors. In particular, EDMs allow for empirically testing all pairs of channel time series variables for an uni-directional or bi-directional, possibly non-linear relationship within a common omni-channel system. The resulting interrelation network can be exploited to assess the state-dependent and interacting within-channel and cross-channel effects. EDM are applied to examine daily visits and sales time series data from a three-channel system (brick-and-mortar, online store, and mobile store) of a fashion retailer. We find that not all possible relationships between channel variables are relevant. Specifically, the online and mobile visits remain independent of each other. Furthermore, not all channels interact synergistically such that the retailer should focus on increasing the number of visits in mobile and brick-and-mortar stores, but not the online store.

3 - Estimating the Causal Effects of Online Ads on Omni-channel Sales

Vibhanshu Abhishek, Carnegie Mellon University, 4800 Forbes Avenue, 3024 Hbh, Pittsburgh, PA, 19104, United States, vibs@cmu.edu, Mi Zhou, Kannan Srinivasan, Edward Kennedy, Ritwik Sinha

Businesses have widely used email ads to directly send promotional information to consumers. While email ads serve as a convenient channel that allows firms to target consumers online, are they effective in increasing offline revenues for firms that predominantly sell in brick-and-mortar stores? Is the effect of email ads, if any, heterogeneous across different consumer segments? If so, on which consumers is the effect highest? In this research, we address these questions using a unique high-dimensional individual-level dataset from one of the largest retailers in the US, which links each consumer's online behaviors to the item-level purchase records in physical stores. Using a doubly robust estimator that incorporates nonparametric machine learning methods, we find that receiving email ads can increase a consumer's spending in physical stores by approximately $11.82. Additionally, we find that the increased offline sales result from increased purchase probability and a wider variety of products being purchased. Further, we demonstrate that the effect of email ads is heterogeneous across different consumer segments using a data-driven approach. Interestingly, the effect is highest among consumers who have fewer interactions with the focal retailer recently (i.e., lower email opening frequency). Overall, our results suggest a reminder effect of email ads. Receiving email ads from the retailer can generate awareness and remind the consumer of the retailer's offerings of various products and services, which gradually increase the consumer's purchase probability in the retailer's physical stores. These findings have direct implications for marketers to improve their digital marketing strategy design and for policy makers who are interested in evaluating the economic impact of prevalent email advertising.

■ TC14

Room 607, Alter Hall

Machine Learning - Customers & Products

Contributed Session

Chair: Fanglin Chen, New York University, Leonard N. Stern School of Business, 321 East 48th Street, Apt 7H, New York, NY, 10017, United States, fchen@stern.nyu.edu

1 - Finding Anomalous Yet Profitable Customers

Keith Botner, Assistant Professor of Marketing, Lehigh University, 621 Taylor Street, Bethlehem, PA, 18015, United States, keith.botner@lehigh.edu, Himanshu Mishra, Arul Mishra

How to find promising customers, opinion leaders, strong sales leads, or those most likely to redeem an offer are questions that most firms are interested in answering. Because such groups may form just a small percentage of the firm's customer base and possess characteristics unknown to the marketer, they can be quite difficult to detect in data sets. Making this more of a challenge, a majority of existing anomaly detection methods do not have the ability to incorporate all features of the current, rich marketing data. In this research, we develop a new kernel-based method suitable for the big data that firms are collecting. Our proposed method provides the benefits of identifying promising customers in: unlabeled data with no known a priori distribution, mixed attribute data, or data with more variables than observations. Using different kernel combinations across synthetic data as well as customer referral data from an online retailer, we examine and show the efficacy of the proposed method. Utilizing data from the online retailer, we examine the revenue generated from a successful referral, and the cost of incentivizing customers to refer. We compare this method to competing methods and approaches, including a no-model condition. In addition to theoretical advances, findings introduce an actionable, flexible tool with significant implications for marketers attempting to identify the most valuable customers.

2 - The Power of Deep Neural Networks: How Machine Learning Can Advance the Forecasting of Product Success Based on Aesthetic Appearance

Stefan Mayer, Goethe University Frankfurt, Theodor-W.-Adorno-Platz 4, Frankfurt, 60629, Germany, smayer@wiwi.uni-frankfurt.de, Jan R. Landwehr, Oliver Beck

The capability of neural networks to automatically classify visual images has increased tremendously in recent years. In fact, since 2015, neural networks have been able to outperform human beings in correctly classifying the content of images. In this study, we present an application of this powerful image-recognition technique to a core marketing problem: The prediction of a product's market performance. In particular, we develop a novel approach to automatically assess the visual typicality of a product's appearance using transfer learning. Extant literature has established that visual typicality is a key determinant of consumers' aesthetic appreciation of product design and of a product's success in the market (e.g., Landwehr, Labroo, & Herrmann, 2011; Liu, Li, Chen, & Balachander, 2017; Rubera, 2014). Against this background, we introduce a novel measure and empirically compare it to alternative measures using car models from different brands. We show that our novel measure is superior at forecasting both sales and aesthetic liking. Our research provides an easily applicable approach to automatically assess a key determinant of a product's success in the market and emphasizes the enormous potential of deep neural networks and transfer learning for marketing applications.

3 - Topic Hidden Markov Model (THMM): A New Machine Learning Approach to Make Dynamic Purchase Predictions

Milad Darani, Texas A&M Universtiy, 503 Southwest Parkway, Apt 1204, College Station, TX, 77840, United States, milad.md183@gmail.com, Venkatesh Shankar

Prediction of customers' next purchases is increasingly becoming important to retailers and direct marketers as it allows them to design effective and personalized marketing campaigns and recommender systems to enhance sales. Prediction of next purchases in these contexts is a big data dynamic problem as they involve a large number of products and a huge customer base. Current purchase prediction models (e.g., collaborative filtering, stochastic models) do not scale well as it is not managerially practical to rely on product characteristics and limited customer characteristics. In this paper, we propose a new machine learning approach, which we call the Topic Hidden Markov Model (THMM) that combines topic modeling with Hidden Markov Model (HMM). Our approach has several unique aspects that set it apart from alternative models. First, it can learn patterns that exist in transactions of multiple items in a purchase occasion. Multiple item transactions are common in categories such as salty snacks and cereals and existing methods of modeling these transactions do not offer sufficiently accurate predictions. Second, the model can capture the dynamic or time-varying patterns in customers purchase habits. Finally, the proposed model can explicitly find segments of customers based on their shopping habits and predict every customer's tendency of deviating from the common shopping behavior within the segment. We empirically test our model using data from retailer settings. We compare our approach to alternative models. The model validation tests demonstrate the superior prediction accuracy of our proposed approach over benchmark models.

4 - Understanding Product Competition with Representation Learning

Fanglin Chen, New York University, New York, NY, 10017, United States, fchen@stern.nyu.edu, Xiao Liu, Davide Proserpio

Identifying key competitors is essential to a firm's pricing, product design, and brand positioning strategies. In mature markets, companies often have long product lines with numerous products under the same brand. As a result, competition does not only occur among brands but also among different products or UPCs within a brand. Studying competition at the UPC level can provide firms with insights on cannibalization, cross-category competition and product line optimization. However, prior methods for mapping competitive relationships (i.e., choice models) focused on measuring brand-level competition, overlooking competition at the UPC level. This choice was mainly driven by computational constraints because incorporating the intrinsic preference for a myriad of UPCs will explode the parameter space and make estimation intractable. In this paper, we overcome the limitations of traditional choice models by combining them with a machine learning technique - representation learning. The proposed model is highly scalable, allowing us to analyze competition among hundreds of thousands of products in a few hours. The representation learning technique, i.e. Word2vec, maps products to an N-dimensional vector space such that products close in the vector space are more likely to compete with each other than products that are far apart. We demonstrate how to use this model to uncover inter-brand and intra-brand competition.

■ TC15

Room 603, Alter Hall

Brand Image

Contributed Session

Chair: Giang Tue Trinh, University of South Australia, Ehrenberg-Bass Institute, School of Marketing, Adelaide, 5001, Australia, Giang.Trinh@marketingscience.info

1 - New Product Introductions, Category Typicality and Firm Value

Burcu Sezen, Universidad de los Andes, Bogota, Colombia, burcu.sezen@ozu.edu.tr, Dominique M Hanssens

New product introductions by family brands cause stock price movements in the parent brand. The family brand is successfully stretched into various categories, however the nature of the category plays an important role in determining the magnitude of the spillover in the financial market. Particularly, typicality of the category for the brand determines how seriously consumers and investors take any action that comes from the brand in this category. Using insights from categorization theory, the authors hypothesize that 1) The more typical is the parent category for the brand, 2) the more typical is the category for the extending brand, the more of a reciprocal effect there is back from the new product introductions. The authors use the Virgin Family Brand case and event study methodology to empirically test their hypotheses. The results have the implication that managers of family brands should pay particular attention to the typicality of the category of the brand when predicting abnormal returns caused by an event such as a new product introduction.

2 - The Role of Interfunctional Conflicts on the Brand Orientation and Innovativeness Relationships

Emine Erdogan, PhD Candidate, Rutgers University, 1 Washington Park, Newark, NJ, 07102, United States, ee134@scarletmail.rutgers.edu, Omer Topaloglu

The brand is the most valuable strategic asset for any business and it requires an effort more than satisfying the needs and wants of customers. It is an identity that frames the company objectives and strategies in the process of value and meaning creation. Brand orientation is an inside-out approach that allows building strategies around the brand and tying all functions of the company into this brand identity (Urde et al., 2013). In this framework, market orientation becomes an antecedent of brand orientation. Scholars argue that interfunctional conflict serves as an important antecedent to market orientation (Jawoski and Kohli, 1993 and Kirca et al., 2005). They claim that conflict among different functions reduces the level of market orientation by inhibiting communication across departments. Conflict literature also suggests that whether conflict has beneficial or detrimental outcomes depends on the type of conflict. While task-related conflict is positively related to outcomes, relationship conflict is negatively related (Jehn, 1995; Jehn, 1997). Mindfulness literature, on the other hand, has found a positive relationship between individual mindfulness and interpersonal conflict handling (Fiol et al., 2009; Horton-Deutsch and Horton, 2003), problem-solving capability (Ostafin & Kassman, 2012) and better work performance (Giluk, 2010). Based on these works of literature, this study explores the question of how different kinds of interfunctional conflict (task and relationship conflicts) influence brand orientation, market orientation, and innovativeness relationships and how mindfulness can help to reduce the negative effect of these conflicts in organizational environments.

3 - A Comparison of Brand Loyalty Between on the Go and Take Home Consumption Purchases

Giang T. Trinh, Senior Marketing Scientist, Ehrenberg-Bass Institute-UniSA, Ehrenberg-Bass Institute, School of Marketing, Adelaide, 5001, Australia, Giang.Trinh@marketingscience.info, John G. Dawes, Rachel Kennedy

This paper compares consumer brand purchasing loyalty for on the go and for take home consumption. The study uses two UK consumer packaged goods datasets: the first details actual consumer repeat purchasing of brands in three product categories, soft drinks, crisps, and savory snacks for on the go consumption; the second contains actual consumers repeat purchasing of the same brands for take home consumption. Using polarization index as a behavioral loyalty measure, estimated from the Beta Binomial - Negative Binomial Distribution, the study finds that consumer loyalty to brands is markedly higher in purchasing for on the go consumption than for take home consumption.

4 - An Application of Place Branding to City and Theme Park Tourism

Sangkil Moon, Professor of Marketing, University of North Carolina-Charlotte, Charlotte, NC, 28223, United States, smoon13@uncc.edu, Young Han Bae, Jong Woo Jun, Ilyoung Ju

Place branding research has deepened and broadened the mainstream branding domain by developing marketing strategies focusing on places. We examine how to improve prospective consumers' attitudes toward places (e.g., city) through the city's major tourism attractions (e.g., theme park). A major theme park can attract tourists to its city by improving tourists' attitudes toward the city through their favorable attitudes toward the theme park. Based on this place branding mechanism, we examine consumers' attitudes toward a theme park and a city. In our empirical analysis, we conducted a survey on the relationship of Disneyland and Los Angeles (LA) as a representative example. In measuring the specified relationships, we use the tripartite framework of attitudes - cognition, affect, and conation. Specifically, our proposed model investigates the relationships of Disney content, Disneyland tripartite attitudes, and LA attitudes. Our results show that international tourists' evaluations of Disney theme park content positively influences Disneyland cognition, affect, and conation, while both cognition and affect are also positively linked to conation. Furthermore, survey participants' favorable Disney content evaluation and affect toward Disneyland enhance their attitude toward LA positively. To conclude, this study incorporates theme parks as an antecedent of consumers' attitudes toward cities to illuminate the interrelationships of relevant constructs capturing the synergistic effect of cities and their tourism attraction components. At the end, we discuss how theme parks and cities can use our study results to attract more tourists as strategic partners in the context of place marketing and branding.

■ TC16

Room 231, Alter Hall

UGC I - Online Reviews

Contributed Session

Chair: Alexander Chaudhry, Texas Tech University, 703 Flint Avenue, Lubbock, TX, 79409, United States, alexander.chaudhry@ttu.edu

1 - The Effects of Review Extremity and Rhetorical Devices on Online Review Helpfulness

Masoud Moradi, PhD Candidate, Texas Tech University, 5001 Chicago Avenue, Apt 415, Lubbock, TX, 79414, United States, masoud.moradi@ttu.edu, Mayukh Dass, Dennis Arnett

How do review extremity and content of online reviews affect review helpfulness? This paper focuses on four rhetorical devices -Emotional Tone (ET), Linguistic Style Match (LSM), Perceived Clout (PC), and Categorical Language Style (CLS), and investigates three research questions: (1) Does review extremity (i.e., one-star or five-star rating) affect review helpfulness? (2) Do rhetorical devices affect review helpfulness? (3) Do rhetorical devices moderate the effect of review extremity on review helpfulness? Focusing on 1,042,265 Video Games reviews posted on Amazon.com over 18 years, we examined the above questions. Results of the Poisson regression show a U-shaped effect of the overall rating on review helpfulness suggesting that review extremity has a positive effect on review helpfulness. With regards to the rhetorical devices, we found that ET, LSM, PC, and CLS have positive effects on review helpfulness. On examining the moderating effects, we found an inverted U-shaped effect of the interaction between emotional tone and overall rating on review helpfulness suggesting that emotional tone decreases the effect on review extremity on review helpfulness. However, LSM, PC, and CLS increase the effect of review extremity on review helpfulness. Our paper contributes by expanding the online review literature and examining the effects of textual information on the review helpfulness and provide a justification for inconsistent results reported in the previous literature regarding the effect of review extremity on review helpfulness.

2 - Longitudinal Analysis of Online Consumer Review

Ping-Yu Liu, Doctoral Candidate, National Taiwan University, No. 1, Sec. 4, Roosevelt Road, Taipei, 106, Taiwan, d01741008@ntu.edu.tw, Chun-Yao Huang

The Internet nowadays has become an important source of information for consumers to make purchase decision. Consumers rely heavily upon online reviews and ratings to seek out opinions and experiences on the Internet from people they might even unfamiliar with. Although abundant studies concern about online reviews in existing literature over last decade, there is scarcity of studies explore the issue of how online reviews of a specific product or service differ across review platforms and change over time. It would be highly interested by researchers, especially practitioners. We choose the hotel category because it represents a kind of experience products that quality is difficult to assess in advance, and therefore consumers highly depend on online review to make booking decisions. Based on scraping data of hotel online review, we focus on ratings across time, and explain such differences by those review texts. In our empirical analysis, we utilized sentiment analysis and General Inquirer (GI) dictionary to identify and tag the sentiment categories of words in the text content of consumer review. Furthermore, we explored how sentiments of review texts change along with hotel rating changes. Our empirical research reveals that the change of online ratings is highly significant for specific providers in the longitudinal situations. Moreover, the change of positive- and pleasure-sentiment relate to the change of review rating positively and significantly. Conversely, the change of negative- and pain-sentiment relate to the change of review rating negatively and significantly. Overall, our result demonstrates that information extracted from review text content can substantially explain such differences by adopting a systematic analysis approach and utilizing an established semantic dictionary.

3 - The Dynamic Impact of Different Reviewer Types on Different Groups of Customers

Shyam Gopinath, Kelley School of Business, Bloomington, IN, United States, shgopi@iu.edu, Elham Yazdani

Online opinion leaders have a role to play in disseminating information and driving product sales. In this research, a dynamic modeling framework is used to investigate the differential dynamic impact of different reviewer types on product sales. The dataset consists of a panel data of all reviews and product sales information covering the first two months of release for all 141 new music albums released on Amazon.com over an approximately three-month period. There are several key findings. First, we find that different reviewer groups have different impacts on product sales, which arises due to their differences in both writing style and product level knowledge. Second, we find that the influence of the reviewer groups vary across different consumer demographics. Finally, our market level econometric model allows us to rank different markets based on the responsiveness of the demographic groups to the different reviewer types. Our findings have important implication for both online retailers as well as brick and mortar stores.

4 - The Impact of Language Switching on Quality Evaluations

Alexander Chaudhry, Assistant Professor, Texas Tech University, 703 Flint Avenue, Lubbock, TX, 79409, United States, alexander.chaudhry@ttu.edu, Yang Wang

We identify the phenomenon of language switching among online reviewers and study motivations for language switching and its impact on product evaluation. We find evidence that language switching cues cultural frame shifts that lead to holistic overall judgments. These shifts lead to overall judgments that are less influenced by a product's outlier attribute evaluations. We document the perceived quality differences between reviewers' native language and English, finding the same effect across 11 languages. However, the magnitude of the quality ratings across cultures vary when considering reviewer demographics and review topics and verbosity.

Thursday, 3:30PM - 5:00PM

■ TD01

Room 32, Alter Hall

Consumer Response to Visual User-Generated Content

General Session

Chair: Purushottam Papatla, University of Wisconsin-Milwaukee, Milwaukee, WI, 53201-0742, United States, papatla@uwm.edu

1 - Mixed Methods and Importance of Multi-Modality in Understanding Online Content

Saeideh Bakhshi, PhD, Facebook, CA, United States, saeede83@gmail.com

Humans are complex and their behaviors follow complex multi-modal patterns, however to understand content on social media, researchers often look at complexity in large-scale yet single point data sources or methodologies. Visual content is one of the examples of social media content that is often looked at using single data source or single methods. Often with one type of data and method, all the other aspects of human behavior are overlooked, discarded, or, worse, misrepresented. We identify this as two succinct problems. First, social computing problems that cannot be solved using a single data source and need intelligence from multiple modals of visual, textual and attitudinal and, second, social behavior that cannot be fully understood using only one form of methodology. Throughout this talk, we discuss these problems and their implications, illustrate examples, and propose new directives to properly approach in the social computing research in today's age.

2 - Visual Listening In: Extracting Brand Image Portrayed on Social Media

Liu Liu, New York University, Leonard N Stern School of Business, 40 West 4th Street, New York, NY, 10012, United States, lliu@stern.nyu.edu

Marketing academics and practitioners recognize the importance of monitoring consumer online conversations about brands. The focus so far has been on user generated content in the form of text. However, images are on their way to surpassing text as the medium of choice for social conversations. In these images, consumers often tag brands. We propose a ``visual listening in" approach to measuring how brands are portrayed on social media (Instagram) by mining visual content posted by users, and show what insights brand managers can gather from social media by using this approach. Our approach consists of two stages. We first use two supervised machine learning methods, traditional support vector machine classifiers and deep convolutional neural networks, to measure brand attributes (glamorous, rugged, healthy, fun) from images. We then apply the classifiers to brand-related images posted on social media to measure what consumers are visually communicating about brands. We study 56 brands in the apparel and beverages categories, and compare their portrayal in consumer-created images with images on the firm's official Instagram account, as well as with consumer brand perceptions measured in a national brand survey. Although the three measures exhibit convergent validity, we find key differences between how consumers and firms portray the brands on visual social media, and how the average consumer perceives the brands.

3 - Face, Body or Both? Effects of Partial and Full Visibility of People in VUGC on Consumer Response.

Purushottam Papatla, University of Wisconsin-Milwaukee, University of Wisconsin-Milwaukee, Milwaukee, WI, 53201-0742, United States, papatla@uwm.edu

Photos posted on social media like Instagram often include people using specific brands of products. Online retailers of these brands have begun to display the photos on their sites with the assumption that seeing other consumers using the products can attract attention and increase product interest in site visitors. One disadvantage of displaying VUGC for retailers is that people rather than products in the displayed photos could attract a substantial share of visitors' attention. This could be particularly the case when the photos display faces prominently. Among visual stimuli, faces attract the most attention because of humans' evolutionary need to understand facial emotions for survival. Recent research in fact finds that the presence of faces in VUGC is detrimental to consumer response. A question raised by these findings is whether the presence of faces in VUGC could be less detrimental if they are less prominent. This is the question that we investigate based on findings that faces and bodies of humans in the visual field are processed holistically even if they are seen as distinct stimuli. If this is the case, faces should be less distractive when an entire person rather than just the face is prominent in the displayed photo since the focus will not be entirely on the face and emotions therein. We investigate if this is the case in this research empirically by analyzing consumer response to about 12,000 photos of 800 different products in six categories displayed by 35 online retailers.

4 - Modeling Visual Impressions of Faces

Alexander Todorov, PhD, Princeton University, NJ, United States, atodorov@princeton.edu

People form instantaneous impressions of other people based on facial appearance, agree on these impressions, and often act on these impressions. These findings suggest that it should be possible to model social perception of faces. However, reducing a high-level social attribution like trustworthiness to the physical description of the face is far from trivial. A major methodological problem is that the space of possible variables driving social perceptions is infinitely large, thus posing an insurmountable hurdle for conventional approaches. The alternative is data-driven approaches whose objective is to identify quantitative relationships between high-dimensional variables (e.g., visual images) and behaviors (e.g., perceptual decisions) with as little bias as possible. I describe a series of studies using reverse correlation methods based on judgments of randomly generated faces from a statistical, multidimensional face model; a vector space where every face can be represented as a vector in the space. These methods can be used to a) model evaluation of faces on any social dimension (e.g., trustworthiness), and b) to identify the perceptual basis of this evaluation. We can model both face shape and face reflectance and experimentally identify their contributions to social perception. These methods provide an excellent discovery tool for mapping configurations of face features to specific social inferences.

■ TD02

Room 33, Alter Hall

Digital Economy IV: Internet of Things, Technology and Sharing Economy

General Session

Chair: Vilma Todri, Emory University, Atlanta, GA, 30322, United States, vtodri@stern.nyu.edu

1 - The Business Value of the Internet-of-Things: Evidence from an Online Retailer

Vilma Todri, Emory University, Emory University, Atlanta, GA, 30322, United States, vtodri@stern.nyu.edu, Panagiotis Adamopoulos, Anindya Ghose

The "Internet of Things" (IoT) is rapidly becoming one of the most popular emerging technologies in business and society. One of the major verticals that has recently begun to effectively utilize IoT technologies is the retail industry. Given the unpreceded opportunities IoT generates for brands and retailers, it is of paramount importance to generate timely insights regarding the business value of IoT and understand whether the adoption of an IoT technology as an alternative purchase channel for consumers affects the volume of sales of physical products. In this paper, using empirical data from an online retailer who adopted an IoT technology that automates the consumers' purchasing process and utilizing a quasi-experimental framework, we study the effect of the adoption of the IoT technology on product sales and demonstrate the business value of IoT for retailers and brands. Our analyses reveal a significant increase in sales due to the IoT technology. Besides, we delve into the effect heterogeneity by examining the impact of IoT for products in different price range and different product taxonomies (i.e., search versus experience goods). Our analyses reveal that less expensive products as well as experience goods, rather than search goods, can accrue the highest benefits leveraging more effectively the novel IoT technologies. We validate the robustness of our findings using several robustness checks and falsification tests. To the best of our knowledge, this is the first paper to study the impact of an IoT technology on product sales making significant theoretical contributions while drawing important managerial implications.

2 - What Makes Movies Popular? The Role of Emotional Arcs

Jonah Berger, University of PA - Wharton, 700 JMHH, 3730 Walnut Street, Philadelphia, PA, 19104, United States, jberger@wharton.upenn.edu, Robert J. Meyer, Yoonduk Kim

Why do some cultural items (e.g., movies and songs) succeed while others fail? While some have argued that success is random, we suggest that fit with individual-level psychological processes plays an important role. Using automated sentiment analysis, we plot the emotional trajectories of thousands of movies, examining the link between emotional volatility (i.e., short-term shifts in emotion) and popular reception. Results indicate that more emotionally variable movies receive higher ratings, and this relationship is stronger in genres where uncertainty and surprise should be more desirable (e.g., thrillers and mysteries). These findings shed light on cultural dynamics, why things become popular, and the psychological foundations of culture more broadly.

3 - Technology Adoption and Depression Diagnosis: Evidence from the Adoption of Multiple Technologies

Xiaolin Li, University of Texas at Dallas, Dallas, TX, United States, lixiaolin420925@gmail.com, Elisabeth Honka, Pradeep Chintagunta

Other than anecdotal evidence, little is known about the potential relationship between the adoption of new technologies by consumers and their health outcomes. We examine a specific health outcome - the probability of being diagnosed with depression - and the adoptions of four technologies (home and handheld video game consoles, HDTV, and mobile internet) by a panel of individuals. Our data come from Forrester Research's annual North American Technographics Benchmark surveys. We observe an unbalanced panel of more than 35,000 consumers between 2003 and 2009 reporting whether they were diagnosed with depression and whether they (previously) adopted each of the four technologies. Additionally, we have demographic information and information on important life events that also occurred during the observation period. First, we look at the relationship between adoption of a technology in a given year and the report of a depression diagnosis the following year. In doing so, we need to address the presence of unobservables that influence both adoption and depression and the reverse causality problem: individuals who feel depressed may adopt technologies that they feel might alleviate the depression and then get diagnosed with depression anyway. To do so, we instrument for the adoption of each of the technologies: marketing and related activities (e.g., advertising) of the technologies encourage adoption without directly influencing depression and hence serve as valid instruments in this case.

4 - Decentralized Pricing and Platform Design in the Sharing Economy: A Randomized Field Experiment

Arun Sundararajan, New York University, Stern School of Business Info Sys Dept, 44 West 4th Street KMC 8-93, New York, NY, 10012, United States, arun@stern.nyu.edu, Apostolos Filippas, Srikanth Jagabathula

Sharing economy platforms like Airbnb and Lyft represent a spectrum of new firm-market hybrids: some are decentralized marketplaces that simply match buyers and sellers, while others centralize pricing, matching and capacity decisions to varying degrees. We conduct a field experiment that analyzes balancing centralized intelligence and decentralized decision making for pricing policy. While centralized dynamic pricing seems optimal at first glance, especially when providers are inexperienced and cognitively bounded, peculiarities of the sharing economy lead to tradeoffs. Beyond superior local knowledge, providers monetize personal time or assets, making platform control over price/availability challenging or infeasible. Provider and platform objectives are often not aligned for reasons beyond competitive spillovers. The ease of provider entry and exit amplifies the risks associated with perceived unfairness and incentive misalignment. Our randomized trials, conducted over a two-month period at a leading San Francisco-based peer-to-peer car rental platform, contrast the behavior and performance of two treatment groups (centralized, hybrid) with a control group (decentralized). We find that provider retaliation to a loss of pricing control alters the economic benefits of dynamic pricing, partial delegation mitigates the impact of retaliation, and these effects vary with provider scale, experience, and perceptions of fairness. Our results provide important guidelines for sharing economy platforms that lack the typical directive authority, asset control or culture-building capabilities that traditional firms use to implement revenue management strategies.

■ TD03

Room 34, Alter Hall

Blockchain Technologies and their Applications to Marketing

General Session

Chair: Catherine Tucker, Massachusetts Institute of Technology, , Cambridge, MA, 02142, United States, cetucker@mit.edu

Co-Chair: Christian Catalini, Massachusetts Institute of Technology, Cambridge, MA, 02142, United States, catalini@mit.edu

1 - Blockchain Technology and Marketing: Promise and Pitfalls

Christian Catalini, Massachusetts Institute of Technology, Cambridge, MA, United States, catalini@mit.edu, Catherine Tucker

This paper is an overview of the variety of ways that blockchain technologies may be used to revolutionize marketing. After providing an issue introduction to what blockchain technologies actually are and what makes them different, we move to their application in marketing. We highlight in particular their potential to provide costless decentralized verification of digital identities, and the variety of applications that this might have to the digital advertising industry. We also introduce the Cryptoeconomics Initiative at MIT.

2 - Seeding the S-Curve? The Role of Early Adopters in Diffusion

Catherine Tucker, MIT, Cambridge, MA, 02142, United States, cetucker@mit.edu, Christian Catalini

In October 2014, all 4,494 undergraduates at the Massachusetts Institute of Technology were given access to Bitcoin, a decentralized digital currency. As a unique feature of the experiment, students who would generally adopt first were placed in a situation where many of their peers received access to the technology before them, and they then had to decide whether to continue to invest in this digital currency or exit. Our results suggest that when natural early adopters are delayed relative to their peers, they are more likely to reject the technology. We present further evidence that this appears to be driven by identity, in that the effect occurs in situations where natural early adopters' delay relative to others is most visible, and in settings where the natural early adopters would have been somewhat unique in their tech-savvy status. We then show not only that natural early adopters are more likely to reject the technology if they are delayed, but that this rejection generates spillovers on adoption by their peers who are not natural early adopters. This suggests that small changes in the initial availability of a technology have a lasting effect on its potential: Seeding a technology while ignoring early adopters' needs for distinctiveness is counterproductive.

3 - Mobile Fintech: How Instantaneous Analytics Changes Consumer Decision Making

Shuyi Yu, MIT, Cambridge, MA, United States, shuyiyu@mit.edu

The Financial services industry has been transformed by the advent of Fintech, and especially the use of mobile applications to deliver instantaneous analytics to consumers. It is not clear, though how this increase in analytics availability affects decision making. To analyze this I use unique detailed data that tracks financial trades made on desktops and mobile. I find suggestive evidence that people uses fewer pieces of data when making purchase decisions on the mobile platform. To identify whether this is causal, I exploit variation in mobile usage related to people reaching mobile data caps at the end of the month.

■ TD04

Room 35, Alter Hall

Digital Marketing II

Contributed Session

Chair: Edlira Shehu, University of Southern Denmark, Geschwister-Scholl-Strasse 64, Hamburg, 20251, Germany, edsh@sam.sdu.dk

1 - What Leads To Longer Reads? Reading Depth In Online Content

Wendy W. Moe, Robert H. Smith School of Business, University of Maryland, College Park, 3469 Van Munching Hall, College Park, MD, 20742, United States, wmoe@rhsmith.umd.edu, Jonah Berger, David A. Schweidel

In today's digital age, more and more consumers read content online. They scan articles on the Wall Street Journal's website, catch up on sports at ESPN.com, and peruse blogs on tech and celebrity gossip. But what leads to longer reads? That is, what about certain articles encourage people to keep reading rather than leave the article and do something else? To address this question, we use natural language processing to analyze half a million reading sessions from over 30,000 articles from nine major online publishers. This allows us to examine, for a given person reading a given article, how textual features of a given paragraph (i.e., the words used) shape whether someone continues to the next paragraph or not. Results indicate that how much emotion content evokes, whether it uses familiar or vivid language, textual complexity, and whether the words indicate cognitive processes are occurring are all linked to longer reads. Importantly, however, not all emotion increases reading. Consistent with research on appraisal tendencies and attention, while text that evokes anger and sadness discourage further reading, text that evokes anxiety encourages it. To address selection concerns, we control for various features such as what platform the user is reading the article (e.g., mobile vs. desktop), the topic of the article, and even article level textual features. The results shed light on the psychology of content consumption and has implications for content marketing and content producers.

2 - Effects of Product Innovativeness and Engagement with Online Users on Branding Strategies: Evidence From Twitter

Meltem Kiygi Calli, Assistant Professor, Kadir Has University, Cibali Campus, Faculty of Management, Fatih, Istanbul, 34083, Turkey, meltem.kiygicalli@khas.edu.tr, Abdullah Onden

Mining social tags enables marketing researches to understand brand associations, competitive market structure and to predict firm performance. Many forms of online content such as web links, images, photos, videos, and tweets can be tagged and used for marketing research. This study presents an approach to gather and analyze social tagging data and shows how marketers can derive useful outcomes from these data. In this paper, we investigate the impact of high-technology (hereafter HT) companies' engagement with the online users on brand perception. Firstly, we analyze the overall sentiment trends for each HT brand using collected tweets posted on Twitter which is one of the popular social media platforms today. Secondly, we analyze the impacts of engagement between companies and users on sentiments related with the brand image and perception. In the study, we collect the Twitter data on five HT product categories. Sentiment analysis is conducted using Sentiment140. It measures the strength of sentiments by giving scores. To analyze the relationship between engagement and sentiment on social media, we collect the tweets posted by the companies' or their support/help services' and analyze them. The impacts of level, media types (link, text, video, photo), length, time (day-of-week and time-of-day) of tweets on customers' emotions and sentiments are investigated. We also examine the word frequencies and show word mapping for each brand. Moreover, we analyze the tweets about the target HT product innovations for each brand. The results show that on which technical characteristics of the HT products consumers do focus. Examples of the technical terms are face ID, all screen, TrueDepth camera, water resistance, wireless charging.

3 - Advertising on Premium or Non-premium Websites? Effects on Recall, Attitudes, and Click Behavior

Edlira Shehu, University of Southern Denmark, Campusvej 55, Odense, DK-5230, Denmark, edsh@sam.sdu.dk, Nadia Abou Nabout, Michel Clement

Hundreds of brands (e.g., AT&T and Verizon) stopped advertising on YouTube and the Google display network in 2017 due to fear that their ads would appear on non-premium websites with inappropriate content. Thus, the inherent quality of websites has become an important determinant of how online marketers plan their online advertising campaigns. Managerial practice currently envisions that advertising on premium websites is primarily relevant for branding campaigns, but less so for performance campaigns. Understanding how premium and non-premium websites affect online advertising effectiveness has substantial managerial relevance; yet, empirical insights are scarce. We use data from two large-scale field studies, alongside observational data, to analyze how advertising on premium and non-premium websites influences advertising effectiveness along the hierarchy-of-effects. We show that website quality is relevant for both branding and performance campaigns, depending on brand image. For high-image brands, advertising on premium websites affects both branding and performance campaign effectiveness positively. In contrast, low-image brands do not benefit from advertising on premium websites.

■ TD05

Room 232, Alter Hall

Mobile, Algorithm, and Artificial Intelligence (AI) Session I: Omnichannel Adverstising and Field Experiments

General Session

Chair: Xueming Luo, Temple University, Philadelphia, PA, 19122, United States, luoxm@temple.edu

Co-Chair: Anandasivam Gopal, University of Maryland, College Park, MD, 20742, United States, agopal@rhsmith.umd.edu

1 - Micro-Giving: On the use of Mobile Devices and Monetary Subsidies in Charitable Giving

Anandasivam Gopal, University of Maryland, University of Maryland, College Park, MD, 20742, United States, agopal@rhsmith.umd.edu, Dongwon Lee, Dokyun Lee

Mobile devices are increasingly being used by non-profits and charitable organizations as an alternative channel for philanthropy. Specifically, organizations can construct fund-raising campaigns through mobile applications or through mobile services such as SMS messages to target individuals and incentivize charitable giving. Research studying how mobile devices may be used to enhance such campaigns is limited. In this paper, we study how charitable giving through mobile apps can be enhanced through the use of push notifications and economic incentives. Using a randomized field experiment conducted in partnership with a mobile service provider in the US, we examine the effects of push notifications, monetary subsidies, and intertemporal choices of rewards on donation outcomes by individual users. Even though the donated amounts are small, consistent with cause marketing campaigns, the campaigns are sustainable since the aggregate amounts received are significant over time. Our experiments provide three main findings. First, push notifications have a remarkably high effect on donation behavior in terms of the decision to donate as well as donation amounts, especially for idle users. Second, offering rebates as economic incentives are more effective than offering matching grants, in particular for male consumers. Finally, while users are indifferent between receiving their rewards now versus later, users that are offered a rebate respond with greater alacrity when rewarded immediately rather than later. Our findings have important implications for charitable organizations and application service providers as well as for the design of cause marketing campaigns using the mobile channel.

2 - Cross-channel Spillovers and Cross-media Synergies in Omnichannel Advertising Response

Min Tian, University of Wisconsin, 975 University Ave, Madison, WI, 53706, United States, mtian8@wisc.edu, Paul R. Hoban, Neeraj Arora

Effective management in the modern omnichannel environment, where firms regularly advertise and sell products both online and offline, requires an understanding of potential cross-channel spillovers and cross-media synergies. Cross-channel spillovers may occur when digital advertising influences offline shopping, and when traditional media influences online purchase behavior. Cross-media synergies occur when response to advertising in one medium (i.e., digital or traditional) is amplified or mitigated because of advertising in the other. Using a large-scale, randomized field experiment, we explore the effects of traditional (i.e., direct mail) and digital (i.e., retargeted display) advertising on online consideration and sales, as well as offline purchases. Results indicate significant spillover in online consideration; direct mail increases both the incidence and frequency of website visits. With respect to sales, we find significant cross-channel spillover and cross-media synergy among digitally active consumers. Retargeted display advertising increases both online and offline revenues. Interestingly, when direct mail is served in isolation, it increases offline revenues, but at the expense of online sales. In contrast, when direct mail is reinforced by retargeted display advertising, this channel switching behavior disappears; both online and offline sales increase. Our findings highlight the need to consider cross-channel spillovers and cross-media synergies to characterize advertising response accurately.

3 - Platform Protection Intervention Effect in the Sharing Economy

Siliang Tong, Temple University, Temple University, Philadelphia, PA, 19144, United States, jack.tong@temple.edu, Xueming Luo, Lin Zhijie, Cheng Zhang

Despite the promise of sharing economy, information asymmetry still exists where sellers possess more knowledge of product quality than buyers do. Thus, the surge of sharing economy puts enormous pressures on platform reputation management. While many platforms enact consumer protection policies such as purchase insurance, empirical evidence regarding the mechanisms on how such policy would take effect remains limited. This study exploits a rich natural experiment field data on a platform reputation policy (Food Safety and Liability Insurance) in a home-cooked food sharing context. The platform saw an overall increase of sellers' sales revenue and buyers' expenditure after implementing the policy. More interestingly, the insurance policy led to greater sales revenue increases for sellers with lower or no review ratings than sellers with higher ratings. The results indicate that the reputation policy intervention boosted the revenue growth of zero-rating and lower-rating sellers by 172% and 162%, respectively, while the revenue growth of higher-rating sellers was 128%. On the buyer side, the insurance policy induced the novice buyers to spend more on the platform than seasoned buyers. The policy intervention boosted inexperienced buyers' expenditure by 395%, whereas there was hardly any increase in experienced buyers' expenditure. These findings suggest that the platform reputation enhancement policy grows the sharing economy business through the mechanism of engendering more sales of the low-rating sellers and increasing more purchases from novice buyers.

■ TD06

Room 234, Alter Hall

Analysis of Markets I – Structure and Alliance

Contributed Session

Chair: Sungtae Eun, Texas Tech University, 5402 66th st, 107, Lubbock, TX, 79424, United States, sungtae.eun@ttu.edu

1 - Modelling and Forecasting the Dynamics of Mobile Devices Market Shares

Ivan Svetunkov, Assistant Professor, Lancaster University, Lancaster University Management School, Lancaster, LA1 5ET, United Kingdom, i.svetunkov@lancaster.ac.uk, Victoria Grigorieva, Yana Salichova

The convergence of mobile telephony, Internet services, and personal computing distorts the mobile devices market. This market can nowadays be considered as a living ecosystem, where sales of one devices influence the sales of the others. These days consumers tend to base their purchase decision not solely on the brand loyalty towards a manufacturer but also on the familiarity with the software platform. For example, consumers owning Apple iPhones would rather buy Apple iPad than a tablet of another competing company, because they are familiar with the operating system and can enjoy the continuity. These connections between the devices create new patterns in the dynamics of market shares and should be taken into account when companies make marketing decisions about the development of their devices and software. We propose a multivariate model that takes this complex dynamics into account. This approach not only allows us to capture the interdependencies in the market of mobile devices, but also generates more accurate forecasts, which supports decision making. We test our model on the dataset and compare its performance with several other benchmark models, showing the advantages of the proposed approach.

2 - The Impact of Economic Crises on Alliance Portfolio Composition

Tuba Yilmaz, Assistant Professor, BI Norwegian, Nydalsveien 37, Oslo, 0484, Norway, tuba.yilmaz@bi.no

An important gap in the alliance literature is the investigation of how business cycles affect firms' collaboration behavior. Though it is well known that firms often use alliances to respond to uncertainty and share risks, little is known how firms adjust alliance strategies in response to economic crises. When faced with rapid, often unforeseen changes in their external environment, firms could need to adapt alliances throughout their alliance portfolio. Alliances can be one of the mechanisms that help firms to reap the opportunities unleashed by the external change. However, these external shocks often negatively affect the value and the effectiveness of alliances and thus makes them more susceptible to failure. This research explores how firms adapt their alliance portfolio composition following an economic crisis. This study then explores how the crisis differentially affect the viability of different forms of alliances.

3 - Proleptic Market Analysis: Market Analysis Based on Consumers' Attention

Daniel Ringel, Assistant Professor of Marketing, Kenan-Flagler Business School - UNC Chapel Hill, Campus Box 3490, McColl Building, Chapel Hill, NC, 27599-3490, United States, DMR@unc.edu, Elham Maleki, Bernd Skiera

Market analysis provides insights into the competitive environment that firms operate in. Traditionally, the scope of market analysis is on products and their producers. Yet, producers are not the only firms active in markets. Firms like information providers and comparison platforms engage with consumers and affect their decision making. As such, non-producing firms can represent new opportunities but also threats to producers in a market. The scope of traditional market analysis, however, is too narrow to capture such firms. Herein, the authors propose a broader market analysis approach, called Proleptic Market Analysis. By combining new methods with a new unit of analysis, namely consumers' attention, Proleptic Market Analysis is able to consider both producers and non-producing firms. To analyze markets based on consumers' attention, the authors draw on a new data source, namely organic search results of a search engine. The underlying idea is that what consumer search for reveals what they are interested in, and what they find in search results reveals who competes for their attention. The authors use their new approach to study the retail banking market in Germany from 2015 to 2016. Based on the organic search results of 902 market-defining keywords, covering over 4 million individual searches, the authors identify 596 firms that compete for consumer's attention across 8 identified topics (i.e., submarkets). Of these 596 firms, 27% produce financial products—yet, these producers only attract 14% of consumers' attention. The majority of consumers' attention goes to non-producing firms that offer product comparisons (29%) as well as news and information on financial products (23%). The authors visualize their findings in a competitive market structure map to show in which topics individual firms attract consumers' attention, how much, and who their closest competitors are in each topic.

4 - The Effect of Pricing Competition on Consumer's Demand and Manufacturers' Performance

Sungtae Eun, Texas Tech University, Lubbock, TX, United States, sungtae.eun@ttu.edu, Ben Chidmi

As reported by Statista Dossier (2016), the global male grooming market has increased from approximately 16 billion US dollars in 2012 to 20 billion US dollars in 2016 and the market is expected to reach almost 30 billion US dollars by 2024. The United States razor market is highly concentrated, with the top four manufacturers accounting for nearly 91% of all razor sales, excluding 7% sales realized by private labels. Two companies -Procter & Gamble (the maker of Gillette) and Edgewell Personal (the maker of Schick)- make practically all of the branded razors (84%) in the United States, with respectively 55.7% and 28.2% market shares. The third and fourth companies (Idea Village and BIC USA) control only 3.6% and 3.5%, respectively. The razor market is one of the few markets where the private label market share hardly exceeds 7%. Furthermore, the razor industry is characterized by new product development that allows brands, like Gillette, to sell some of their razors for more than $5 per cartridge. However, new entries in the market (Dollar Shave Club and Harry's) have reshaped the price competition in this market. The objective of this analysis is to investigate the effect of pricing competition on consumer's demand and manufacturers' performance in the U.S. razor market. The methodology proceeds as follows: First, we estimate a random coefficient logit demand model for a razor, using IRI data. Second, the demand results are used to estimate a menu of market structures amongst razor manufacturers.

■ TD07

Room 237, Alter Hall

Sales & Salesforce Management II

Contributed Session

Chair: Ashutosh R. Patil, University of Missouri, Columbia, Cornell-342, Trulaske College of Business, University of Missouri, Columbia, MO, 65211, United States, arpatil@yahoo.com

1 - The Performance Measurement Trap

J. Miguel Villas-Boas, University of California - Berkeley, Berkeley, CA, 94720-1900, United States, villas@haas.berkeley.edu, Dmitri Kuksov

This paper investigates the effect of performance measurement on the optimal effort allocation by salespeople, when firms are concerned about retention of salespeople with higher abilities. It shows that introducing salespeople performance measurement may result in productivity, profit, and welfare losses when all market participants optimally respond to the expected information provided by the measurement and the (ex-post) optimal retention efforts of the firm cannot be (ex-ante) contractually prohibited. In other words, the dynamic inconsistency of the management problems of inducing the desired effort allocation by the salespeople and the subsequent firm's objective to retain high ability salespeople may result in performance measurement yielding an inferior outcome.

2 - How Inequality Impacts Sales Team Performance? An Empirical Investigation

Ashutosh R. Patil, University of Missouri, Columbia, Cornell-342, Trulaske College of Business, Columbia, MO, 65211, United States, arpatil@yahoo.com, Niladri Syam, Sounak Chakraborty

The use of teams to organize work is very common and has become a mainstay for many organizations. Extant literature on sales teams has focused mainly on investigating team incentives and pay inequality in teams. In contrast, we focus on understanding the effect of a critical and pervasive characteristic of sales teams, namely, performance inequality among team members. Surprisingly, and in contrast to much of the literature that has focused on pay inequality, we find that performance inequality can have a positive effect on group sales under specific conditions. Specifically, performance inequality (e.g., the presence of a 'star' salesperson in a sales team whose other members are 'non-star' salespeople) can be beneficial ifthe team quota is high, and thereby, challenging to achieve. This positive interaction of team inequality and team quota is new not only in the literature on salesforce management, but also in management and economics. We also find that a higher team quota adversely impacts the positive association between individual sales and team sales. Finally, we also investigate an interesting 3-way interaction (among team's sales quota, performance inequality, and individual performance) impacts the overall team performance. We present several recommendations to managers on enhancing the performance of sales teams.

■ TD08

Room 238, Alter Hall

Channels and Strategy

Contributed Session

Chair: Lena Hoeck, Ludwig-Maximilians-University Munich, Geschwister-Scholl-Platz-1, Munich, Germany, hoeck@bwl.lmu.de

1 - Industry Informality and Marketing Channel Innovation Effects on Sales Performance: A Multilevel Modelling

Sadrac Cénophat, Europa-Universitat Viadrina, Schwibbogengasse, 3, Heilbronn, 74072, Germany, cenophat@europa-uni.de, Miriam Anja Lohrmann

While prior research has stressed the impact of marketing channel innovation (MCI) on firm performance, there is little empirical evidence or explanation for the implications of industry informality. Prior research describes informality as a shady underground, populated by substandard products and uncompetitive practices. Informality occurs due to the presence of unregistered firms within a particular industry. Studies suggest that the global informal economy consists of up to US$9 trillion worth of unregistered assets, and that unregistered firms make up to 40% of the GDP in emerging markets. These figures suggest that informality may constitute a powerful force which have the potential to affect the positive impact of MCI—i.e., the introduction of new or significantly improved delivery or distribution methods for inputs, products, or services. Drawing on the life cycle theory of the firm, this paper develops and tests a multilevel model explaining the impact of MCI in industries with issues of informality. The analysis of 8,052 firms operating in 26 industries in India reveals that, in industries with high issues of informality, MCI is not effective among larger firms. The empirical evidence and this model will help managers understand and accurately predict their sales performance when engaging in MCI in industries with issues of informality.

2 - Channel Choice Decisions for E-commerce in Consumer Goods Industry

Renuka Kamath, Professor, S.P. Jain Institute of Management Research, Dadabhai Road, Munshi Nagar, Mumbai, 400058, India, rkamath@spjimr.org, Sheila Roy, Nilendra Singh Pawar

E-commerce channels have increased the opportunities for market access for all organizations. In emerging markets such as India, organizations access diverse consumers through a complex network of channel intermediaries. The channel choice decision between channel configurations offline and through online channels is an interesting area. Firms have developed innovative linkages in dyadic relationships (manufactures as sellers on platforms) or as triads (manufacturer, e-distributors and e-marketplaces) that impact the transaction cost of the relationship. The governance structures of these relationships, through which firms outsource or build capacity for various transactions for e.g. order-booking, payments, warehousing etc. can be significantly different from those for the traditional channel (off-line), for the same set of product and consumers. The primary objective of the research is to study how organizations make choices regarding their online channel configuration and governance structures. We identify the relative transaction costs when firms choose between online channel configurations and off-line channels. We seek to understand the decision making process of firms and the various transaction costs (explicit and implicit) associated with various channel configurations. Due to the exploratory nature of study, the methodological approach of case study research permits a granular observation of this phenomenon. The methodology allows the in-depth investigation of a contemporary phenomenon involving inter-organizational relationships between manufacturers, platforms and associated intermediaries within the real world context to discover the rules of engagement between them. We intend studying these through a multiple case study design of three firms.

3 - Service Marketing Strategy in an Automated World

Ming-Hui Huang, Distinguished Professor, National Taiwan University, 1 Sec 4, Roosevelt Road, Taipei, 10617, Taiwan, huangmh@ntu.edu.tw, Roland T Rust

This paper explores and develops strategic applications of artificial intelligence (AI) in service marketing. AI, manifested by machines that exhibit aspects of human intelligence, is increasingly utilized in marketing, and today is a major source of service innovation and revolution. For example, chatbots turn customer service into self-service, big data AI applications provide personalized recommendations to customers, cognitive technology offers idiosyncratic solutions to complex service, and social robots engage customers in frontline interactions. We develop four AI-enabled service marketing strategies based on our four-intelligence framework. This framework specifies that there are four intelligences that can be used to create competitive advantage: mechanical, analytical, intuitive, and empathetic. The four intelligences are parallel as well as hierarchical. The more complex, idiosyncratic, and emotional service is, the higher the level of AI intelligence required to create and deliver the service. Firms need to decide the optimal intelligence portfolio to stay competitive. Specifically, the mechanical AI strategy suits any service that is simple, standardized, repetitive, routine, and transactional; the analytical AI strategy provides decision support for marketers to create value from systematic patterns from data; the intuitive AI strategy makes decisions autonomously to create value; and the empathetic AI strategy provides emotional support and emotional satisfaction to customers. We conclude with a set of implications for marketers to formulate service strategies that leverage the four intelligences.

4 - App, Web or Trailer? How to Effectively Build TV Audiences under Multiscreen Behavior

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One of the core challenges in the advertising-financed media industry is attracting audiences. Publishers, such as tv broadcasters, invest significant resources to attract viewers, for example by advertising tv shows in online and offline channels. Among others, they are trying to leverage the growing use of complementary digital devices (second screens) in conjunction with the television, the first screen. In this research, we empirically study the effectiveness and interplay of first and second screen marketing channels on television viewing activity. We use unique large-scale observational datasets from a large European media company. These include individual television viewing behavior as well as individual usage of television-related online content on e.g., the consumers' desktop and mobile devices. We match the datasets on the basis of behavioral and user characteristics. We find that both first and second screen touchpoints influence the likelihood to tune into a specific television show and the duration of show viewing. We find differential effects of the timing of first and second screen touchpoints (i.e. prior, during, and post-show) and the interplay of the first and second screen. We discuss implications for the design and planning of marketing in the media industry.

■ TD09

Room 239, Alter Hall

Pricing and Competition

Contributed Session

Chair: Mushegh Harutyunyan, Washington University in St. Louis, 1 Brookings Dr, WUSTL, Seigle Hall, Room 307, St. Louis, MO, 63130, United States, m.harutyunyan@wustl.edu

1 - Buying an Input From a Competitor with a Production Learning Curve

Matthew Selove, Chapman University, 1 University Drive, Orange, CA, 92867, United States, mselove@gmail.com, Dominique Lauga

Many firms buy a production input from a competitor, but managers often worry that this type of supply agreement could help the competitor develop a strategic advantage. We develop a model in which two firms compete during two periods, and in each period, the focal firm can buy an input either from its competitor or from a third party. Buying from the competitor in the first period helps the competitor move down its learning curve and produce the input at lower cost in the second period. Such a cost reduction implies the competitor can credibly threaten to set a lower goods market price if the focal firm buys its input from the third party, which strengthens the competitor's bargaining position and can reduce the focal firm's equilibrium profits. Despite concerns about weakening its future bargaining position, the focal firm's desire to avoid intense price competition in the first period can cause it to make an even larger fixed payment for the input than it would in the absence of a possible production breakthrough.

2 - Upstream Effects of Selling Formats in Emerging Markets

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In emerging markets, traditional retailers, typically characterized by small neighborhood stores, follow a "mediated access" selling format in which they stock products inside the stores away from direct access of customers. Under this selling format, the retail stores are manned by shopkeepers who offer products to customers on demand. This allows the retailers the ability to push the demand for certain products within a category by selectively recommending them to their customers. We build a game theoretic model to study the implications of this ability on profit sharing within the channel and how it affects the strategies of a manufacturer that has the ability to offer multiple horizontally differentiated products. We find that when the manufacturer offers full product variety, the mediated access retailer is able to fully extract the extra surplus generated in the channel by its ability to recommend products to its customers. If this ability is high, the manufacturer offers a reduced product variety to handicap the retailer and share this extra surplus. In certain cases, the retailer commits to handicapping itself by switching to the direct access format in order to receive a larger product variety from the manufacturer. The results continue to hold when the products offered by the manufacturer are asymmetric in terms of quality or marginal costs, as long as this asymmetry is not very high.

3 - Decision Fatigue and Online Dynamic Pricing

Richard Schaefer, Rutgers University, Rutgers Business School, 1 Washington Park, Newark, NJ, 07102, United States, rschaefer@business.rutgers.edu

How should an online retailer change its pricing policy based on the depth and speed of a consumer's product evaluation process? To investigate this topic, we model pre-purchase deliberation for a multi-attribute product: here, the decision maker can determine whether and when to evaluate preference fit along each attribute. Using this framework, we incorporate the psychological concept of decision fatigue, in which a consumer's deliberation difficulty depends on his number of recent evaluation decisions. We then investigate how an online retailer should devise its pricing strategy with respect to fatigue. We determine when a seller should utilize a standard price-skimming strategy and when it can credibly threaten future price increases. Furthermore, we determine the exact relationship between price levels and decision fatigue, establishing when longer-lasting fatigue yields more noticeable price changes across periods.

4 - Late Product Release: The Bright Side of Lost Sales

Mushegh Harutyunyan, Assistant Professor of Marketing, Nazarbayev University, 53 Kabanbay Batyr Ave, Astana, 010000, Kazakhstan, mushegh.harutyunyan@nu.edu.kz, Chakravarthi Narasimhan

When the competitor's product release is earlier than that of the firm, many consumers may decide to buy the competitor's product, rather than wait for the firm's product release. Hence, to avoid losing customers, the firm might prefer to also release its product early. In this paper, we show that, counterintuitively, the firm may be better off by releasing its product late and allowing its competitor to saturate the early market. Intuitively, by doing so, the firm induces its less committed customers to buy the competitor's product, while the firm's more "loyal" customers choose to wait for the firm's product. When the firm releases its product, the firm will have strong incentives to charge a high price to exploit the segment of consumers who have been waiting for its product release, which will induce the firm's competitor to also charge a high price, i.e., price competition will become alleviated, benefiting all firms. Furthermore, we show that the firm can benefit if its competitor captures a large share of the early market, rather than a small share. In other words, the firm can become better off if the competitor's market penetration increases. Our results suggest that the firm that is the first to release its product can be better off by using penetration pricing strategy rather than price skimming, because penetration pricing will help mitigate future price competition, while price skimming can lead to more intense competition.

■ TD10

Room 605, Alter Hall

Corporate Social Responsibility II

Contributed Session

Chair: Samuel Staebler, University of Cologne, Albertus-Magnus-Platz, 50923, Germany, staebler@wiso.uni-koeln.de

1 - The Socially Responsible Marketing Manager

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A growing, important business trend is for firms to engage in socially responsible practices. Meanwhile, the role of the marketing function and marketing managers, and their contribution to firms, are attracting attention in the marketing discipline. Interestingly however, the trend of social responsibility has not been integrated into the latter stream; thus we do not know much about the value from having a socially responsible marketing manager. Using legitimacy theory as a theoretical framework, this research investigates the concept of a socially responsible marketing manager, and tests its impact on marketing functions' performance (a form of external legitimacy) and influence within the firm (a form of internal legitimacy). Based on multiple empirical efforts (interviews, secondary data analysis, a survey, and an experiment), we find that, while socially responsible marketing managers are still far from mainstream, such managers positively contribute to marketing functions' performance and influence within the firm. Additionally, this impact is enhanced when customers are more interested in social responsibility and weakened when the marketing manager is more experienced.

2 - Does it Pay to Be Virtuous? Examining Whether and Why Firms Benefit from Their Corporate Social Responsibility Initiatives

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While corporate social responsibility (CSR) has become an integral part of brand strategy for most firms, the important question of whether CSR initiatives have an impact on brand sales remains unanswered. This paper attempts to fill this gap, while trying to reconcile seemingly contradictory viewpoints in the literature on the effect that CSR engagement has on firm performance. While meta-analyses show a small, positive effect of firm CSR engagement on firm financial performance, these studies have produced mixed results, where the effect is not significant or negative, in some cases. While past research has argued for the importance of accounting for differences in the types of CSR engagement, this aspect remains largely underexplored. This study makes the first attempt at documenting the potential influence of different types of CSR engagement on brand sales. We distinguish between three types of CSR activities: correcting the negative impact of a brand's business operations, compensating for the negative impact of a brand's business operations without necessarily altering those operations, and cultivating consumer goodwill despite being unrelated to any negative externality attributable to the brand's business operations. To investigate this relationship, we leverage a database of CSR press releases issued by several top CPG brands and combine it with detailed sales data for those brands. We employ the synthetic control method to measure the causal effect of firms' CSR announcements on brand sales. We find differential effects for the various CSR activity types on sales response. We then proceed to explore the mechanism behind this effect under controlled experimental settings. Our experimental results show that, conditional on brand reputation, CSR type influences perceptions of brand genuineness and thereby attitudes towards the brand. This work provides important insights for marketing managers looking to effectively incorporate CSR into their marketing strategy repertoire.

3 - Green Means Go! The Role of CSR Appeals in Product Recalls of Private Label Brands

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Private label brands attract consumers with the promise of delivering quality at a relatively lower price than national brands, and their contributions to retail store sales is increasing. It is important for managers to understand how to handle a product crisis that affects private labels because consumer perceptions of product quality and economic value fall following recalls, which results in the loss of store sales. This study investigates tactics that retailers and private label brand managers may use to recover from product recalls. The results of a functional data analysis demonstrate that private label sales decrease after product recalls, while product recalls in private labels do not seriously hurt category sales even in serious cases. However, when private label brands with CSR appeals are recalled, they experience a relatively quicker recovery than non-CSR products and positively influence post-recall category sales. Although price discounts have proven to be an effective recovery tactic for recalled national brands, our findings suggest that cutting prices on recalled private labels does not help category sales recovery. Rather, private label managers should rely on featured advertisements to help category sales recovery following recalls. In sum, the results of the study have a number of practical implications that provide ways for retailers and private label brand managers to mitigate losses following product crises and subsequent recalls.

4 - The Impact of Corporate Social Irresponsibility on Customer and Shareholder Perception: A Comparison Between Six Countries

Samuel Staebler, University of Cologne, Albertus-Magbus-Platz, 50923, Germany, staebler@wiso.uni-koeln.de, Marc Fischer

Corporate Social Irresponsibility (CSI) is spread across the world. Volkswagen s pollution crisis is just one exemplary crisis out of many that is covered in public media. Such negative coverage can severely harm the trust people place in brands and detrimentally impact financial performance measures. In line with these real world developments, there has been extensive research on the effects of crises on customer and firm related variables. Nonetheless, research has mostly ignored cross cultural differences. In order to mitigate the negative consequences of crises around the world, this study investigates crises across a wide range of countries. In the empirical setting, we cover all the CSI events that appeared in the leading media outlets of six countries during the years 2008 to 2014. Our dataset comprises of more than 500 crisis events involving 227 brands from 12 industries. Furthermore, we match this data with unique country-specific datasets covering customer perceptions dimensions and shareholder perception from six countries. To capture the effect of crisis events, we resort to the methodology of an event study. Our results show that CSI events have a negative impact on customer perception in all countries. The negative consequences however, are driven by different moderators: For example, customers from countries who have high traditional and nationalistic values are more likely to protect their "own" economy and are more likely to criticize foreign companies instead of national companies. Furthermore, we identify different effect strengths for different types of crises (e.g., human rights issues, environmental issues and operating practices). Finally, we identify and discuss differences in the impact on stock return.

■ TD11

Room 606, Alter Hall

Digital Marketing IV

Contributed Session

Chair: Sila Ada, Vienna University of Economics and Business, Romergasse 16/11, 1160, Wien, Australia, sila.ada@wu.ac.at

1 - When Enough Ad is Enough: Who Tolerates and Who Doesn't?

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Millions of users utilize the Internet content consumption on a regular basis. While content drives engagement, ads displayed on the website is generally the most common source of revenue for a publisher. There is a considerable body of work on how ads can adversely affect retention on websites. However, there is a lack of research on how ads impact satiation as a user progresses across multiple pages on a content website. We fill this research gap by utilizing a data set from a content provider who is serving millions of users where we observe a user's progression across multiple pages. We estimate the role of ads on the decay in user retention at different stages of progression on the site. Harnessing the richness of the data, we explore how the consumption pattern and engagement with the website changes depending on whether the source of traffic to the website is organic, inorganic or from social media. We further analyze how heterogeneity in device (mobile, tablets, and desktops) affects retention. Thus our research is focused on generating practical insights regarding the trade-off between monetization and user engagement in the short run and in the long run for content providers.

2 - Less is More: Ad Clutter and Advertiser Valuations of Websites

Sila Ada, WU Vienna University of Economics and Business, Welthandelsplatz 1, Vienna, 1020, Austria, sila.ada@wu.ac.at, Nadia Abou Nabout

Despite its rapid growth, advertisers recently became reluctant to keep investing more budgets in display advertising due to persistent concerns about (1) the specific websites that the ads are displayed on, (2) viewability of display ads, and (3) websites being cluttered with ads. Among these concerns, ad clutter (i.e., the number of display ads that a website visitor is exposed to) is considered a major hurdle for advertisers to overcome. Ad clutter exists because publishers (i.e., website owners and, thereby, content creators) aiming to increase revenue may want to place more ads on their website. However, such behavior is often myopic due to (1) the risk of losing website visitors and (2) advertisers potentially experiencing lower ad effectiveness, which might lead them to withdraw their ads from these websites. With this study, we aim to investigate website visitor behavior as well as advertiser reactions towards ad clutter by studying its effect on ad effectiveness and advertiser valuations of websites utilizing outcomes of real-time bidding advertising auctions. We use two auction outcomes as proxies for advertiser valuations, namely demand (i.e., number of impressions purchased at a specific website) and winning price (i.e., the cost-per-mille (CPM)). Our findings will inform both advertiser and publisher decisions: Advertisers will be able to make better decisions regarding where to place their ads, understanding how ad clutter affects ad effectiveness. Publishers will be able to decide how many ads to place on their websites, understanding how ad clutter affects demand and winning price, eventually composing their revenue.

■ TD12

Room 745, Alter Hall

Marketing Strategy – Value & Perceived Quality

Contributed Session

Chair: Sina Aghaie, Darla Moore School of Business, Columbia, SC, sina.aghaie@grad.moore.sc.edu, Carlos J.S. Lourenço, Charles H. Noble

1 - Modeling Strategies for Configuration of Interactive Platforms in Co-creation of Value

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In recent marketing literature, co-creation is defined as enactment of interactional creation across interactive system-environments (afforded by interactive platforms), that connect creational interactions with how experienced outcomes emerge from their underlying resourced capabilities. Interactive platforms as instantiations of agencial assemblages are composed of heterogeneous relations of artifacts, processes, interfaces, and persons, implying interactional capacities that bring about evolving patterns of interactional creation. In a digitalized world of interactions with rapidly evolving interfaces based on IoT, Big Data, artificial intelligence, and robotics, effective co-creation of value creation entails configuring heterogeneous relations in platformed interactions that afford a multiplicity of value creating environments in the joint sphere of enactment of interactive value creation. Value is no longer just a function of product features and service attributes (i.e., offerings as "having" value), but emerges as a function of interactional creation of outcomes from resourced capabilities, and as experienced by actors. Moreover, actors are 'interacted actors', in contrast to the 'atomistic' view of actors in neoclassical conceptions of markets. Organizations can potentially situate an interactive platform anywhere in the system of value creational activities, be it on the side of facilitating actors (e.g., firms) or that of engaging actors (e.g., customers) with the key questions of (1) Where and how can interactional value creation be made more co-creational? (2) How do opportunities for value co-creation arise through the interactive platform, and what are its implications for enterprises and users alike? We will discuss how these prediction and control challenges can be addressed with synthetic modeling approaches such as functional programming, deep learning, multiagent simulations, and topological data analysis, along with empirical methods such as immersive clinical action-based research.

2 - The Impact of Quality Gap on Market Share

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In this study, the authors define Quality Gap as the difference between perceived and objective quality. According to Mitra and Golder (2006), there is a positive relationship between two quality metrics. Objective quality has positive contemporaneous and carryover impact on perceived quality. Moreover, the long-term impact of objective quality on perceived quality is greater than its short-term impact. Nonetheless, improvements to actual quality may not always be reflected in perceived quality (Mitra and Golder, 2006). Therefore, it is of paramount importance for brands to be able to transform improvements in actual product quality to an improvement in their customers' perceptions to increase sales (Rust et al., 2002 and Mitra and Golder, 2006). Further, considerable progress has been made in the perceived quality and performance (Aaker and Jacobson 1994; Jacobson and Aaker, 1994; Mizik and Jacobson, 2003; and Srinivasan et al. 2009). However, little attention has been paid to the impact of the quality gap and performance. Considering the findings on positive contemporaneous and carryover impact of objective quality on perceived quality, the authors expect that objective quality and perceived quality converge in the long term. Similarly, previous studies mention the positive link between perceived quality and performance. Hence, firms might need to consider the quality gap to highlight on performance. Initial results indicate that quality gap has a negative effect on market share in the longitudinal study between 2001 and 2014 by exploiting Ward's Auto Yearbook and J.D. Power and Associates data sources. Similarly, offering high performing products in comparison to segment average (gap between brand's objective quality and segment average) negatively affects the market share. However, the gap between brands' perceived quality and segment average has positive effect on market share. The authors believe that marketing managers can optimize value creation and value appropriation expenditures by adjusting the quality gap based on the results.

3 - Repelling Invaders: The Effect of Incumbents' Marketing Strategies on Low-cost Entrants' Market Exit Over Time

Sina Aghaie, Darla Moore School of Business, 2117 Wallace Street, Apt A, Columbia, SC, 29201, United States, sina.aghaie@grad.moore.sc.edu, Carlos J.S. Lourenço, Charles H. Noble

Proliferation of low-cost competitors has increasingly eroded traditional firms' market share and profitability in recent decades. However, traditional firms are still uncertain about how to respond to this new challenge. In this paper, the authors study a common and important phenomenon - the marketing strategies that incumbent firms may employ to drive new low-cost entrants (challenger) out of the market. Specifically, they investigate how incumbents' price, service quality, and service convenience influence a new entrant's exit decision. They test the hypotheses on a rich, multi-market longitudinal dataset from the US airline industry and estimate a challenger's time-to-exit using a split population hazard model a type of survival model that can handle three types of challenger firms: (i) challengers that do leave the market during the observation period, (ii) challengers that will eventually leave the market, but outside the observation period, and (iii) challengers that are unlikely to ever leave the market (with the latter two types being right-censored observations). The challengers of the latter type are 'long-term survivors,' in the sense that they are immune to and will not leave the market because of incumbents' marketing activities but may still exit in the far-future for other reasons. In contrast to prior research that has studied low-cost entrants' time-to-exit in a static environment, the authors apply a time-variant approach considering immediate and later post-entry stages. Instead of homogeneous results, they find that the magnitude and direction of the effects vary over time. For instance, a substantial price-cut initially delays but will accelerate an entrant's exit decision later on. This result suggests that managers should be strategic in the type, timing, and intensity of their defensive responses to a new low-cost entrant and offer valuable insights for practitioners to efficiently assign marketing expenditures to the activities that might send an influential signal to the challenger and affect its future competitive behavior.

■ TD13

Room 746, Alter Hall

Multi-Channel Marketing II

Contributed Session

Chair: Yimeng Li, University of East Anglia, Norwich, United Kingdom; knn15zva@uea.ac.uk, Franco Mariuzzo, Nikolaos Korfiatis

1 - Social Network Service Promotions vs. Targeted Promotions: Exploring an Emerging Marketing Platform of Credit Card Companies

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In recent years, credit card companies and partner retailers have launched a new marketing platform aimed exclusively at their cardholders. This platform provides either public promotion through social network services or targeted promotion through company websites by providing customer with discounts or credits toward future purchases. In this paper, we present our game theoretical model analyzing this emerging marketing platform and investigate the various ways in which a monopolist credit card company (CC), working with two partner retailers (one more competitive than the other) and a social network service (SNS), might give discounts to its cardholders. We then examine how these proposals would affect both the profits of both the CC and the retailers. Our analysis shows that the CC can make a higher profit by running either 1) an SNS promotion with a less competitive company simultaneously with an SNS promotion with a more competitive retailer or 2) an SNS promotion with a less competitive company simultaneously with a targeted promotion with a more competitive retailer. We also analyze how the aforementioned platforms affect consumer surplus and social welfare and find that there is deviation between the CC's preferred promotion strategies and the strategies that can maximize consumer surplus because of the promotion-induced increase in the net price. Since the disutility caused by the price increase negatively affects social welfare, strategies aimed at maximizing the CC's profit often run contrary to approaches that seek to maximize social welfare effects. Moreover, considering the advertising effects for the SNS, we also examine how the SNS's increase in its revenue-generating rate through advertising influences the CC's choice of marketing platform, retailer' profit, consumer surplus and social welfare. In a future study, we will expand this work into a comparative examination of other price discrimination-based business models, including online coupons.

2 - The Impact of Manufacturer Direct Channel Entry on the Level and Volatility of Retailer Sales and Price

Els Breugelmans, Associate Professor, KU Leuven, Korte Nieuwstraat 13, Antwerp, 2000, Belgium, els.breugelmans@kuleuven.be, Michiel Van Crombrugge, Kathleen Cleeren, Scott Andrew Neslin

Multi-brand retailers are increasingly confronted with manufacturers opening up their own online direct sales channels, where end-consumers are offered the possibility to bypass the retail channel and buy their brands straight from the manufacturing source. This surge in direct channel openings has the potential to shake up the retail market in many ways. First, retailers may respond via for instance price changes, as they are now finding themselves competing against their own partner-suppliers. Second, also consumers may change their behavior, as they are offered yet another option in an ever-increasing roster of sales channels, which we capture by changes in retailer sales. Third, we not only investigate changes in the level of these metrics, but also study changes in their volatility to assess the extent that retailers and consumers experiment, driven by their mutual uncertainty in learning how to deal with the new player in the field. Retailer price and sales volatility has, so far, been an overlooked phenomenon in marketing literature, despite its high importance. We use the pioneer entry of the online direct channel of a high-profile electronics manufacturer in Belgium as a unique natural field experiment to perform a before-and-after analysis for the 19 involved retailers and 34 involved categories. As a consequence, we not only look at level and volatility measures of the two parties that are considered to be managerially the most relevant, but also inspect which category and retailer characteristics may play a moderating role. To our knowledge, this study is the first to offer such comprehensive overview of all these possible effects following a direct channel entry.

3 - Price Matching Guarantees an Equilibrium Analysis in Dual Channel Supply Chain

Yuansheng Wei, School of Management, Fudan University, 670 Guoshun Road, Yangpu District, Shanghai, 200433, China, 16110690031@fudan.edu.cn, Pei Huang

Many firms now offer price matching guarantees (PMGs) whereby they promise their consumers that any lower price offered elsewhere within a specific period will be matched. In practice, many suppliers complement their existing traditional retail channel with direct sales. However, extant literature on PMGs focus mainly on competing retailers and ignore the price matching strategy between a dual channel supply chain members which is observed in the market. This paper contributes to the literature by conceptualizing the price competition within channel members and investigating the implication of PMGs in dual-channel supply chain. We model the impact of channel relative advantage (CRA) and price sensitivity across channels (direct channel and retail channel) on equilibrium PMGs choices of the supplier and the retailer. We demonstrate that the presence of PMGs as a Nash Equilibrium hinges on the two key factors and the PMGs prevails as the retailer's strategical response to the supplier's encroachment even when the wholesale price is set by the supplier. We show that the encroaching supplier should not unilaterally offer PMGs regardless of the retailer's choice. The retailer optimally implements PMGs when the CRA for retail channel is relatively high. What interest us is that both the supplier and the retailer would offer PMGs when the channel differentiation is large and the CRA for retail channel is high. Finally, we show that PMGs implemented by retailer or both channel members in equilibrium benefits the channel by mitigating double marginalization problem. The results in our paper complement the findings in previous research on PMGs and develop important managerial insights on the interactions between the supply chain members.

4 - How do Information Strategy Online Lead to a Win-Win Situation with Free Riding Problems

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Recent foreclosures of high street retail shops further challenge the viability of brick-and-mortar retailers in an era dominated by electronic commerce. Classic brick-and-mortar shops rely on the reputation of facilitating customer understanding of a product through expert sales assistance. On the other hand, the internet allows sellers to operate online stores at lower cost with a structured provision of information. Online stores can also free-ride on the investment undertaken by physical stores, e.g. the provision of unit inspections to the customer and personalized assistance, even he provides during his product search. Studying competition in the information collection stage and purchase stage between the two channels, we find that under certain conditions the occurrence of free-riding is ultimately beneficial to brick-and-mortar retailers, not the expected online sellers. Information gathered through these two stages can also lead to cross-channel browse-and-switch behavior. This paper demonstrates that this behavior always intensifies competition and does harm to both sellers' profits, however in certain conditions the e-tailer can take the strategy of affecting consumers' switching cost to soften competition between the sellers, minimizing damage to their own profits.

■ TD14

Room 607, Alter Hall

Machine Learning – Search Behavior & Social Media

Contributed Session

Chair: Kunpeng Zhang, University of Maryland, 4347 Van Munching Hall, 4316, College park, MD, 20742, United States, kzhang@rhsmith.umd.edu

1 - Content-based Model of Web Search Behavior: An Application to TV Show Search

Jia Liu, Postdoctoral Researcher, Microsoft Research, 750 Columbus Ave, APT 10R, Doctoral Program, New York, NY, 10027, United States, jiliu3@microsoft.com, Olivier Toubia, Shawndra Hill

Consumers regularly interact with search engines to acquire information matching their changing preferences for content by entering search queries and clicking on the results. In this paper, we develop a flexible content-based search model, based on Poisson Factorization and Topic model, that can collaboratively model users' text-based search behaviors (typing a query), subsequent discrete search behaviors (clicking on a link), and the content that users encounter during the search process, while also capturing changes/heterogeneity in users' preferences underlying these search behaviors. We evaluate our modeling framework using large-scale Bing search logs on searches for TV shows. We examine how users' search behaviors and underlying content preferences vary across time in our data (i.e., before, during, and after a show is aired). We show that our content-based model can provide valuable insight into user query usage, clicking behavior, and the relationship between the two. We also show that our model can improve predictions of consumer click-through behavior above and beyond Bing's predictions (reflected by the position of links on the results page). Capturing the dynamics of user content preferences over time can especially improve prediction accuracy for TV shows for which changes in user search intent are more likely around the time the show is aired. In addition to search engines, our proposed model can also be applied by advertisers with their search campaigns data, to answer questions such as which ads to target to whom, on which devices, and when.

2 - Over Promise and Under Delivery in a Market with Product Previews

Dai Yao, Assistant Professor of Marketing, National University of Singapore, 15 Kent Ridge Drive, Singapore, 119245, Singapore, dai.yao@nus.edu.sg, Kaiquan Xu

In a market where customers preview a product before deciding to consume it, are creators of the products tempted to over promise in the previews, and consequentially, under deliver in the actual products? We investigate the question using data from WeChat Media Platform, where writers regularly post articles to attract readership and likings from the audience. Tipping is also available at the end of an article for readers to pay as they want to reward the writer. The data comprises 428 writers and 186,447 articles with previews authored by these writers between 1 January and 1 July in 2017 (previews in the form of a title, a cover image and an abstract), and their performances (i.e., readership, likes, and tips). We develop a multimodal deep learning framework to detect over promise in the previews and under delivery in the products. We find existence of such behaviour among the writers, furthermore, it augments readership but undermines the chance of tipping.

3 - Image Network and Interest Group a Heterogeneous Network Embedding Approach to Analyze Social Curation on Pinterest

Kunpeng Zhang, University of Maryland, 4347 Van Munching Hall, 4316, College park, MD, 20742, United States, kzhang@rhsmith.umd.edu, Liye Ma, Baohong Sun

Social curation has become an effective process for consumers to navigate through the vast digital content to find product information that fits their interests. However, little is known about the characteristics and implications of the social curation process, and there is little guidance on how brands should use social curation tools to achieve marketing goals. Using the popular image curation platform Pinterest.com as the empirical context, this research aims at understanding (i) how digital content are collected, classified and curated by users; (ii) what these activities reveal about the latent preference of users. To do so, we leverage heterogeneous network embedding, a powerful technique recently developed in machine learning. We treat images, curation keywords, and users as nodes in a heterogeneous network, where edges are defined by users' collection and curation actions. The heterogeneous network embedding technique captures structural and semantic correlation among multiple types of node in large-scale networks. Aligning image and user networks in the same space allows us to relate image classification with user interests and the context revealed in curations. Applying the approach to a large data set of users and images from Pinterest.com, our results show the images are effectively organized based on features and user curation. The underlying structure and relationship revealed from the embedding analysis show that users grouped into same clusters tend to curate similar images. We further demonstrate how the technique can be used to assess brand perception and to customize image design to improve user acceptance.

■ TD15

Room 603, Alter Hall

CB - Decision-making

Contributed Session

Chair: Clarice Yulai Zhao, University of Toronto, 105 St. George Street, Toronto, ON, M5S 2E8, Canada, clarice.zhao15@rotman.utoronto.ca

1 - Influence of Product Aesthetics on Hedonic Adaptation and Test on the Effect of Savoring

Mengyi Xu, Tongji University, Shanghai, China, rhea217@163.com, Xin Zheng, Jie Zhang

In a highly diversified and segmented market, product aesthetics has been an vital tool to catch consumers' eyes for most marketers. It's true that visual aesthetics can create values for consumers, more or less. However, enhanced aesthetics does not always lead to enhanced satisfaction and repurchase intention. To examine the influence of aesthetics design on hedonic adaptation, two groups of participants were asked to eat cookies intermittently during the time of a song and recorded their degree of happiness after eating each cookie. One group had highly aesthetic icing cookies, while another group had plain icing. We also conducted a similar experiment using durable goods (water glass). In addition to immediate consumption scenarios, we also wonder that if delaying the actual consuming and leaving participants to savor the upcoming event, will the degree and speed of hedonic adaptation progress change? To elucidate the effect of savoring, a experiment which is identical to the cookies one apart from subtly delaying consumption was conducted. The results indicate that highly aesthetic product actually can accelerate hedonic adaptation, especially for non-durable goods. While savoring can help slow down hedonic adaptation. Furthermore, this effect is more significant for highly aesthetic product. This study may shed some light on the relationship between product visual design and consumers' repurchase intention.

2 - The Effectiveness of Product Selling Preannouncement

Zhe Zhang, Fudan University, No.670 Guoshun Road, Shanghai, 200433, China, zhezhang@fudan.edu.cn

In the online marketing context, the product preannouncement has become more and more popular for online shopping platforms and merchants. We define Product-Selling-Preannouncement (PSPA) as a marketing communication strategy for ready-to-sell product that the online merchants leverage through the same online channel before the selling period. Using the empirical data from an e-commerce website, we analyzed the effect of PSPA from the product level, consumer level, and product-consumer level. Furthermore, we carried out an experimental measure to explain the influence mechanism based on construal level theory and perceived risk. The results show that the PSPA in the online shopping environment can boost product sales and consumers who browsing the PSPA are more likely to buy the product. Additionally, our study shows that the difference of consumers' psychological distance along with perceived risk between the preannouncement period and the selling period can explain the influence mechanism of the PSPA.

3 - Millennials and Financial Well-being: The Effects of Promotion Focus, Prevention Focus, Pride, Embarrassment and Financial Literacy

Jane McKay-Nesbitt, Associate Professor, Bryant University, 1150 Douglas Pike, Smithfield, RI, 02917, United States, jmckayne@bryant.edu, Namita Bhatnagar

This research examines the effects of regulatory (promotion, prevention) focus on consumers' financial well-being and the roles that self-directed positive and negative emotions (pride, embarrassment), and cognitive financial literacy have on those relationships. Results of a lab experiment with 235 millennials enrolled in a U.S. university, revealed that emotions mediate the relationship between regulatory focus and financial well-being. While a promotion orientation is not directly related to perceptions of financial well-being, there is an indirect positive relationship between promotion focus and financial well-being via heightened feelings of pride in personal finances. On the other hand, prevention focus' negative association with financial well-being is fully mediated through a heightened sense of embarrassment related to personal finances. Moreover, while there is an indirect effect of promotion focus on financial well-being through cognitive financial literacy, this relationship is not found for prevention focus. These results further our understanding of Regulatory Focus Theory; new information is provided regarding the emotional and cognitive mechanisms that mediate relationships between chronic regulatory focus and other attitudes. In addition this work has important practical implications as it suggests that attention should be paid to factors that may influence the accessibility of chronic regulatory focus, and ultimately one's sense of financial well-being.

4 - Package Downsizing and Consumer (In)Attention

Clarice Yulai Zhao, University of Toronto, 105 St George St, Toronto, ON, M5S 2E8, Canada, clarice.zhao15@rotman.utoronto.ca

Package downsizing, an indirect method to increase price, is commonly observed in consumer packaged goods markets. Manufacturers reduce the volume of product per package whereby the new size replaces the old one, but do not reduce the price. In this paper, I examine how consumer purchase behaviour changes after the package size decreases. Do consumers take the product size into account when making purchase decisions? If there is heterogeneity in consumers' attentiveness, what proportion of the population is attentive? Lastly, how does consumer's attentiveness correlate with their demographics, purchase frequency, and other characteristics? The answers to these questions would help researchers and managers improve forecasting and category management. For example, a manufacturer would like to know about the effects of downsizing on product sales and its profitability. Given that each product is targeting at a different segment of consumers, the downsizing strategy would differ by the attentiveness of its targeting consumers. Similarly, a retailer who concerns about sales across all competing brands need to consider the effect of downsizing on consumers' brand choice to coordinate their pricing and promotion strategies among these items.

■ TD16

Room 231, Alter Hall

UGC II - Online Reviews

Contributed Session

Chair: Angela Xia Liu, Tsinghua University, Weilun Building 353, SEM, Beijing, 100084, China, liux@sem.tsinghua.edu.cn

1 - Consumer Response to Affective Traits of Visual UGC

Nima Y Jalali, Assistant Professor of Marketing, University of North Carolina-Charlotte, 9201 University City Blvd, Charlotte, NC, 28223, United States, nima.jalali@uncc.edu, Purushottam Papatla

Visual user-generated content (VUGC) like photos of products posted by consumers on sites like Instagram is steadily increasing. Online retailers have therefore begun to curate thumbnail galleries of VUGC that can help consumers browse through several products. Since the galleries cannot provide detailed information on specific products, retailers make the thumbnails clickable for an enlarged view of the photo. If clicked again, the enlarged photo leads the visitor to the product's page. In order to gain sales, therefore, online retailers need to curate galleries with photos that when enlarged can stimulate visitor interest in proceeding to product pages. There are however few insights in this regard. This is the issue that we investigate empirically by examining whether the affective traits of a curated photo can stimulate consumer interest in the product that it carries. Our investigation is based on the assumption that the response to a photo on social media (e.g., number of likes on Instagram) represents not only the effects of its physical attributes (e.g., color composition, objects in the photo) and the audience size (e.g., number of followers of the person posting the photo) but also of its affective traits. This assumption allows us to isolate and investigate the effects of the affective traits on consumer response to more than 4500 user-generated photos curated by 18 online retailers. Our findings suggest that affective traits of VUGC do affect consumer response to the products that they contain.

2 - The Effects of Post Attribute Matching on Liking Behavior

Kaichi Saito, Meiji-Gakuin University, 1-2-37 Shirokanedai, Minato-ku, Tokyo, 108-8636, Japan, ksaito@eco.meijigakuin.ac.jp, Atsuko Inoue, Takashi Teramoto, Jeff Inman, Akira Shimizu

In this era of social media, "likes" given to user-generated content can promote brand sales. The authors explore what and how post attributes affect recipients' liking behavior using online communication history data collected at a social media site. The results show that a recipient is more likely to provide likes to posts that are similar to his/her previous posts in terms of content (topic and valence) and writing style (text length and emoji length). For example, a post with a lot of emojis is more likable for emoji users while it is less likable for non-emoji users. Such effects of post attribute matching exist independent of the effect of homophily (i.e., similarity between a recipient and a sender in their personal attributes). The results also show that these effects are strongly moderated by online social ties. Specifically, the effects of post attribute matching as well as the homophily effects disappear when making a liking decision on a post from a followee. This study expands the horizons of consumer interaction research by shedding light on liking behavior on social media and contributes to the literature by providing empirical evidence on what and how post attributes affect liking.

3 - Ratings, Reviews, and Recessions: How Business Cycles Shape Online Opinion

Thomas Scholdra, Doctoral Student, University of Bremen, Hochschulring 4, Bremen, 28359, Germany, scholdra@uni-bremen.de

Online reviews, usually consisting of a numerical rating and a textual content, provide opportunities for consumers to seek and share product information before and after purchase. Anticipating and expressing consequences of buying actions may be particularly crucial consumer activities when the level of uncertainty increases. While past research has examined the effects of economic uncertainty induced by business cycle fluctuations on consumer purchase behavior, these studies typically focus on changes in demand or consumer choice. Research on the effects of varying macroeconomic conditions on consumers' pre- and post-purchase behavior is sparse. Drawing on data of online reviews from 24 product categories over a 15-year period, the goal of this study is twofold: First, investigating whether, and to what extent, online reviews structurally change with macroeconomic fluctuations. Second, analyzing whether, and how, consumers' perception of helpful online reviews is linked to varying macroeconomic conditions. Using text-mining and time-series techniques allows to disentangle temporary and permanent effects of business cycle fluctuations on numerical and textual review components. Furthermore, quantifying asymmetries in depth and speed of changes across economic up- and downturns is possible. Understanding how the creation and perception of online reviews change with macroeconomic conditions may help companies and consumers to leverage the information provided on online review platforms.

4 - Behind the Online User Generated Content the Role of Residential Mobility

Angela Xia Liu, Associate Professor, Tsinghua University, Weilun Building 353, SEM, Beijing, 100084, China, liux@sem.tsinghua.edu.cn

Past research on consumer generated content on the social media has largely ignore one fact, that online content could be driven and shaped by an important socioecological factor—residential mobility. Residential mobility changes one's interpersonal environments (Oishi, 2014) and thus can potentially change interpersonal communication. In this study, we examined whether and how residential mobility drives people to engage in online content creation and increase the wom effectiveness. Using a large sample of data provided by Yelp, we analyze how the residential mobility influences the creation of online review and the topics of the review, which in turn influence the effectiveness of the content. This research sheds light on the socioecological drivers of user generated content and how companies can identity consumers and markets to create more targeted WOM program.

■ TD17

Room 31, Alter Hall

Panel Session: ISMS Code of Conduct Town Hall Discussion

Panel Session

Chair: Sandy Jap, Emory University, Atlanta, GA, sjap@emory.edu

1 - ISMS Code of Conduct Town Hall Discussion

Moderator: Sandy Jap, Emory University, Atlanta, GA, sjap@emory.edu

Discussion about ISMS Code of Conduct

Panelist: Leigh McAlister, University of Texas, Austin, TX, leigh.Mcalister@mccombs.utexas.edu

Barbara Kahn, University of Pennsylvania, Philadelphia, PA, kahn@wharton.upenn.edu

Gene Anderson, Syracuse University, Syracuse, NY, genea@syr.edu

Dan Airely, Duke University, Durham, NC, dan@danariely.com

Friday, 8:30AM - 10:00AM

■ FA01

Room 32, Alter Hall

Consumer Motivations in Financial Decision-making

General Session

Chair: Gil Appel, University of Southern California, Los Angeles, CA, 90089, United States, gappel@marshall.usc.edu

1 - Categorizing Spending as Exceptional Decreases Consumer Motivation to Repay

Simon Blanchard, Georgetown University, McDonough School Of Business, 37th & O Street NW, Washington, DC, 20057, United States, sjb247@georgetown.edu, Remi Trudel, Keri Kettle

People tend to categorize expenditures as exceptional (uncommon, infrequent) or ordinary (common, frequent). Financial planning programs (e.g., Mint.com) employ algorithms that differentiate exceptional versus ordinary spending and may notify clients when exceptional spending is detected. Intuitively, these notifications should motivate better financial decisions by bringing attention to the exceptional spending. However, we show that such notifications can backfire because consumers also categorize income as exceptional and ordinary and prefer to repay extraordinary debt with extraordinary income. Using a dataset of 3,777 customers' spending across categories (e.g., groceries, clothing, debt repayments), we show that consumers may be less motivated to repay their credit cards when an unusual spending notification is received while the consumer experiences extraordinary spending. Then, we show that this occurs consumers are less motivated to repay debts that they perceive as being due to exceptional (versus ordinary) expenditures and that this lack of motivation occurs of beliefs in the acceptability in postponing the payment of extraordinary debts with ordinary income. Finally, with a field study with recent tax return filers, we show that some income source perceptions as either ordinary and extraordinary are malleable, such that by framing income as ordinary can increase consumer intentions to repay their ordinary debt and reduce spending.

2 - Why I Share My Possessions: Motivations to Share Affect Customer Retention and Pricing

Yanyan Li, Columbia University, New York, NY, United States, yl3220@gsb.columbia.edu, Jaeyeon Chung, Gita Johar, Oded Netzer, Mathew Pearson

The consumer behavior literature has examined the antecedents and consequences of consumer motivation using experimental research paradigms and shed light on many theoretical facets of motivation. While some of these findings can be applied to consumer welfare, this research has not inspired much application by practitioners. This could be a result of the difficulty in uncovering motivations and examining their impact for specific firms. The present research puts forth a practical technique by which firms can extract consumer motivations from customer text responses. Specifically, we extract motivations from 25,290 hosts who list properties on the Airbnb platform by mining their text responses to the question, "why did you start hosting?". We find that Airbnb hosts are driven by three principle motivations - the motivation "to earn cash," "to share beauty," and "to meet people." We find that these motivations have downstream consequences for hosts' engagement with the platform and likelihood of staying on the platform. We use different analytical tools including machine learning and natural language processing, "buy-till-you-die" latent attrition model and lab experiments. These findings suggest that firms can leverage these motivations in their own advertising by attracting the right "type" of customer, which could also dictate firm revenue.

3 - Generosity or Sacrifice – Which Signal Derives Higher Monetary Donations

Gil Peleg, University of the Negev, Beersheba, Israel, Gilpel@post.bgu.ac.il, Oded Lowengart, Danny Shapira

Often donors take into account the social recognition component as part of the decision-making process regarding the level of contribution they make. Since societies value the economic value of the donation, as well as the benefactors' sacrifice (or effort), beneficiaries can incentivize donors by publishing their donations (and effort) as a signal to society. In this study, we analyzed various signaling procedures that trigger different social reward schemes in order to gain better fundraising outcomes. We developed a pseudo principal-agent model to reveal the best strategy for beneficiaries when they use society's reward as a motivator for monetary donation. We considered three social reward schemes in our model: surreptitious donations, generosity signals, and sacrifice signals. The model yielded counter-intuitive trade-offs as the donor's wealth become a moderator for social reward scheme. We conducted a confirmatory lab experiment to examine the model's assertions.

4 - I Need a Hero: Lower Financial Well-being Increases Interest in Superheroes

Gil Appel, University of Southern California, Marshall School of Business, Los Angeles, CA, 90089, United States, gappel@marshall.usc.edu, Eesha Sharma, Stephanie Tully

The superhero industry is large and growing, amassing billions of dollars each year. Despite the vast popularity of superheroes, existing consumer research is silent with respect to factors contributing to their success. The current research documents the novel phenomenon that lower financial well-being increases interest in superheroes. We suggest that superheroes represent a beacon of hope for those facing adversity and that this feature is particularly attractive to those experiencing lower financial well-being. Through the analysis of Facebook and Google data and controlled laboratory experiments, we demonstrate the relationship between lower financial well-being and increased preference for superheroes. We show that this effect results from the sense of hope that superheroes inspire, is moderated by the extent to which consumers feel their financial situation is unfair or undeserved, and is specific to financial (vs. general) well-being. These results add to the growing literature on how consumers' financial situation influences consumer behavior, demonstrating that financial well-being is not simply a proxy for general well-being but rather a construct with distinctive consequences. Beyond their relevance to the expansive entertainment industry, our findings may have implications for other contexts in which consumers may seek superhero-type figures such as when voting for political candidates.

■ FA02

Room 33, Alter Hall

Digital Economy V: Large Scale Social Interaction

General Session

Chair: Dean Eckles, MIT, Cambridge, MA, 02139, United States, informs@deaneckles.com

1 - Social Influence and Reciprocity in Online Gift Giving

Dean Eckles, MIT, Cambridge, MA, 02139, United States, informs@deaneckles.com, René F Kizilcec, Eytan Bakshy, Moira Burke

Giving gifts is a fundamental part of human relationships that is being affected by technology. The Internet enables people to give at the last minute and over long distances, and to observe friends giving and receiving gifts. How online gift giving spreads in social networks is therefore important to understand. We examine 1.5 million gift exchanges on Facebook and show that receiving a gift causes individuals to be 56% more likely to give a gift in the future. Additional surveys show that online gift giving was more socially acceptable to those who learned about it by observing friends' participation instead of a non-social encouragement. Most receivers pay the gift forward instead of reciprocating directly online, although surveys revealed additional instances of direct reciprocity, where the initial gifting occurred offline. Thus, social influence promotes the spread of online gifting, which both complements and substitutes for offline gifting.

2 - p-Hacking in A/B Testing

Christophe Van den Bulte, University of Pennsylvania, Marketing Department 759 JMHH, 3730 Walnut Street, Philadelphia, PA, 19104-6340, United States, vdbulte@wharton.upenn.edu, Ron Berman, Leo Pekelis, Aisling Scott

A/B testing platforms have made it easy for businesses and other organizations to run online experiments, perform statistical analyses, and assess treatment effects. As these platforms offer flexibility in how experiments are managed, decision makers may stop experiments earlier or later than proper statistical validity requires, possibly because they are overly eager to obtain significant results. Such behavior may result in invalid test conclusions and financial losses. We investigate whether online A/B experimenters indeed behave in this manner, more specifically whether they "p-hack" by stopping their experiment based on the p-value of the effect. Our data comprise 2,101 A/B tests from a leading online platform, and track the size and significance level of the effect on every day that the experiment is running. We apply a regression discontinuity design to hazard modeling. This allows us to estimate the causal effect of reaching a particular p-value on stopping vs. continuing the experiment. We find that experimenters indeed p-hack, at least for positive effects on lift, the key metric in the A/B tests we study. In addition, experimenters p-hack more if the lift is mildly positive rather than strongly positive. Finally, a false discovery rate (FDR) analysis is used to quantify to what extent p-hacking inflates the fraction of false positives beyond the nominal rate.

3 - A/B Testing

Eduardo Azevedo, University of Pennsylvania, Wharton School of Business, 3620 Locust Walk, Philadelphia, PA, 19104, United States, eazevedo@wharton.upenn.edu, Alex Deng, Jose Montiel-Olea, Justin Roa, Glen Weyl

A/B tests are increasingly popular in business, policy, and academia to evaluate the efficacy of innovations. This raises the question of how to evaluate innovations, measure the value of experimentation, and invest experimentation resources efficiently. We develop a model to answer these questions. We find that, when the distribution of gains is thin-tailed, so that most of the gains come from typical incremental innovations, the standard approach of running very large experiments is optimal. However, when the distribution of gains is fat-tailed, with much of the gains coming from a few outlier innovations, a lean experimentation of trying more innovations is optimal. We apply our model to data on the A/B testing of a major cloud product, the Bing search engine. We find that the distribution of gains is highly skewed, and that simple changes to experimentation can substantially increase performance.

4 - Information Diffusion, Social Interactions, and Collective Action

Angel Iglesias, University of Pennsylvania, PA, United States, angelig@sas.upenn.edu, Camilo Garcia-Jimeno, Pinar Yildirim

How is collective action shaped by social interactions, and how are social interactions mediated by the availability of networked information technologies? To answer these questions, we study the Temperance Crusade, the first instance of organized political mobilization by women in the U.S. This wave of protest activity against liquor dealers spread between the winter of 1873 and the summer of 1874, covering more than 800 towns in 29 states. We first provide causal evidence of social interactions driving the diffusion of the protest wave, and estimate the roles played by information traveling along information networks - specifically rail and telegraph. We do this relying on exogenous variation in the rail network links generated by railroad worker strikes and railroad accidents. We also develop an event-study methodology to estimate the complementarity between rail and telegraph networks in driving the spread of the Crusade. We find that railroad and telegraph-mediated information about neighboring protest activity were main drivers of the diffusion of the protest movement. Using variation in the types of protest activities of neighboring towns and in the aggregate patterns of the diffusion process, we also find suggestive evidence of social learning as the mechanism behind the effect of information on protest adoption.

■ FA03

Room 34, Alter Hall

Causal Inference I: Consumer and Firm Response to Quality and Cost Changes

General Session

Chair: Bryan K Bollinger, Duke Fuqua School of Business, Durham, NC, 27708, United States, bryan.bollinger@duke.edu

1 - Advertising Content and its Relation to Other Elements of the Marketing Mix

Elisabeth Honka, UCLA Anderson School of Management, 110 Westwood Plaza, Gold Hall, Suite B520, Los Angeles, CA, 90024, United States, elisabeth.honka@anderson.ucla.edu, Yi-Lin Tsai

Using data from the auto insurance industry, we comprehensively describe advertising content and its relation to two other elements of the marketing mix, namely, product (quality) and pricing. Our unique main data consist of the creative files for all advertisements placed by all auto insurance companies on TV, the Internet or in magazines in the U.S. between 2001 and 2016. We employ a team of research assistants to code the presence or absence of 18 informational cues in each advertisement. We supplement these main data with data containing online reviews of auto insurance companies, data containing the number of complaints filed with state insurance commissioners, and data on all rate change filings submitted by auto insurance companies between 2008 and 2013. We start with a detailed description of the advertising content data investigating different advertising content mixes companies employ, how these differ across advertising channels, and across time. Then we describe whether and how insurance companies change advertising messages when product quality and rates change.

2 - The Impact of Soda Taxation

Song Yao, Duke University, 1 Towerview Drive, P.O. Box 90120, Durham, NC, 27708, United States, song.yao@duke.edu, Stephan Seiler, Anna Tuchman

Abstract not available.

3 - Learning-by-Doing in Solar Photovoltaic Installations

Bryan K Bollinger, Duke Fuqua School of Business, 100 Fuqua Drive, Durham, NC, 27708, United States, bryan.bollinger@duke.edu, Kenneth Gillingham

The solar photovoltaic (PV) industry in the United States has been the recipient of billions of dollars of subsidies, often motivated by environmental externalities and firm spillovers from learning-by-doing (LBD) in the installation of the technology. Using a dynamic model of both demand and supply, this paper investigates installation cost reductions due to LBD using comprehensive data on all solar PV installations in California between 2002 to 2012, during the development of the PV market in California.

■ FA04

Room 35, Alter Hall

Social Influence and the Adoption of Novel (Life Critical) Products in Emerging Markets

General Session

Chair: Rajesh Chandy, London Business School, London, NW14SA, United Kingdom, rchandy@london.edu

1 - Can Friends Seed More Buzz?

K Sudhir, Yale University, School of Management, P.O. Box 208200, New Haven, CT, 06520-8200, United States, k.sudhir@yale.edu, Vineet Kumar

A critical element of word of mouth (WOM) marketing (aka. buzz marketing) is to identify central actors with high degree in the social network to serve as seeds. But seed identification typically requires data on the full network structure, which is often unavailable. We propose WOM seeding strategies motivated by the friendship paradox to get higher degree nodes without knowing network structure. But whether well-connected nodes generate enough WOM is an empirical question. We develop and estimate a model of WOM and adoption using data on microfinance adoption across 49 villages in India for which we know the complete social networks. Counterfactuals show that the proposed seeding improves adoption over random seeding by about 15%, relative to random seeding. Remarkably, it even improves over opinion leader seeding by 6-7%.

2 - Lock Me Up: Examining the Role of Product Design in Loans for Entrepreneurs in Ghana

Stephen J. Anderson, Stanford University, Stanford GSB, 655 Knight Way, Stanford, CA, 94305, United States, sjanderson@stanford.edu, Rajesh Chandy, Om Narasimhan

Poor access to finance is widely viewed as one of the biggest obstacles to the growth of small businesses in emerging markets. By allowing small scale entrepreneurs to purchase productivity enhancing assets, improved access to finance can raise firm performance and prosperity. Yet most studies on the adoption of loans by entrepreneurs in emerging markets find adoption rates of these products to be strikingly low. This study examines the role of product design in the context of micro-finance loans. We develop a loan product that is designed to address a crucial reason for the non-adoption of micro-finance loans: pressure to divert. Pressure to divert refers to the tendency on the part of the entrepreneur to allocate the loan proceeds to a purpose that is different from that for which the loan was originally secured. Pressures to divert loan proceeds can be internal (e.g., due to temptation) or external (e.g., due to family demands). We argue that restricting an entrepreneur's investment by requiring him or her to dedicate the loan proceeds ex-ante to a specific firm asset (through a "locked" product) will lead to higher adoption than offering traditional cash loans which impose no constraints on how loan funds are used (through an "unlocked" product). This is possible despite the optimal qualities of cash (e.g., fungibility, divisibility, liquidity). Moreover, we hypothesize that the increase in adoption of locked loans will be driven by a segment of "frailty conscious" customers - entrepreneurs who recognize their susceptibility to give in to pressures and divert money from business to nonbusiness purposes. We test these predictions by implementing a randomized controlled trial with 2,000 business clients of a large Ghanaian bank over a two-year period. Through a random lottery, half the entrepreneurs running small businesses were offered the opportunity to take up a locked loan product (treatment group), while the other half were offered an unlocked loan product (control group). Our findings are twofold. First, the likelihood of adopting a loan is significantly higher for entrepreneurs offered the locked asset product. Second, this main effect in adoption rates is largely due to the influx of frailty conscious customers who, recognizing their susceptibility to diversion pressures, tend to prefer the new locked loan product - and would otherwise shy away from adopting a traditional cash (unlocked) loan. The results of this study highlight how product innovation can drive demand for financial services by entrepreneurs in emerging markets. In doing so, this study contributes to the burgeoning literature on the adoption of innovation among emerging market customers, and on the drivers of growth among emerging market firms.

3 - Leveraging Patients' Social Networks to Improve Tuberculosis Detection in India: A Field Experiment

Pradeep Chintagunta, University of Chicago, 5625 S Blackstone Avenue, Chicago, IL, 60637, United States, pradeep.chintagunta@ChicagoBooth.edu, Jessica Goldenberg, Mario Macis

The under-detection of TB represents a key challenge for health officials in many developing countries. In this paper, we explore the use of incentives to encourage peer referrals, focusing on a specific community group with unique potential to identify those in need of treatment - those currently undergoing treatment themselves. Specifically, we present results from a field experiment conducted in partnership with Operation ASHA, an NGO that runs about 200 DOTS centers across India. Our study compares the effects of different types of incentives to encourage TB patients to refer people from within their social networks for TB screening and testing. We vary the conditionality of the incentives ('unconditional' and 'conditional' incentives), the method of outreach ("peer-to-peer outreach" or "provider promotional visits") and whether the new suspects know who named them ('known referrer' and 'anonymous referrer' conditions). Preliminary results indicate that current patients have useful private information about others in their social network who need treatment, and that financial incentives overcome barriers that otherwise prevent this information from being shared.

■ FA05

Room 232, Alter Hall

Mobile, Algorithm, and Artificial Intelligence (AI) Session II: Modeling Customer Mobile Experience in Omnichannel Shopping

Invited Session

Chair: Debashish Ghose, Temple University, Philadelphia, PA, 19122, United States, dghose@temple.edu

Co-Chair: Xueming Luo, Temple University, Philadelphia, PA, 19122, United States, luoxm@temple.edu

1 - "Mobile to Store" Promotion Effect on Omni-Channel Spending: A Randomized Field Experiment

Debashish Ghose, Temple University, Philadelphia, PA, United States, dghose@temple.edu, Xueming Luo, Jack Tong, Takeshi Moriguchi

Because of the convenience and seamless experience of mobile nearby search in omnichannel shopping, 80% customers express the interests to search product inventory at physical stores on their mobile when planning a visit . Agile omnichannel marketers capture this unique micro-moment of mobile search for offline store inventory (we name it "Search-to-Go", similar to the term of "Want-to-Go" micro-moment by Google) and steer customers with promotions to convert the mobile search and store visit intention to purchase decision (we name this mobile behavioral targeting promotion: "Mobile to Store" promotion). By collaborating with Muji, a Japanese life-style retail company which sells a variety of high quality household and consumer goods at over 700 locations worldwide. We run a large-scale randomized field experiment (between Feb 10, 2017 & Apr 17, 2017) with 22,000 customers to test the effectiveness of "Mobile-to-Store" promotion on driving spending of omnichannel customers at "Search-to-Go" micro-moment.

2 - Driving towards Purchase: Investigating Consumers' Search Patterns on an Automobile Mobile App

Jingcun Cao, Indiana University Bloomington, 1309 E. 10th Street, Bloomington, IN, 47405, United States, jingcao@indiana.edu, Pradeep K Chintagunta, Shibo Li

With the prevalence of mobile devices, consumers are choosing to search and shop on their mobile apps. While past studies in the search literature mostly focus on consumer search behavior given a static choice set, little is known about their search patterns when facing a dynamically changing product list. In this study, we use data from a mobile app selling used cars to study search behavior that spans several sessions. A feature of such search is that the set of products available changes over time as exiting cars are sold and fresh supplies are added to the site. We focus on the subset of browsers who make a purchase and trace the "tap-stream" of these users on cars they search. Our data include the attributes of the cars searched, the mobile device used (iPhone or Andriod), etc. At the same time, we also observe the list of available cars to the consumers each time they search for cars on the site. We find that consumers engage in extensive search prior to making a purchase decision. While one subset of consumers demonstrates "convergence" to the various attributes of the purchased car over the items searched, another subset demonstrates such a convergence only for the price attribute. Further, consumers in this latter group make the decision to purchase the car chosen during their very first session browsing that car even though these consumers often revisit sites of cars that they previously browsed. We then provide a descriptive model of the factors influencing the various stages in the consumer's search and purchase process.

3 - A Structural Model of Mobile App Adoption and Multichannel Choice of Purchase

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Consumers' multi-channel shopping is a widely observed phenomenon. From a firm's perspective, understanding consumers' channel choice and purchase decision is critical for their revenue. Furthermore, mobile applications (apps) have become a popular shopping channel for firms to engage with customers, provide services, and impact customer spending and loyalty. Therefore, another key question to answer is how the introduction of this new channel (i.e., mobile apps) impact consumer cross-channel shopping behavior. Using data from a leading hospitality firm covering a four-year period, we develop a integrated dynamic structural model to investigate consumers' decision to adopt mobile applications, and its subsequent impacts on their decisions to purchase using alternative shopping channels. With counterfactuals we examine the impact of firm's decision not to introduce an app and availability of app service on customer spending.

■ FA06

Room 234, Alter Hall

Analysis of Markets II – Incentives & Entry

Contributed Session

Chair: Sina Aghaie, University of South Carolina, 2117 Wallace ßtreet Apt A, Columbia, SC, 29201, United States, sina.aghaie@grad.moore.sc.edu

1 - Marketing Elasticities for Sales Incentives at the Point of Sale as Well as for Online and Offline Advertising in the Book Market

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Effect sizes of sales incentives at the Point-of-Sale (POS) in comparison to general offline and online advertising are not well understood. Both offline and online advertising received much attention in the marketing literature. This resulted in multiple meta-analyses that demonstrate their effectiveness to stimulate demand. Understanding the relative effect sizes of advertising and POS sales incentives is particularly important in the media industry. Customers are uncertain about the value of a product before actual consumption. In this regard, advertising may reduce this uncertainty or simply raise awareness of a product in the first place. On the contrary, the high uncertainty may be associated with impulse decisions that may be influenced at the shelf. Consequently, managers are interested how to allocate investments between general advertising to stimulate demand and more "push" style strategies at the POS. In cooperation with a publisher we estimated a market response model in which we relate offline and online advertising expenditures and promotion incentives paid to retailers to the sales of all 467 books published by the cooperating publisher in 2016. We find that offline advertising and sales incentives at the POS have similar elasticity magnitudes of around 0.08, each. The relationship of online advertising on the contrary is not associated with additional sales. We advance the academic literature by providing evidence for the continuing importance of sales incentives at the POS. Managers are reminded of the importance of push strategies in the physical world.

2 - Technology Incentives and Service Quality the Case of Taxis and Uber

Meng Liu, Massachusetts Institute of Technology, 100 Main Street, Sloan Room 412, Cambridge, MA, 02142, United States, mengliu@mit.edu, Erik Brynjolfsson, Jason Dowlatabadi

Moral hazard is prevalent in market places, likely leading to market inefficiency or even market failure. This paper studies how technology affects agent incentive of quality provision, based on an online-offline comparison of taxis and Uber. We find asymmetric effects through comparing routing behaviors of taxi and Uber drivers. Taxi drivers detour more (relative to Uber drivers) on routes that are longer in distance, that have lower expected subsequent pickup probability, and that are taken mostly by non-local riders. Uber drivers detour more on routes with greater surge pricing. We demonstrate that these effects are due to moral hazard, instead of driver selection or difference in navigation technologies. We further highlight and disentangle important mechanisms —- the usual tech-enabled disciplinary devices (monitoring and rating) that increase moral hazard cost are effective but only to a certain degree, while tech-aided efficient matching of platform sides that decreases moral hazard incentive can play an important role.

3 - Impact of Entry of Uber on the Taxi Industry

SunAh Kim, Assistant Professor, Concordia University, 1450 Guy St., Montreal, QC, H3H 0A1, Canada, sunah.kim@concordia.ca, Pradeep Chintagunta, Jia Li

We empirically examine whether, and to what extent, entry of a ride-sharing program (e.g. Uber) affects taxis in a large city. Using a unique and comprehensive dataset that contains all taxis' trip information (e.g. time and location stamps of trip starting and ending points) and hailing information (e.g. GPS data) from one of the big cities in China, we examine the impact of Uber entry on various outcomes for taxi drivers'. Specifically, our data enables us to explore whether and to what extent the number of trips, income of taxi drivers, hailing behaviors and traffic conditions (e.g. inferred by speed of the vehicles) have decreased and/or improved with entry. We use a regression discontinuity model to examine the consequences of the Uber entry on the taxi drivers' work productivity (e.g. hourly income) and hailing behaviors (e.g. wide or narrow search). We also examine how the time of a day (e.g. morning commuting hours) and location characteristics (e.g. airport, tourist area) moderate the effects of Uber entry.

4 - Repelling Invaders: The Effect of Incumbents' Marketing Strategies on Low-cost Entrants' Market Exit Over Time

sina aghaie, PhD Candidate, Darla Moore School of Business, 2117 Wallace street APT A, Columbia, SC, 29201, United States, sina.aghaie@grad.moore.sc.edu, Carlos J.S. Lourenço, Charles H. Noble

Proliferation of low-cost competitors has increasingly eroded traditional firms' market share and profitability in recent decades. However, traditional firms are still uncertain about how to respond to this new challenge. In this paper, the authors study a common and important phenomenon - the marketing strategies that incumbent firms may employ to drive new low-cost entrants (challenger) out of the market. Specifically, they investigate how incumbents' price, service quality, and service convenience influence a new entrant's exit decision. They test the hypotheses on a rich, multi-market longitudinal dataset from the US airline industry and estimate a challenger's time-to-exit using a split population hazard model a type of survival model that can handle three types of challenger firms: (i) challengers that do leave the market during the observation period, (ii) challengers that will eventually leave the market, but outside the observation period, and (iii) challengers that are unlikely to ever leave the market (with the latter two types being right-censored observations). The challengers of the latter type are 'long-term survivors,' in the sense that they are immune to and will not leave the market because of incumbents' marketing activities but may still exit in the far-future for other reasons. In contrast to prior research that has studied low-cost entrants' time-to-exit in a static environment, the authors apply a time-variant approach considering immediate and later post-entry stages. Instead of homogeneous results, they find that the magnitude and direction of the effects vary over time. For instance, a substantial price-cut initially delays but will accelerate an entrant's exit decision later on. This result suggests that managers should be strategic in the type, timing, and intensity of their defensive responses to a new low-cost entrant and offer valuable insights for practitioners to efficiently assign marketing expenditures to the activities that might send an influential signal to the challenger and affect its future competitive behavior.

■ FA07

Room 237, Alter Hall

Search Engine Marketing

Contributed Session

Chair: Sebastian Schubach, University of Passau, Innstrasse 27, Passau, Germany, sebastian.schubach@uni-passau.de

1 - Keyword Selection Strategies in Search Engine Optimization: How Relevant is Relevance?

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Search Engine Marketing (SEM) consists of efforts by a firm to increase clicks to their website through Sponsored Search Advertising (SSA) and Search Engine Optimization (SEO). To date, research in Marketing has focused more on SSA relative to SEO. This seems surprising given that organic search results are considered more trustworthy, account for the majority of the clicks, and firms spend significantly more on SEO than on SSA ($65B vs. $35B in the US in 2016). In order to create content for SEO to maximize organic clicks, managers need to identify appropriate keywords on which their content will be focused. Currently, most managers use simple heuristics to identify appropriate keywords and then write relevant content about those keywords. However, it is unclear whether these heuristics actually are effective techniques for SEO. In this paper we build a framework which provides model-based guidance to SEO practitioners for keyword selection and web content creation. It is often thought that content relevance is a key factor to improve the effectiveness of SEO. We find, however, that while content relevance is an important criteria in a consumer's organic click decision, improving content relevance regardless of the keyword selected may not always be effective as search engines only reward content relevance when ranking links under certain conditions. Specifically, we find that when the online authority of a website is more (less) than the average online authority of its competitors, then focusing content on more broad (specific) keywords is effective in improving organic rank.

2 - Consumer Click Through Behavior Across Devices in Paid Search Advertising

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The paper investigates how consumer click through behavior with paid search ads differs across devices (i.e., smartphone vs. desktop vs. tablet). We attempt to determine: (1) whether and how smartphone users differ from desktop users in terms of their tendency to click on the top paid search ad; (2) whether and how smartphone and desktop users differ in their sensitivity to ad position change; (3) whether tablet users are more like smartphone users or desktop users when it comes to clicking through paid search ads. By leveraging Google AdWords data from twenty paid search advertisers, we conduct a single-paper meta-analysis to establish generalizable empirical regularities. We find that, for unbranded searches (i.e., queries without the focal advertiser's brand name), smartphone users (compared to desktop users) are on average more likely to click on the top paid search ad and are more sensitive to ad position change. Such differences, however, do not exist for branded searches (i.e., queries with the focal advertiser's brand name). Tablet users are more similar to smartphone users when it comes to both tendency to click on the top paid search ad and sensitivity to ad position change. We discuss the managerial implications of these cross-device behavioral differences for paid search advertising.

3 - Post Purchase Search Engine Marketing

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Though consumer behavior in response to search engine marketing has been studied extensively, few efforts have been made to understand how consumers search and respond to ads post purchase. This is in part due to the fact that purchases are difficult to track and link to search queries. Thus, it is unsurprising that advertisers have been targeting consumers on search engines similarly regardless of the heterogeneity in their search intents and context. Advertising to current customers the same way as to prospective customers inevitably leads to wasteful and inefficient marketing. Employing a unique dataset that combines both search query and purchase data, we examine consumers' searching behavior and response to search engine marketing after purchase. We study large advertising campaigns for two popular technology products. We find that over half of the branded keyword searches come from consumers who already purchased, and that advertising response varies based on whether searchers are pre or post purchase. In general, post-purchase searchers are less likely to click on focal brand ads (i.e., they are less responsive to ads for products they already own). However, post-purchase searchers are still responsive to advertising, and much more likely to click on ads for complementary products (i.e., they are more responsive to ads for relevant products other than the focal product). Our findings offer unique academic contributions regarding consumer behavior along with practical implications for how platform should market post-purchase targeting and how marketers should advertise to customers post purchase.

4 - Leveraging Browsing Behavior for Enhanced Bidding Strategies in Search Engine Advertising

Sebastian Schubach, University of Passau, Innstrasse 27, Passau, Germany, sebastian.schubach@uni-passau.de, Jan H. Schumann, Alexander Bleier

New technologies in paid search advertising (SEA) allow firms to adjust their keyword bidding based on tracked behaviors of individual consumers in their online stores. A popular way how firms use this information is to influence the position in which their ads appear, based on individual consumers' progress in the purchase funnel before visiting a search engine. In this regard, current industry practice suggests placing higher bids (for higher ad positions) on search queries from consumers in later stages of the purchase decision process. Marketing theory, however, suggests the exact opposite, i.e., placing higher bids on search queries from consumers in earlier funnel stages, due to their heightened sensitivity to rank-ordered choice alternatives. Based on a field experiment and observational data, we demonstrate that advertisers should indeed align their bidding strategies with marketing theory. In particular, we find consumers in earlier funnel stages to exhibit higher click-through rates for search ads in higher positions than consumers in later stages. Given that post-click conversion rates are independent of ads' positions, firms can increase their SEA effectiveness by targeting early- instead of later-stage consumers with higher bids. Our work adds to extant research on position effects in SEA as well as personalization and provides meaningful and actionable implications for firms' SEA strategies.

■ FA08

Room 238, Alter Hall

Consumer Choice and Consumption

Contributed Session

Chair: Takuya Satomura, Keio University, Faculty of Business and Commerce, 2-15-45 Mita, Minato-ku Tokyo, 108-8345, Japan, satomura@fbc.keio.ac.jp

1 - Does Ethnicity Influence Beer Consumption and Brand Choice?

Matthew A. Looney, Graduate Student, Texas Tech University, 5403 28th Street, Lubbock, TX, 79407, United States, matthew.looney@ttu.edu, Benaissa Chidmi

The beer industry in the US represents more than $350 billion dollars of total economic impact (2016). This makes the industry one of the largest consumer product sectors in America. As a category of consumer goods, beer is one of the most dynamically changing products in the country. The industry responds quickly to changes in consumer preference and shifting consumer demographics. The continued ability to understand and predict shifting consumer demand is paramount to the industries' ability to continue to innovate and selectively appeal to the heterogeneous consumer. It is well known that consumer demographics play a key role in determining consumer preference. Lopez and Matschke (2012) examine consumer preference for beer, in characteristic space, using market level data. The authors assume a heterogeneous agent model with age and income variation across consumers. Consistent with expectations, they find a strong relationship between increased age and income and lower sensitivity to price. However, the study omits other relevant consumer demographic variables, such as ethnicity. This study seeks to understand more deeply how additional consumer characteristics influence preference for beer; and in particular, how ethnicity influences beer consumption and brand choice. The methodological approach taken in this study is to estimate a differentiated demand for beer using a random coefficients discrete choice model. IRI Brand level data will be used as well as consumer level demographic data from the Current Population Survey.

2 - Decision Rule Evolution in Multistage Dyadic Choice

Kee Yeun Lee, Assistant Professor, The Hong Kong Polytechnic University, 8/F Li Ka Shing Tower, MM Department, Hung Hom, Kowloon, Hong Kong, keeyeun.lee@polyu.edu.hk, Fred M. Feinberg, Elizabeth Bruch

Consumers interact online to explore everything from office supplies to life partners. As they do, their evaluative criteria evolve, often due to feedback from the environment or other users. A key aspect of such interactions is their "staged" nature: we click, gather information, compare, then potentially purchase (for a product) or initiate personal contact. To address this intrinsic evolution, we develop a multi-stage dyadic choice model with dynamic decision rules, calibrated on data from a major online dating firm consisting of two distinct phases: browsing potential profiles, then writing messages to a promising subset. The data provide a unique opportunity to explore how decision rules evolve not only temporally, but as a function of dyadic interaction, e.g., receiving a return message. Potentially noncompensatory behavior is addressed via piecewise linear splines with multiple changepoints, while a non-homogeneous Hidden Markov Model (HMM) captures decision rule dynamics relative to users' latent states, thereby providing a potential account of users learning and strategic behavior in a dyadic choice context.

3 - The Wait is Worth it – The Effect of Payment Depreciation on Consumption in Short Temporal Separations

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Existing research on payment depreciation examines the impact of this phenomenon in temporal separation of more than three weeks but researchers have neglected to examine the decay of sunk costs in short temporal separations of less than three weeks. The investigation of the effect of payment depreciation on consumer behaviour for short temporal seperations is crucial for e-tailers as the payment and delivery of products is usually separated only by short durations of less than three weeks. With two experiments, the present study examines the occurrence of payment depreciation in a go versus no-go condition for temporal separation of three days, one week and two weeks. The results indicate the existence of the phenomenon in temporal separation of even three days. The results further indicate a step-like attenuation of sunk cost with differential payment depreciation occurring with one week separation. The second experiment examined the impact of payment depreciation according to the payment methods, i.e., credit, debit and cash-on-delivery. The results indicate maximum payment depreciation in cash-on-delivery mode followed by debit cards. As an implication, retailers can vary the order delivery time with due attention to payment mode to minimise order cancellations due to delayed delivery.

4 - A Duration Model of Customers' Repeated Usage of Multiple Services

Takuya Satomura, Professor, Keio University, 2-15-45 Mita, Minato-ku, Tokyo, 108-8345, Japan, satomura@fbc.keio.ac.jp

Service firms need to retain their customers and to make customers keep using their services. For these purposes, service firms seek to understand the customers' repeated usage behavior of their services. In this research, we focus on the customer behavior in the service industry, in which customer uses multiple services repeatedly. Moreover, the customer, in this industry, uses each service in a different interpurchase time, and she can use multiple services at the same moment. It follows that the customer uses only one service at one time, but she uses multiple services at another time. We propose the duration model for customers' repeated use of multiple services. The proposed model is based on the competing risk model, which assumes multiple episodes continue to survive until one of them ends for the first time. The proposed model also accommodates the heterogeneity of customers' preferences for service usage. We apply the proposed duration model to the historical data of customers' service usage from hair salon industry. The choices of services during the period are heterogeneous within the customer. She gets her hair only cut at one time but dyed and cut at other times. The choices of services are also heterogeneous between the customers. Some of the customers might use an only one service all the time, but others might use multiple services. The longitudinal customer data is applied to our proposed model. The effects of marketing variables and individual specific variables on the service usage are presented and discussed.

■ FA09

Room 239, Alter Hall

Pricing Strategies – Bundling

Contributed Session

Chair: Sreya Kolay, University of California, 8 Vega Court, Irvine, CA, 92617, United States, sreya.kolay@gmail.com

1 - Market Characteristics and Licensing Incentives in Tied-goods Markets: An Application to the Single-serve Coffee System Industry

Shaojun Qin, University of Minnesota, 4-351 Carl School of Management, 321 - 19th Avenue South, Minneapolis, MN, 55454, United States, qinxx113@umn.edu, Pradeep Chintagunta, Maria Ana Vitorino

This paper studies the licensing incentives for firms selling tied-goods. We study how different market characteristics affect incumbents' and entrants' incentives for entering a licensing agreement that allows the entrants to sell components that are compatible with the incumbent's primary good. We develop a structural model of demand and supply for tied-goods and estimate it using data from the single-serve coffee system industry. Using the model, we solve for the counterfactual market equilibria under different market conditions. We find that incumbents and entrants are more likely to enter a licensing agreement when consumers place higher value on variety, when the incumbent has a higher installed base for coffee machines, and when the number of existing competitors is large. Also, the likelihood of reaching a licensing agreement goes down if the discrepancy in the quality of coffee pods between the incumbent and the entrant is high.

2 - Seller-driven, Customer-driven or Hybrid Bundling? A Study of Relative Attractiveness for Buyers and Sellers

R. Venkatesh, Professor, University of Pittsburgh, 332 Mervis Hall, Pittsburgh, PA, 15260, United States, rvenkat@katz.pitt.edu, Ashutosh Prasad, Vijay Mahajan

Bundling has long been seen a strategy in which a seller decides to offer two or more products as a specially-priced package. Here the seller has full control on the make-up of the bundle. The current study is motivated by growing use of two alternative strategies in the marketplace. New York Philharmonic follows customer-driven bundling in which a customer can form one's own bundle of three or more performances. Chicago's CityPASS is a form of hybrid bundling in which the seller offers a five-attraction bundle (out of seven attractions), in which the seller determines three attractions and the customer picks one from each of two pairs of attractions. Our model has a monopolist seller with a 3-product portfolio of complements and/or substitutes. Surplus-maximizing customers have heterogeneous tastes and a budget constraint that restricts their consumption to two products at the most. The study examines three questions: (i) Under what product-market conditions do the strategies yield similar profits for the seller? (ii) When profits diverge, which strategy is optimal and when? (iii) What are welfare and surplus implications of the alternative strategies? Pricing and bundle design are integral to answering the above questions. Illustrative findings: Customer-driven bundling diminishes the traditional role of the bundle as an effective surplus-capturing device. The "required" product under hybrid bundling is not the one most favorably valued. The study's implications, research limitations and future research directions are presented.

3 - Bundling and Two-part Pricing under Demand Uncertainty

Sreya Kolay, Assistant Professor, University of California, Irvine, Irvine, CA, 92697, United States, skolay@uci.edu, Rajeev Kumar Tyagi

Pricing mechanisms like two-part pricing or bundling are ubiquitous in the marketplace. While the former involves charging a consumer an upfront fixed fee and a per unit price on the units consumed of the product, the latter involves offering a consumer a fixed quantity of the product at a fixed price. For example, massage spas and fitness clubs sometimes offer a monthly fee and price per session, or offer a monthly fee that comes with a fixed number of sessions. Prior literature has compared the profitability and consumer welfare implications of these mechanisms under scenarios where consumers face no demand uncertainty. In reality, consumers routinely need to make their payment decision in advance of their actual consumption while under substantial uncertainty about their future consumption needs. We incorporate demand uncertainty in analyzing the relative profitability and consumer welfare implications of these two mechanisms, and show some interesting results.

■ FA10

Room 605, Alter Hall

Customer Loyalty

Contributed Session

Chair: Junzhou Zhang, Old Dominion University, 4809 Killam Ave, Apt 2, Norfolk, VA, 23508, United States, jzhan001@odu.edu

1 - Leveraging Limited Loyalty Programs using Competitor Based Targeting

Wayne Taylor, Southern Methodist University, Dallas, TX, 75275, United States, wjtaylor@smu.edu, Brett Hollenbeck

This paper uses a new dataset from a Fortune 500 specialty retailer to fill an important gap in the study of loyalty program effectiveness by examining the interaction between the loyalty program and competitive structure. We use detailed, individual-level transaction data to analyze how purchase behavior both before and after joining a loyalty program depends on the spatial relationship among customer, store, and competitor locations. This research provides insight into the degree to which a loyalty program's effectiveness can be attributed to stealing business from competitors versus increasing customer demand. Furthermore, this loyalty program is unique in that the program discounts are earned and applied on only a single category of the firm's goods. This distinct framework allows us to also study whether the loyalty program and the competitive structure causes spillovers into other category purchases. We use this rich analysis to suggest how targeted marketing can leverage a store's competitive structure in order to maximize profits.

2 - Close But No Cigar: The Joint Impact of Goal Type and Goal Completion Status on Consumer' Post-goal-completion Behavior

Junzhou Zhang, Old Dominion University, Norfolk, VA, United States, jzhan001@odu.edu, Yuping Liu-Thompkins

Goal pursuit represents an important psychological mechanism under loyalty programs. Although academic research on loyalty programs has examined the extent to which consumers succeed or fail in reward goal pursuit (Kivetz et al. 2006; Koo and Fishbach 2012), insufficient attention has been paid to the consequences of such successes or failures (Dreze and Nunes 2011; Wang et al. 2016). Addressing this gap, we utilized data from a major airline's multi-tiered loyalty program to examine the effect of goal completion status on individuals' effort toward their subsequent goals, and how maintenance versus attainment goal types moderate this relationship. Analyzing 5,719 program members' flight activities from 2014 to 2017, we found (1) a linear effect under the maintenance goal, such that the more one completed his/her previous goal, the more effort he/she will invest in the subsequent goal cycle; and (2) a reverse U-shaped effect under the attainment goal, such that substantial goal achievement in the previous goal cycle creates a surprising hampering effect on subsequent goal pursuit. Instead, moderate achievement of the previous goal leads to the most effort invested in subsequent goal pursuit. We explain our results using counterfactual thinking (Medvec et al. 1995). Specifically, the counterfactual alternative for consumers with a maintenance goal is the possibility of losing their previous status regardless of goal achievement status. In contrast, consumers' counterfactual alternative under an achievement goal depends on how far they have surpassed the original goal, creating a counter-intuitive unhappiness effect when one greatly surpasses the goal and becomes overly ambitious.

3 - Brand Loyalty Driven Price Promotions

Dan Horsky, Professor (ret.), University of Rochester, 500 Wilson Blv, University of Rochester, Rochester, NY, 14627, United States, danhorsky4@gmail.com, Polis Pavlidis

Recent theoretical results suggest that the use of price promotions by profit maximizing manufacturers of frequently purchased consumer goods may stem from the existence of the consumer phenomenon of brand loyalty. A price promotion by a brand clearly also attracts consumers who otherwise would have bought another brand or not bought in the category at all. When brand loyalty exists some of these brand purchasers will develop a loyalty, a transient increase in utility, such that when the brand resumes its regular high price they will buy it again.The theoretical results indicate that if consumer loyalty is strong enough it can make price promotions lead to profits which are higher than those attained with an optimal single price. We thus investigate whether the frequency of offering price promotions by a brand is positively impacted by the magnitude of its consumer loyalty. We do so with brands from twenty product categories. We use a MCMC algorithm that handles the estimation of all twenty categories demand and price promotions supply models jointly to address the issue of "non-random" marketing mix variables. We are able to provide rich empirical evidence that dynamics of the loyalty type are a significant driver of brands' price promotions . Specifically we find that controlling for category , store and brand factors, brands with higher re-purchase effects are offered on price promotions more frequently.

■ FA11

Room 606, Alter Hall

Dynamic Models

Contributed Session

Chair: Amin Rahimian, MIT Institute for Data, Systems and Society, 100 Memorial Drive,, Apt 8-12A, Cambridge, MA, 02142, United States, rahimian@mit.edu

1 - Predicting Dynamic Consumer Search with Reinforcement Learning

David M. Muir, Assistant Professor of Marketing, University of Delaware, Department of Business Administration, 20 Orchard Rd, Newark, DE, 19716, United States, muir@udel.edu

In the process of consumer decision making, which frequently involves a thorough search of price and product information, consumers learn. Previous research has considered the question of consumer search with learning from the perspective of causal inference; for example, previous work has assumed consumers use some form of a Bayesian updating process to learn as they search dynamically. Uniquely, I take a different approach to the study of dynamic search with learning and apply the machine learning technique of reinforcement learning on clickstream data to show that both model-based MDP and the less restrictive, model-free Q-learning algorithm yield a complete set of predictions about how consumers search and learn in a dynamic world. Importantly, I employ the same dataset as previous consumer search research — which focus on causal inference instead of predictive accuracy - to illustrate how our respective works complement each other. This research has important practical implications for marketers who want to encourage optimal real-time search pathways for consumers.

2 - Building Hierarchy in the Dynamics of Marketing Mix Variables

Keyvan Dehmamy, Assistant Professor of Marketing, University of Groningen, Nettelbosje 2, Groningen, 9747 AV, Netherlands, k.dehmamy@rug.nl, Jaap Wieringa

In the world of big-data, a familiar way to reduce the dimensionality could be using factor analysis. This method however, often lacks structure and good interpretability. One way to bring in structure to the extracted factors is to form groups and apply a subjective hierarchy to the factors. The goal of this paper is to identify the common dynamics of the marketing mix variables (like price or advertisement activities) in the brands, category, and chain and market level. We use an extension of a Dynamic Hierarchical Factor Models, in short DHFM (Moench et al., 2013). This method was developed to add time varying intercepts to a hierarchical factor model. To get an insight about possible common dynamics, we use the information about two marketing mix variables (price and advertisement activities) for one category of FMCG, including multiple brands sold in several stores of different super-market chains in the Netherlands. We extracted the common dynamics of the marketing mix variables into brand and chain level. Using the outcomes, we identify the always-discounting chains and brands, as well as often price-changers in both brand and chain level. We also identify the constantly-advertisers or impulsive advertisers in brand and chain level. Furthermore, we use the dynamic-hierarchical structure of the model to predict the marketing mix variables of all the brands, by only predicting the overall price dynamics of the FMCG market. We also investigate the effect of a price shock (like a price war) in the market level and chain level on the prices of individual brands. The aim is to extend the empirical study towards different product categories as well as regional dependent price-dynamics.

3 - Assessing Strategic Customer Behavior under Bounded Rationality

Jihoon Cho, Kansas State University, 1301 Lovers Lane, Manhattan, KS, 66506, United States, jihoonch@ksu.edu, Anocha Aribarg, Puneet Manchanda

Firms often offer free product or service to meet (or exceed) customer expectations and elicit pleasant surprise. But these costly efforts can hurt the long-run profit margin as customers consistently update their expectations of what is to come and become strategic to take advantage of promotional offers. This paper provides empirical evidence on the extent that dynamic customer expectations affect strategic purchase behavior via the use of individual-level cross-sectional and time-series data from the auto rental industry. Using the Kalman filter algorithm, the data are applied to a two-equation system consisting of customer expectations and product switching. The results suggest evidence of bounded rationality in customer expectations and experiential learning, providing managerial insights on how firms are able to take advantage of imperfect strategic customer behavior.

4 - Dynamic Structural Modeling of Online Reputation Systems: How Do People Rate?

Amin Rahimian, Postdoctoral Associate, MIT Institute for Data, Systems and Society, 100 Memorial Drive,, Apt 8-12A, Cambridge, MA, 02142, United States, rahimian@mit.edu, Shrabastee Banerjee

Online reputation systems constitute an important component of many electronic commerce platforms. Reviews and ratings posted on these platforms strongly influence the purchase and browsing behavior of customers, and play an important role in revenue generation. Existing literatures in marketing, computer science, and economics highlight the statistical foundations of such impacts and address some of the behavioral and structural patterns that govern them (such as self-selection and reporting bias). These studies, however, fall short of a comprehensive framework to capture all aspects of online reputation dynamics that include the public perception of reviews, as well as the purchase and rating decisions. In this work, we propose a dynamic structural model for the evolution of reputation on an online e-commerce platform. We use the proposed generative model to make inferences about individuals' rating behavior. We train a deep learning inference architecture with the simulated data from our generative model to test for non-zero thresholds in the model. Finally, we apply the trained network to real time-series data of reviews submitted on a popular e-commerce platform. The results reveal circumstances under which these reviews are posted and their implications for the evolution of product ratings. Gaining a better understanding of the dynamics of reputation systems, namely, the conditions under which ratings are submitted, and how they are eventually interpreted, is crucial for marketers and designers of digital platforms, who can leverage this information to stimulate further reviews and better manage user-generated content.

■ FA12

Room 745, Alter Hall

Marketing Strategy - Competition

Contributed Session

Chair: Mitsukuni Nishida, Johns Hopkins Carey Business School, 100 International Drive, Baltimore, MD, 21209, United States, nishida@jhu.edu

1 - The R2m Index Assessing the Relevance of Marketing Scholarship to Business Practice

Kamel Jedidi, John A. Howard Professor of Business, Columbia University, 518 Uris Hall Grad Sch of Bus, 3022 Broadway, New York, NY, 10027, United States, kj7@columbia.edu, Bernd Schmitt, Yanyan Li, Malek Ben Sliman

Has marketing academia strayed away too far from marketing practice and thus become less relevant? Many feel that way and have called for more emphasis on addressing relevant marketing problems. We present the development of a metric that assesses the relevance of academic marketing articles to the practice of marketing. Ideally, academic articles should be evaluated directly by practitioners in terms of their relevance to practice to provide feedback to academics. However, such a task would be tedious and time consuming. Instead, we propose the use of Natural Language Processing and Latent Dirichlet Allocation to classify articles into topics, and score each of the topics based on their "marketing-ness". Marketing terms are identified based on a marketing dictionary developed using various sources (e.g., AMA dictionary of marketing terms) and validated with practitioners. The proposed R2M (Relevance to Marketing) score is a weighted combination of the probability that the article belongs to a topic multiplied by the "marketing-ness" of the topic. We apply the proposed R2M measurement on a balanced, random sample of more than 4000 articles from Journal of Consumer Research (JCR), Journal of Marketing (JM), Journal of Marketing Research (JMR), and Marketing Science from 1982 to 2015. We discuss the marketing topics generated from the LDA analysis, show their evolution over time and assess their "marketing-ness." We also report the R2M score distribution overall and by journal. We find that JM has the highest R2M score followed by Marketing Science, JMR, and JCR. For validity check, we find that the R2M measure correlates well with observable measures of relevance, such as practice prize awards and self-stated evaluations by marketing practitioners of a random set of articles. Estimating the R2M on a holdout set of articles from MSI working paper series, Psychological Review (PR), and Quarterly Journal of Economics (QJE), we find that MSI working papers score slightly higher than JM; PR and QJE generally score lower than marketing journals as expected.

2 - Technological Dynamism and the Janus Like Effects of Firm Capabilities

Saeed Janani, Arizona State University, BA 411, Tempe, AZ, 85281, United States, sjanani@asu.edu, Gaia Rubera, Michael Wiles

Technology is a key aspect of any markets, and markets go through various technology phases, each of which rewards firms with particular set of capabilities. Having a contingency view on firm capabilities, we investigate the effects of marketing, design, and R&D capabilities on return on assets (ROA) in different technological market conditions. Using all the published patents in the US as of 1980, we defined three fundamental technology characteristics of markets: technology intensity, technological growth, and technological uncertainty. While technology intensity refers to the level of technological advancement in a market in a certain year, technological growth and uncertainty respectively capture the general trend and the degree of unpredictability in technological changes in a market. Building on the RBV and dynamic capability theories and using the most comprehensive sample to date with 1961 firms within 378 industries (SIC codes) in 36 years, we manifest that all the capabilities have a positive effect on ROA, but technological conditions moderate such effects. That is, technology intensity has a positive moderating effect on the marketing capability-ROA relationship and a negative effect on the R&D capability-ROA relationship; technological uncertainty positively moderates the effects of these capabilities on ROA; and, technological growth has a positive impact on the R&D capability-ROA relationship. This study provides insights to researchers and managers with respect to what capabilities should be developed under different technological market conditions to drive profitability.

3 - What if Your Owners Own Other Firms in Your Industry? Institutional Cross-ownership's Effect on Firm Marketing and Performance

John Healey, Tulane University, 7 McAlister Drive, New Orleans, LA, 70118, United States, jhealey@tulane.edu, Ofer Mintz

The growth in institutional holdings of public firms has led to increased incidence of cross-ownership, in which the same investor owns stakes in multiple firms within an industry. Economic theory suggests such cross-ownership could impact individual firm capabilities, but no empirical study has examined its association with a capability like marketing that all firms need in order to sustain profitability. Based on an updated agency-theory model, we propose a relationship between cross-ownership and firm performance, and moderators of this relationship based on the firm's marketing capabilities and the firm's strategic emphasis of marketing investment. To develop an industry cross-ownership measure, we use information from 59,222 institutional owner individual holdings and then empirically test our model using Arrellano-Bond estimation, accounting for endogeneity by using instruments calculated using lags of the focal variables. We find a significant positive relationship between cross-ownership and firm performance over both the long- and short-term. Further, we find evidence that this effect is stronger over both the short- and long-term for firms with lower marketing capabilities, suggesting that the effect of institutional cross-ownership on firm performance is stronger for firms with lower marketing capability. We also find that, over the short-term, institutional cross-ownership has a stronger effect on firms with a strategic emphasis towards R&D. Further, we find these results are robust to a variety of alternative model and measure specifications. This framework and empirical results provide important managerial, public policy, and theoretical implications on the consequences of cross-ownership.

4 - Firm Dynamics, Entry Order, and Performance

Mitsukuni Nishida, Johns Hopkins Carey Business School, 100 International Drive, Baltimore, MD, 21209, United States, nishida@jhu.edu

Over the past forty years, a large literature on entry-order effects on performance has documented how a pioneering firm entering a market or developing a product might (or might not) achieve an advantage in market share in reduced-form analyses where they abstract away forward-looking decisions under strategic interactions, which are often salient features of most industries. We empirically illustrate the importance of accounting for strategic interactions among firms and forward-looking incentive when measuring the entry-order effects on performance. By using a panel on the store counts and sales from the convenience-store industry in Japan, we find evidence of a revenue and entry cost advantage for early entrants. In contrast, early entrants face a disadvantage in expansion and variable costs.

■ FA13

Room 746, Alter Hall

Multi-Sided Platforms 1

Contributed Session

Chair: Jinzhao Du, Fuqua Business School, Apt 506, 910 Constitution Dr., Durham, NC, 27705, United States, jinzhao.du@duke.edu

1 - Preference Elicitation, Price Discrimination and Matching in Ride-sharing Systems

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We study the dynamic design of a ride sharing platform in terms of allocation and pricing, when there is demand heterogeneity over the time preferences. There are two type of agents: time-sensitive agents who value low wait times even at a price premium, and time-sensitive agents, with great flexibility regarding wait times. By allowing the agents to reveal their preferences and designing dynamic allocation and pricing rules accordingly, the platform can get an opportunity to discriminate over the customers, and, at the same time, smooth out the imbalance between the demand and supply over time. We show that, when the valuation heterogeneity is strong, time becomes a significant discrimination tool. In this case, the platform can extract all the surplus that the system generates. This outcome however, is suboptimal as it does not maximize the total surplus. As valuation heterogeneity becomes weaker, time becomes less important for discrimination, and the platform uses the allocation mechanism primarily to manage the dynamic imbalance between supply and demand. In this case, the platform has to leave some of the surplus to the time-sensitive agents as information rent. We also show that the price does not necessarily increase with the realized demand, in contrast to conventional wisdom. We quantify the benefits of our mechanism by comparing its performance to that of baseline mechanisms based on surge pricing. We characterize the circumstances under which the general mechanism we suggest leads to more preferable outcomes in terms of consumer surplus as well as the overall system efficiency.

2 - Dynamic Bundling Strategies in Platform and Two Sided Markets

Richard T. Gretz, Associate Professor of Marketing, University of Texas at San Antonio, One UTSA Circle, San Antonio, TX, 78249, United States, richard.gretz@utsa.edu, Bradley Allen, Suman Basuroy, Deepa Chandrasekaran

Bundling, defined as the practice of selling two separate items together in one offering, is used as a strategic tool in various industries. Our research attempts to answer three critical, and hitherto unanswered questions as to how managers use bundling strategically over the life of the products in platform markets and what factors influence the performance of bundles. Specifically, the research questions are: (1) what are the hardware-specific, software-specific and actor-specific factors that influence bundle introduction, (2) how do these factors affect market performance of such bundles, (3) how does bundle introduction impact the sales of stand-alone hardware and software sales. Using a dataset of observed console/game bundles in the video game industry, we empirically examine the determinants of bundle introduction and the impact of bundle introduction on sales of the bundle, overall hardware, stand-alone hardware, and stand-alone software.

Preliminary findings indicate that bundle introduction increases stand-alone component sales, suggesting that mixed bundling may increase hardware adoption beyond what traditional bundling literature predicts. Further, findings indicate that bundle introduction is a function of hardware installed base, hardware life-cycle, and the interplay of characteristics of hardware and software providers. Bundling is implemented as a catch-up strategy for non-leading hardware providers and a niche strategy for established hardware providers. Bundle performance increases along with the stand-alone price of the included software, suggesting consumers perceive bundles with more expensive software as a good deal. Our research extents bundling research by showing how bundling operates in platform markets, and by examining the strategic decisions of managers bundling software and hardware. Several managerial implications are discussed.

3 - Media Platforms' Content Provision Strategy and Source of Profits

Jinzhao Du, Fuqua Business School, Apt 506, 910 Constitution Dr., Durham, NC, 27705, United States, jinzhao.du@duke.edu, Wilfred Amaldoss, Woochoel Shin

We see media platforms earning their profits from both consumers and advertisers (e.g., the New York Times), advertisers only (e.g., the Huffington Post), or consumers only (e.g., Tidal). This paper theoretically investigates two important strategic issues confronting a media platform: what proportion of its limited bandwidth or space should a platform allocate for content (instead of advertising)? and what should be the source of a platform's profits? To facilitate this analysis, we propose a model where a media platform interacts with three sides: content suppliers, consumers, and advertisers. In a perfectly competitive content market, our analysis shows that competing platforms will adopt a free-content strategy even in circumstances where a monopoly platform adopts a paid-content-with-ads strategy. However, the result can get reversed if the content supplier is a monopoly. Counter to conventional wisdom, inter-platform competition helps a platform to earn more profits when they adopt a free-content strategy. Next, despite paying a lower price to content suppliers, a media platform may still get hurt. Furthermore, though advertisers' higher valuation for consumers benefits a media platform, it can hurt a content supplier's profits when a monopoly supplier sells content to a platform using paid-content-with-ads strategy or when duopoly suppliers can shape consumers' preference at a low marginal cost and sell to a platform using free-content strategy. Finally, if advertising is quite annoying, even while a monopoly platform shuns the advertising market, duopoly platforms may cater to advertisers.

■ FA14

Room 607, Alter Hall

Machine Learning - Retail

Contributed Session

Chair: Vinay Kanetkar, University of Guelph, Dept of Marketing and Consumer Studies, Guelph, ON, N1G 2W1, Canada, vkanetkar@uoguelph.ca

1 - Model-based Marketing Insights from High-dimensional Purchase Data

Bruno Jacobs, Assistant Professor, University of Maryland, 3453 Van Munching Hall, Robert H. Smith School of Business, College Park, MD, 20742, United States, brunojacobs@rhsmith.umd.edu, Bas Donkers, Dennis Fok

We introduce a novel method to obtain insight in purchase behavior from high-dimensional purchase data, e.g. by identifying seasonality and dynamics in purchase behavior. In addition to these high-level insights, the method can predict on the level of a shopping basket which products will be relevant. We extend on previous work where LDA was used to model purchase behavior using latent motivations in several ways: We allow for correlations between motivations, estimate time effects such as seasonality, and allow for dynamics across shopping baskets. With these extensions, we obtain high-level insights in high-dimensional purchase behavior. Naturally, these extensions add complexity to the model and hence we rely on a new scalable estimation technique called variational inference, originating from the machine learning literature. We apply the method to purchases from an assortment that contains over 4,000 products. The obtained results display high face-validity, e.g. the motivations can be labeled intuitively and the inferred correlations make sense.

2 - Adaptive Customization

Khaled Boughanmi, PhD Student, Columbia Business School, 3022 Broadway at 117th Street, Uris Hall, New York, NY, 10027, United States, kb2662@columbia.edu, Rajeev Kohli

On a recent day, Amazon.com had over 10,000 electronic tablets for sale. To facilitate shopping, the web page showing the tablets displayed a menu of features that a shopper could use to refine the display. For example, selecting ``iPad" as the first feature eliminated all but 418 tablets. Selecting ``at least 64GB hard drive" as the second feature further reduced the display to 30 tablets. Two more screening steps (9"-10" screen size, followed by at most $499 price) narrowed the options to 8 tablets. Suppose we could predict the sequence in which a shopper is likely to screen the tablets. Then we could use the prediction to customize the screening menu and the displayed alternatives, and to recommend tablets to the shopper. We propose a method for making such predictions. The first prediction is obtained after the shopper selects the first screening feature. It is revised after the shopper selects each additional feature. The proposed approach has an offline component and an online component. The offline components uses past behavior and/or choice data to identify probabilisitic screening rules for different consumer segments. The online component uses Bayes' rule to update segment-membership probabilities based the features selected by a shopper. The posterior membership probabilities are combined with the segment-level estimates to identify the optimal feature sequence recommended for a shopper. The procedure is adaptive since the optimal feature sequence can change as a shopper selects additional features. We illustrate the proposed procedure using data on tablet computers.

3 - Assortment Optimization: Using Network Analysis to Reduce Product Complexity at Retail Stores

Ehsan Gholami, University of California, Davis, 690 Alvarado Ave., Apt 11, Davis, CA, 95616, United States, egholami@ucdavis.edu, Kevin Manuel, Ashwin Aravindakshan, Chen-Nee Chuah

Assortment rationalization, the process to determine if a product should be kept or discontinued, has gained renewed importance in the retail industry. Prior research has produced several assortment rationalization algorithms. Nonetheless, to the best of our knowledge, none of the proposed solutions are comprehensive when the number of Stock-Keeping Units (SKUs) increases into the thousands. In this research, we propose a graph-based approach in which the components of the graph (e.g., nodes, edges) are constructed using the retail customer's purchasing history. This construction allows retailers to learn not only about SKUs with high sales but also about key products that might bring shoppers into the store. Given the vast number of SKUs (over tens of thousands of items) that each retailer carries and the shelf space capacity constraint, we take advantage of graph theory to reduce the number of products in an assortment. We do so by analyzing the purchasing behavior of all customers to determine the relative importance of different goods in the assortment. We find that our solution outperforms other assortment rationalization methodologies. Finally, we also perform an analogous analysis at the personal level, targeting the key merchandise in a shopping basket. Leveraging the results of the aforementioned analyses, we build a network of relationships among products and develop a network-based algorithm to cull the assortment subject to the capacity constraint.

4 - Generalizing Benford's Law for Retail Prices

Vinay Kanetkar, Associate Professor, University of Guelph, Dept of Marketing and Consumer Studies, University of Guelph, Guelph, ON, N1G 2W1, Canada, vkanetkar@uoguelph.ca

Newcomb (1881) observed that beginning pages of logarithmic tables were overused than back pages. Benford (1938) independently noted for 20 different datasets that the first significant digit (FSD) did not have uniform distribution as might be expected. Benford (1938) suggested that FSD distribution followed logarithm of digit with base 10. Benford's observations were empirical generalization. Seven years later, Stigler (1945) proposed alternative explanation for Benford law. Over the last 135 year, many mathematician, physicist and statistician have tried to explain this phenomenon using variety of techniques, methods and datasets. In area of business, Benford's law is used for fraud detection. However, number publications in marketing and economics are limited. In this paper, we investigate whether retail prices follow pattern suggested by Benford law. We examined retail prices for automobiles, computer monitors, end of day stock market prices, house prices (list and selling prices), dish detergent prices based on scanner data as well as prices for spirits (wine, whiskey, rum, gin, vodka). Not surprising that Benford's law generally does work for most of retail prices. Using several flexible distribution that are special case of Benford's or Stigler's law, we are able describe various retail price datasets. Although there is substantial literature in the marketing about price-ending, strategic aspect of pricing is hidden in the first digit. That is should retailer price its product and service for $1 or $2 and so on and not about $1.39 or $1.40. This paper provides insights about distribution of first digits using retail prices.

■ FA15

Room 603, Alter Hall

CB – Health & Choices

Contributed Session

Chair: Amir Heiman

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1 - Healthy Shopping Dynamics – The Healthiness of Sequential Grocery Choices

Martine T. van der Heide, University of Groningen, Nettelbosje 2, P.O. Box 800, Groningen, 9700 AV, Netherlands, m.t.van.der.heide@rug.nl, Koert van Ittersum, Tammo H. Bijmolt, Jenny van Doorn

To stimulate healthier shopping baskets among grocery shoppers, it is critical to understand how the healthiness of sequential choices evolves within a shopping trip. For example, if the healthiness of food choices (relative within their product category) is interdependent, then the benefits of a healthy choice (e.g., low-fat yogurt) may be offset by a subsequent unhealthy choice (e.g., regular chips). Across panel data from over 5,000 shopping trips in a brick-and-mortar supermarket and two controlled experiments, we find evidence for such interdependencies across sequential food choices, irrespective of the supermarket's floor plan or choice format. A healthier choice reduces the healthiness of the subsequent choice; an unhealthier choice in turn increases the healthiness of the subsequent choice. Additionally, the brick-and-mortar supermarket data suggests that a) the negative effect following a healthier choice is larger than the positive effect following an unhealthier choice, b) the relative healthiness of choices reduces as a function of the number of choices made, and c) unhealthy choices promote healthy subsequent choices to a lesser extent as more choices have been made, all diminishing the relative healthiness as the shopping trip progresses. These findings contribute to literature on food decision-making and within-trip dynamics, while offering important implications for organizations aiming to promote healthier food choices. In order to successfully promote healthier choices throughout shopping trips, one must take a dynamic perspective and take into account effects across a longer range of sequential choices.

2 - Does Air Pollution Affect Food Consumption

Han Zhang, Peking University, Beijing, China, hanzhanggsm@pku.edu.cn, Xing Li, Ping Tu, Xiaona Zheng

This paper uses data from a Chinese online grocery store to examine the effect of air pollution on food sales. We find that 100 increase in Air Quality Index (AQI) increases the sales of the grocery store by 5%. This effect is concave, implying that when AQI is low, an increase in AQI has a relatively larger impact on food sales. With regard to the sources of sales increase, our result suggests that consumers tend to upgrade their purchase to more expensive food items in polluted days. We conjecture that the salience of health concerns (referred to as the health-saliency mechanism) leads consumers to buy more healthy and expensive food. Further analysis of sales for organic food confirms our conjecture.

3 - Air Pollution and Consumer Behavior: Evidence from Mobile Games

Zhuo Zhang, Shanghai University of Finance and Economics, Shanghai, China, xixizz@sina.com, Weihe Gao, Yong Liu

Although researchers are using the weather and the air quality to predict investors' behavior, they struggle to quantify the impact. While marketers focused on the effect of weather and air quality to consumer behavior in the real life, little is actually known about how the air quality influenced consumer behaviors in the virtual world. This study exploits the data from the mobile games at consumers' individual level. Results find that air quality has main effects. Air pollution not only negatively influenced the game player's amount of paid for mobile games but also negatively influenced their social reciprocity. Due to the"Winter Blue" effect, SAD(seasonal affective disorder) plays moderate role in the relationship between air pollution and game player's paying behavior and reciprocal behavior. These findings are robust across different measures of air quality changes. Also, firm's promotion and product strategy plays important role in the process of players' consuming. This research explored the relationship between the reality environment and consumers' behavior in virtual mobile games. These findings imply new opportunities in customer data analytics for firm's managers and marketers.

4 - Catching the Health Wagon: Consumers` Strategies of Control in Healthy Food Consumption

Meltem Ture, Université de Lille, Paris, France, meltem.ture@skema.edu, Sukriye Sinem Atakan, Mina Seraj

Debates about healthy food have once again come to the fore as obesity rates increase in most parts of the world and more people suffer from diet-related illnesses (e.g., diabetes, cancer). This study focuses on consumers' (mundane and special) practices of cooking and eating to understand how they - with the help of or despite other actors - adopt what they perceive as healthy eating behaviors. A two-step methodology consisting of a netnography on blogs and websites on food and cooking (consisting a total of 4000 consumer posts), and sixteen in-depth interviews with consumers and dieticians provide the data set. We find that while some aspects of healthy food consumption are clearly defined, consumers still feel overwhelmed by the amount and variety of information. Moreover, analyses reveal four strategies that consumers use to eat healthily and, ultimately, gain control over their bodies and lives: 1) relocating the locus of control to external actors, 2) shifting the focus away from food, 3) planning in advance, and 4) cooking. This study extends the discussion that consumers try to establish a sense of control by moderating their food consumption when they feel powerless in other domains of life (Rezek and Leary, 1991). We found the pursuit of health to be perpetual, full of uncertainties, and a source of anxiety for consumers. The strategies of control we delineated above help consumers navigate those dynamic discourses. Hence, while the pursuit of healthy eating can add to the feelings of stress, distrust, and confusion - trademarks of postmodern times - it can, at the same time, provide consumers with a sense of control over their lives and hope for their future wellbeing. Furthermore, we observed that high levels of planning may have negative consequences (overconsumption due to availability, frustration due to over-planning) and should be done in moderation to prevent cognitive overload. The findings have significant implications for researchers, managers, as well as policy makers.

5 - Substitution and Complimentary Relationships Between Diet, Physical Activity and Medication Use

Amir Heiman, Director of Research, The Center for Agricultural, Hebrew University, Department of Environmental Economics and Management, P.O. Box 12, Rehovot, 76-100, Israel, amir.heiman@mail.huji.ac.il

This study discusses the possible tradeoff between chronic intake of hypertension medication, intensity of performing physical activity during leisure time and adhering to DASH (Dietary Approach to Stop Hypertension) nutritional guidelines. The medical literature considers medication intake, physical activity efforts and calorie restricting diet to be complementary in their nature. Integrating prescribed medicines that control high blood pressure with healthier life style is recommended by the medical intuitions as an efficient mean to lower hypertension and reduce the risk of cardio vascular diseases (CVDs). Despite the belief of the medical establishment that taking medication and maintaining a healthy lifestyle should come hand in hand for patients suffering from chronic diseases there is reason to believe that various psychological and personality factors would cause a situation in which chronic medicine intake will cause a boomerang effect. Chronic usage of medicines may reduce the cost of unhealthy behavior, reduce risk of unhealthiness and establish a state of mind of incompetence that lead to passive rather than proactive behavior. This study empirically analyzes whether the relationship between chronic medication intake and making efforts to maintain healthier lifestyle are indeed complementary or substitute means to maintain health. The possible trade-off between adopting healthier life style and medication intake is analyzed using medical records database of a sample of diagnosed hypertension from Israel. Our results suggest a two direction boomerang effect when it comes to physical activity. Specifically, taking hypertension medication reduces the likelihood of meeting the threshold for physical activity recommendation of 2.5 hours per week. The reversal relationship is also significant. We found that adhering to the physical activity recommendation reduced the likelihood of taking medication

■ FA16

Room 231, Alter Hall

2018 ISMS/MSI Gary Lilien Practice Prize

General Session

Chair: John H. Roberts, University of New South Wales, Sydney NSW, Australia, johnr@agsm.edu.au

FA17

Room 31, Alter Hall

UGC III - Online Reviews

Contributed Session

Chair: Douglas Bowman, Emory University, Goizueta Business School, 1300 Clifton Road, Atlanta, GA, 30322-2710, United States, doug.bowman@emory.edu

1 - The Coevolution of Volume, Valence, and Textual Content on Social Media

Ning Zhong, Emory University, 1300 Clifton Rd, Atlanta, GA, 30322, United States, nzhong@emory.edu, David A. Schweidel

Although marketers have been taking advantage of social media to watch brand perceptions by tracking the volume, valence, or key words of online conversations individually, limited efforts have been made to investigate how the volume, valence, and textual content of user-generated content (UGC) coevolve. Research questions remain open about how the valence of UGC disturbs its volume, how the textual content of UGC impacts its valence, and how the topics of textual content affect each other over time. To examine the mechanism of how online conversations develop, we analyze a corpus of time-stamped user-generated posts across multiple social media platforms in the wake of a brand crisis. We develop a dynamic model that jointly models the volume, valence, and texts of these posts with a vector autoregressive (VAR) form. This modeling approach not only reveals the precedence of volume, valence, and textual content as online conversations about the brand crisis evolve, but also unveils the causality of topics in the textual content at the meantime.

2 - Using Online Employee Reviews to Understand the Corporate Culture of Firms Facing Consumer Crises

Vrinda Kadiyali, Cornell University, 385 Sage Hall, Ithaca, NY, 14853-6201, United States, kadiyali@cornell.edu, Piyush Anand, Vishal Narayan

We use publicly available online employee reviews to understand how the corporate culture of firms which face consumer crises (e.g., E.coli outbreak at Chipotle restaurants), differs from comparable firms which do not face crises. Unlike traditional data sources for measuring culture, employee reviews are readily available from a large number of employees both before after the crisis, for both crisis firms and comparable non-crisis firms, and over relatively long durations. Based on the competing values framework of corporate culture, we estimate a factored hierarchical topic model on 43,000 employee reviews. We use propensity score matching to control for selection issues between crisis firms and non-crisis firms. In comparison with employee reviews of non-crisis firms, we discuss how employee reviews of firms that face crises differ in their discussion of various aspects of corporate culture, both before and after the crises. Key words: social media, employee reviews, topic modeling, latent dirichlet allocation, propensity score matching, firm crises, corporate culture

3 - Suspicious Online Reviews and Brand Advertising Effort

Douglas Bowman, Professor of Marketing, Emory University, Goizueta Business School, 1300 Clifton Road, Atlanta, GA, 30322-2710, United States, doug.bowman@emory.edu, Eun Hee Ko

Concerns over the legitimacy of online reviews hinders their usefulness. In this paper, we study the relationship between a brand's advertising effort and it having reviews that consumers are suspicious of being fake. Studying 18 years of Amazon.com reviews for 2.4 million unique products, we find that 3% of reviews are ones consumers would be suspicious about. Extreme emotions (e.g., fear, joy) account for a review being viewed as suspicious better than mixed emotions (e.g., anticipation, surprise) or low-arousal emotions (e.g., sadness). We are argue that weaker brands have an incentive for review manipulation. We find that a weak brand status, described by lower advertising effort, is associated with suspicious reviews that are promotional (positive) in nature. Though, the effect fades away for suspicious reviews that are denigrating (negative).

Friday, 10:30AM - 12:00PM

FB01

Room 32, Alter Hall

Healthcare Marketing: II

General Session

Chair: Sriram Venkataraman, UNC-Chapel Hill, Chapel Hill, NC, 27599, United States, venkats@kenan-flagler.unc.edu

1 - Success Breeds Success: Weight Loss Dynamics in the Presence of Short-Term and Long-Term Goals

Kosuke Uetake, Yale School of Management, 165 Whitney Avenue, Room 5477, New Haven, CT, 06520, United States, kosuke.uetake@yale.edu, Nathan Yang

We investigate the role of short-term goal achievement on long-term goal achievement under the context of weight loss. Using novel large-scale data from a popular mobile weight management application, we track the daily dynamics of weight loss and calories consumption across a large number of users. The application sets a salient daily budget for calories, and by comparing cases in which the user is slightly under or over-budget, we provide an empirical link between short-term goal achievement and various long-term outcomes. Using LASSO in a synthetic control method to predict counterfactual outcomes, we show that our results are robust to potential manipulation of calories consumption around the goal. Furthermore, our findings generalize beyond observations around the discontinuity when we implement propensity score methods with random forests. Finally, estimates from a dynamic structural model of calories management reveal that users receive positive utility from past short-term goal accomplishments, and counterfactual analysis with the estimated model quantify the long-run user benefits of various hypothetical policies that adjust the budget.

2 - The Legalization of Marijuana and Opioid Epidemic

S. Sriram, University of Michigan, University of Michigan, Ann Arbor, MI, United States, ssrirag@umich.edu, Hayoung Cheon, Tong Guo, Puneet Manchanda

Two drug-related topics have garnered considerable attention in recent years. The first pertains to growing concerns with opioid painkiller prescriptions, addiction, and consequent death due to drug overdose. The second issue is the legalization of marijuana for medical and recreational purposes by several states. While, prima facie, these two issues do not appear to be related, two opposing viewpoints have been advanced. On the one hand, it has been contended that marijuana is a safer alternative to opioids, both for medical and recreational use. Therefore, marijuana legalization should reduce opioid prescriptions and other related adverse consequences. On the other hand, it has been contended that marijuana is a gateway drug that will encourage users to seek the more harmful opioids. This point of view opposes marijuana legalization measures. We study the effect of legalizing marijuana on opioid prescriptions and deaths due to overdose. Further, we explore heterogeneity in the direction and magnitude of these effects based on the nature of marijuana legalization (e.g., recreational vs. medical) as well as the type of patients seeking opioid prescriptions. Thus, our research represents an early attempt to understand the consequences of marijuana legalization on prescriptions of opioids and opioid-related adverse health events.

3 - Prediction and Intervention of Racial-Ethnic Disparity Reductions in Severe Maternal Morbidity: A Machine Learning Approach in the Field

Jian Ni, Johns Hopkins University, The Johns Hopkins Carey Business School, 100 International Drive, Baltimore, MD, 21202, United States, jni@jhu.edu, Andreea Creanga

Marked and persistent racial-ethnic disparities exist in health in the United States and reasons behind these disparities are not fully understood. We study the disparity reduction of Severe Maternal Morbidity (SMM) in Maryland. We develop and implement a machine learning approach for assessing the potential reduction and estimating treatment effects using sequential visits data for Maryland resident patients across facilities and hospitals setting. We assess whether delivery in hospitals that have contracts with commercial payers where payment is tied to performance on quality and safety measures would reduce racial-ethnic disparities in SMM. We also detail the high concentration of SMM racial-ethnic disparities in Maryland and compare it with potential improvements in individual or health system changes in the state. Our study is aimed to provide some much-needed analytics-driven recommendations to the policymakers and healthcare professionals.

4 - Impact of the ACA Medicaid Expansion on Public Health

Sriram Venkataraman, UNC-Chapel Hill, McColl Building, Kenan-Flagler Business School, Chapel Hill, NC, 27599, United States, venkats@kenan-flagler.unc.edu

The ACA Medicaid expansion extends coverage for most low-income adults to 138% of the federal poverty level. While the ACA Medicaid expansion was intended to be national, the June 2012 Supreme Court ruling made it optional for states to adopt this program. As of the end of the calendar year 2017, 19 states have yet to expand their Medicaid program. Medicaid eligibility for adults in states that did not expand their programs became quite limited. For example in nearly all states not expanding, childless adults remain ineligible for Medicaid. Even amongst the states that have adopted such an expansion, there exist significant variation in the timing of their adoption decisions. For example, coverage under the Medicaid expansion became effective January 1, 2014 in all states that opted to immediately adopt the Medicaid expansion. Other states were late to adopt (ex. Michigan 4/1/2014; New Hampshire 8/15/2014; Pennsylvania 1/1/2015 etc.) . This study investigates the impact of states decision to expand or not expand its Medicaid program on key outcomes like hospital admission, readmissions, emergency room utilization, etc. Causal identification is achieved by exploiting the rich variation in adoption timing decisions across states (specifically counties across adjacent states). Our findings reveal economically significant impact of such a policy on these public-health outcomes.

■ FB02

Room 33, Alter Hall

Digital Economy VI: Online Search and Advertising

General Session

Chair: Elea McDonnell Feit, Drexel University, Philadelphia, PA, 19104, United States, eleafeit@gmail.com

1 - Competition and Confusion on Brand Search

Andrey Simonov, PhD Student, University of Chicago, Chicago, IL, United States, andsimonov@gmail.com, Shawndra Hill

Bidding on a rival's brand keyword in search advertising is legal and common, despite the arguments that such advertising might confuse consumers and thus constitutes a trademark infringement. Using a randomized ad allocation on Bing that manipulates the presence and positions of competitors' ads, we measure the share of clicks stolen by competitors and the percent of these clicks driven by consumers' confusion. We use the incremental "quick back" returns to the search engine page as a proxy for confusion. One-four competitors in the top paid positions on the page can steal 2%-15% of the focal brand's traffic. Sole confusion cannot explain the clicks substitution, with more relevant advertisers stealing more and higher quality (lower "quick back" probability) clicks. Yet, four competitors' ads increase the total "quick back" probability by 4 percent points, implying that around 23% of the consumers clicking on competitor's links are due to confusion. The share of "confused" switching consumers decreases to 12.5% if the top competitor is the most relevant one and increases to 29.5% if the top competitor mentions focal brand's company name. Competitors' ads increase the time-to-click of consumers on the search results page, suggesting higher search costs for consumers. Overall, our results show that consumer confusion is limited, suggesting that brand search is not restricted to the strict navigational purpose.

2 - Large-scale Demand Estimation with Search Data

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Many online markets are characterized by sellers that stock large numbers of products and sell each product infrequently. At the same time, consumer browsing information is typically tracked by online retailers and is much more abundant than purchase data. We propose a demand model that caters to this type of setting. Our approach, which is based on search and purchase data, is computationally light and allows for flexible substitution patterns. We apply the model to a data set containing browsing and purchase information from a retailer stocking over 500 products, recover the elasticity matrix, and solve for optimal prices for the entire assortment.

3 - Measuring the Position Effect of Search Rankings: Evidence from an Online Travel Website

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Online platforms increasingly rely on ranked lists to display product information to consumers. These lists are typically constructed using machine learning algorithms that predict and optimize consumer responses to the ranked options. As a result, measuring the effect of a product's position is challenging since the ranked list is endogenous. In this paper, we analyze the causal effect of a product's position on consumer search outcomes using data from a travel search engine. The data is unique in that it provides information on the revenues that the platform made from the products listed, which we find correlate with the position of the product in the list. This feature of the data allows us to use revenues as an instrument for position and thereby measure the causal effect of position. In addition, we are able to quantify the estimation bias that arises from not correctly addressing the endogeneity of position.

4 - Profit Maximizing Marketing Experiments

Elea McDonnell Feit, Drexel University, 3220 Market Street, Philadelphia, PA, 19104, United States, eleafeit@gmail.com, Ron Berman

Recommended sample sizes for A/B tests are usually based on a hypothesis testing framework where the goal is to detect a specific marketing effect with high confidence. When the effect is small these formulas suggest samples of tens of thousands of consumers. Moreover, the hypothesis testing framework provides no guidance as to how to proceed when an A/B test fails to reject the null hypothesis of no effect. We propose a new method to plan sample sizes for marketing experiments. We explicitly define the goal of a marketing experiments as deploying the best performing treatment over a population (e.g. visitors to a website) to maximize the profit of the experimenter. Given this goal, we re-frame A/B testing as a Bayesian decision problem, where the marketer has prior beliefs about the treatments and chooses sample sizes in the experiment to maximize the profits produced during the test and in the subsequent roll-out. We find that profit-maximizing sample sizes are highly dependent on the priors and costs of the marketing treatments, and are often substantially smaller than those suggested by standard sample size formulas. We provide recommended sample sizes for several different types of experiments that are common in practice including a symmetric "A/B" Test, an asymmetric "Incumbent/Challenger" test and a "Holdout" test where both costs and priors are different for the two treatments.

■ FB03

Room 34, Alter Hall

Causal Inference II: Pricing and Preferences

General Session

Chair: Bryan K. Bollinger, Duke Fuqua School of Business, Durham, NC, 27708, United States, bryan.bollinger@duke.edu

1 - The Impact of Surge Pricing in Ride-Sharing Market

Linli Xu, University of Minnesota, Minneapolis, MN, United States, linlixu@umn.edu, Song Yao, Yi Zhu, Jiaoju Ge

Ride-sharing companies such as Uber and Lyft have fundamentally disrupted the taxi industry by matching riders and drivers more efficiently. Recent studies have shown that the entry of these platforms could improve consumer surplus and reduce search frictions commonly observed in traditional taxi markets. One distinct feature of ride-sharing platforms is that a dynamic pricing algorithm, so-called "surge pricing," is utilized to increase supply of drivers at times and places of high demand. Using a comprehensive dataset of individual trips from one of the largest ride-sharing companies in the world, we explore the impacts of surge pricing on consumer demand and its implications on consumer welfare and government regulation.

2 - Reference Dependence and Price Negotiations – The Role of Advertised Reference Prices

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Retailers routinely indulge in comparative pricing where they post two different prices (e.g., Regular Price and Sale Price) on the price tag of a product. Previous literature shows that comparing the sale price to an Advertised Reference Price (ARP) increases consumer's likelihood to purchase and reduces their likelihood to search. In this paper, we study the effect of ARP on transacted prices in settings where consumers can negotiate over product prices. Quantifying the effect of ARP on transacted price is important to both retailers, as well as policy makers such as the Federal Trade Commission (FTC) which closely monitors deceptive pricing arising from price comparisons. Utilizing transactions data from a large durable goods retailer, we find that ARP has a positive and significant effect on negotiated prices. For consumers who purchase at the retail store, a $1 increase in ARP increases the negotiated price by $0.20 on average. Interestingly, holding sale price fixed, higher ARPs lower consumer's likelihood to negotiate, but conditional on negotiating, higher ARPs result in lower negotiated prices. While salespeople differ in the discount they offer to the consumers, we do not find any differences across salespeople in how ARP affects negotiated price, pointing to this effect being driven primarily by consumers. The effect of ARP on negotiated price differs based on consumers' demographics, which as we discuss, has several implications for retailers and policy makers.

3 - Expectations-Based Reference Points and Consumer Search – The Relevance of Irrelevant Prices

Anocha Aribarg, University of Michigan, Ross School of Business, 701 Tappan Street, R5478, Ann Arbor, MI, 48109-1234, United States, anocha@umich.edu, Pranav Jindal

Retailers routinely indulge in comparative pricing where they post two different prices (e.g., Regular Price and Sale Price) on the price tag of a product, which, as the literature shows results in higher purchase intent and lower search likelihood. In this paper, we explicitly study how consumers use observed prices (both regular and sale) to form (and update) beliefs about market prices, and how these beliefs impact consumer search. We design an incentive aligned online study, where consumers update their price beliefs based on random search outcomes, and trade-off potential savings from search with the associated search costs. The experimental setup also allows us to test the feasibility of the rational expectations assumption, and the assumption that consumer update beliefs consistent with Bayesian updating, which are commonly made in the literature on consumer learning and search.

4 - Understanding Preference Changes due to Aging for Consumer Packaged Goods

Masakazu Ishihara, New York University, Tisch Hall 818, 40 West 4th Street, New York, NY, 10012, United States, mishihar@stern.nyu.edu, Akira Shimizu, Takashi Teramoto

In many countries, aging of the population has become an increasingly important issue among marketers. As the population of senior consumers grows, marketers need to appropriately design marketing strategies for capturing their needs and wants, which are likely to change due to aging. The goal of this paper is to estimate preference changes due to aging, using scanner panel data that keep track of the same group of consumers' purchases over ten years at a large supermarket in Japan. We extend a multiple discrete-continuous choice model by incorporating age-period-cohort effects into consumer preferences that are governed by a Hierarchical Gaussian Process. Our approach allows us to separately identify the changes due to aging from period and cohort effects. We further supplement the purchase data with a large scale survey on lifestyles, and examine the interaction effect between aging and lifestyles on consumer preferences. As an application, we study the Liquor category purchases and investigate how aging influences consumers' choice on the type of liquor (wine, beer, sake, shochu, etc.) as well as the healthiness. The results offer new insights on preference evolution due to aging.

■ FB04

Room 35, Alter Hall

Empirical Investigations of Present-day Television Advertising Strategies

General Session

Chair: Beth Fossen, Indiana University, Bloomington, IN, 47401, United States, bfossen@indiana.edu

Co-Chair: Anna Tuchman,Chicago, IL, 60614, United States, anna.tuchman@kellogg.northwestern.edu

1 - Watching People Watch TV

Matthew McGranaghan, Graduate Student, Cornell University, Ithaca, NY, United States, mcgranam@gmail.com, Jura Liaukonyte, Kenneth C. Wilbur

The proliferation of new technologies presents both challenges and opportunities for measuring the effects of television advertising on attention: on one hand, new technologies such as cell phones and tablets compete with television advertising for viewer attention, in effect changing the interpretation of traditional audience metrics; on the other hand, new technologies can be used to get a more accurate picture of an audience's attention to, as well as content in, specific advertisements. This paper focuses on those opportunities and investigates the effects of advertising content on viewer attention using two novel data sets: (1) a data set of advertising content developed using a combination of human coders and machine learning algorithms, and (2) a data set of audience attention measures that are passively collected from a panel of several thousand households by devices that use facial and body recognition algorithms to quantify in room and eyes-on-screen television viewing behavior - measures that may be more aligned with an ad-buyer's interests. Combined, these data provide a unique view into how television advertising content affects attention, as well as suggest meaningful implications for the future of audience measurement and content development.

2 - Contracts in the Upfront Market for National Television Advertising

Sylvia Hristakeva, University of California, Los Angeles, CA, United States, sylvia.hristakeva@anderson.ucla.edu, Nicholas Diebel, Julie Holland Mortimer

Advertising is an important input in the production of most final products sold to consumers, and national television ads still command the majority of ad dollars spent in the U.S.. Nevertheless, firms face different costs when accessing the market for national television ads. These differences are so important that the industry distinguishes between `good' and `bad' money. In particular, industry practices suggest that firms with long advertising relationships benefit from favorable prices to reach the same audiences. We seek to confirm empirically whether there are important differences in firms' costs to advertise nationally and analyze the competitive consequences of these industry practices. As contracts between advertisers and networks are considered trade secrets, we combine data on national ad placements and program viewership demographics with average ad prices in each program airing. Reduced-form analyses suggest that advertisers who have longer relationships with broadcasters face lower prices in those networks. We use a structural model to quantify these price differentials, and to estimate firms' incentives to advertise to different audiences. Firms' input-sourcing choices are modeled with a discrete-continuous payoff function. Preliminary results suggest that advertisers that establish relationships with national broadcasters before 1996 obtain a 25% discount relative to advertisers that establish relationships in 1996 or after. We propose a counterfactual that eliminates these historic price dependencies and allows for prices to adjust using a market clearing condition.

3 - Heterogeneity in Own and Competitive Advertising Effects across Categories

Anna Tuchman, Northwestern University, 2755 N Lakewood Ave Apt 3S, Chicago, IL, 60614, United States, anna.tuchman@kellogg.northwestern.edu, Gunter Hitsch, Bradley Shapiro

Much of the empirical literature exploring the economics of advertising may not be generalizable because it uses a case-study model of research, finding a particular effect in a single category and exploring the implications of that effect only in that category. Publication bias may further distort our understanding of the distribution of realized advertising effects if it discourages researchers from pursuing projects where a null effect may exist. Additionally, empirical identification in many studies of advertising can suffer due to a lack of exogenous variation. In this paper, we study the effects of TV advertising across a broad range of brands and categories, which allows us to characterize the full distribution of advertising elasticities. We also evaluate the sensitivity of our results to different identifying assumptions that are frequently employed in the literature. Our distributional analysis provides insights into i) whether or not, effects found in the literature are generalizable, ii) the extent to which null effects may be present, and iii) the need to carefully address identification in any empirical study of advertising effectiveness.

4 - The Impact of Product Placement on Brand-related Social Media Conversations and Website Traffic

Beth Fossen, Indiana University, Bloomington, IN, 47401, United States, bfossen@indiana.edu, David A. Schweidel

As some advertisers grow concerned about traditional television advertising effectiveness, product placement activities, where brands are visually and/or verbally incorporated into television and movies, have increased. Despite its popularity, there is limited research in marketing that has investigated the impact of product placement and their relationship with traditional television advertising. In this research, we leverage media multitasking by television viewers to investigate the effect of product placement in television programs on the volume of social media activity and website traffic for the placed brand. Using data on nearly 3,000 product placement incidences for 99 brands that aired on 77 television programs during the fall 2015 television season, the authors find that product placement activities contribute to both more online conversations and web traffic for the brand, with audiovisual placements yielding larger increases compared to visual placements that lack a verbal mention of the brand. The authors also find that television advertising can enhance the impact of product placement on social media activity, depending on the modality of the placement, supporting the importance of coordination between marketers and television content creators.

FB05

Room 232, Alter Hall

Mobile, Algorithm, and Artificial Intelligence (AI) Session III: Customer Welfare in Mobile Age

General Session

Chair: Xueming Luo, Temple University, Philadelphia, PA, 19122, United States, luoxm@temple.edu

Co-Chair: Siliang Tong, Temple University, Philadelphia, PA, 19144, United States, jack.tong@temple.edu

1 - Personalized Recommendation Algorithms Impact on Seller Revenues in the Sharing Economy

Siliang Tong, Temple University, Temple University, 1801 Liacouras Walk, Philadelphia, PA, 19144, United States, jack.tong@temple.edu

A central feature of the sharing economy is to use recommendation algorithms to match buyers and sellers. However, it remains unclear whether and how recommendation algorithms affect demand and supply of products in the sharing economy. The authors explore this question by using a unique field data from a leading Asian home-cooked food mobile sharing platform with1.5 million observations. To match peer sellers who cook dishes at their home kitchens with peer buyers in the same city who order take-out food, the app platform implemented two algorithms: (1) review popularity recommendation (RPR) and (2) botler personalization recommendation (BPR). Data analyses find that both RPR and BPR have significantly positive incremental effects on the seller's revenues, but through different mechanisms. RPR can improve sales revenues by benefiting the seller's future online reputation on the demand side, whereas BPR can improve revenues by motivating sellers to offer more new products on the supply side. The results also find unintended consequences of recommendation algorithm designs: RPR has negative impact on new product offering, and BPR reduces subsequent consumer review rating. These findings are consistent with the exploration-exploitation tradeoff account, in which RPR acts as an exploitation algorithm since it encourages sellers to leverage existing competences, whereas BPR acts as an exploration algorithm as it rewards sellers who are willing to take risks and introduce new products to satisfy buyers' personal preference. The authors discuss implications for how to leverage recommendation algorithms and artificial intelligence for the prosper of sharing economy platforms.

2 - Empowering Patients using Smart Mobile Health Platforms: Evidence from a Randomized Field Experiment

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With today's technological advancements, mobile phones and wearable devices have become extensions of an increasingly diffused and smart digital infrastructure. In this paper, we examine the emerging mobile health (mHealth) platform and its health and economic impacts on the outcomes of diabetes patients. To do so, we partnered with a major mHealth firm that provides one of the largest mobile health app platforms in Asia, specializing in diabetes care, together with the Office of Chronic Disease Management from the national Ministry of Health. We designed and implemented a randomized field experiment based on 9,251 unique responses from 1,070 diabetes patients over a 15-month period from May 1, 2015, to July 31, 2016. Our main findings show that adoption of an mHealth platform by users has a statistically significant impact on reducing blood glucose and glycated hemoglobin levels, hospital visits, and medical expenses of diabetes patients over time. In conjunction with patient self-management through the mHealth platform, we also find heterogeneous effects between personalized and non-personalized messages. Interestingly, non-personalized mobile messages with general diabetes-care guidance demonstrate a stronger impact on patient health improvement. Our findings indicate the potential value of mHealth technologies, as well as the importance of mHealth platform design in achieving better healthcare outcomes.

3 - A Dynamic Structural Model of Customer Learning on Mobile Pay

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As one of the prominent components of Financial Technology (FinTech), the method of mobile pay is gradually accepted by more and more customers. This study develops a stochastic model to investigate the dynamics of individuals' mobile pay behavior. A Bayesian learning model is proposed and calibrated using a rich data set. We find that there are two significant learning processes on both mobile pay channel and online pay type. These two learning processes are affected by consumer-specific factors, order-specific factors, and promotions from firms. We find a significant discounts effect on customers' mobile channel adoption. Customers prefer mobile channel mainly because there are more discounts for the transactions conducted via the mobile channel. We also find a significant lock-in effect of lifetime, i.e., customers with shorter PC lifetime on e-commerce platform are more likely to adopt the mobile channel. Compared to mobile channel, online pay learning process is more affected by customer-specific factors, including geographical and membership factors. We find that customers in first-tier cities or in the higher membership level are less likely to adopt online pay. Three sets of policy simulations are conducted to optimize bonus policies for firms to promote customers' mobile pay adoption. The simulation results show that reducing bonus amount while increasing bonus offering opportunities and extending bonus policy durations are more effective strategies.

FB06

Room 234, Alter Hall

Analysis of Markets III – Competitive Strategies

Contributed Session

Chair: Yusan Lin, Penn State University, 301D Grubb, White Course Apartments, University Park, PA, 16802, United States, yusan@psu.edu

1 - When Should Biopharmaceutical Rivals form Alliances

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Arun Gopalakrishnan

Biopharmaceutical firms, when developing products for new markets, sometimes have to decide between forming an R&D alliance with a potential rival versus competing on R&D. When such alliances make sense for firms, as well as regulators looking to promote innovation that improves consumer welfare, remains far from clear. In this paper we use a game-theoretic framework to study the conditions under which firms should pursue R&D alliances, and the situations under which the alliance decision may conflict with consumers' interests in having access to life-saving medicines. First, we find that R&D costs in an alliance relative to in-house costs are an important driver of the alliance decision. Second, firms with large asymmetries in their in-house R&D costs are less likely to form an alliance. Third, as product-market competition intensifies, R&D alliances are more likely to be pursued to alleviate competition rather than for efficiency gains in R&D. Fourth, and most strikingly, we show a sizable region of the parameter space in which firms would pursue an R&D alliance even though it would lower the chances of a successful drug becoming available to consumers -a clear loss of ex ante consumer welfare that regulators should be concerned with. These results provide a novel theoretical analysis of the biopharmaceutical industry for regulators, firms, and researchers.

2 - Consumer Social Sharing and Brand Competition

Jane Gu, Associate Professor, University of Connecticut, 2100 Hillside Road, Unit 1041, Storrs, CT, 06269, United States, jane.gu@business.uconn.edu, Xinxin Li

This study investigates how the identity revelation consequence of consumers' social sharing behaviors affects their product choice decisions and firm competition. Our analysis reveals two identity revelation mechanisms induced by two types of consumer sharing activities that have different strategic influences on market competition. First, consumers commonly publicize on social media their associations with products of distinct brand images, which has the effect of suggesting their identities to the public. Such identity suggestion through publicizing product association allows consumers to derive a social value in addition to the consumption value from buying a branded product. Identity suggestion affects firm profit through three effects: the positive identification effect, the negative misidentification effect, and the positive competition alleviation effect. We find that compared to the case of no social sharing, identity suggestion through publicizing product association always enhances the profit of the leading firm in a market with a large loyal segment, but can hurt the profit of the follower firm with a small loyal segment. Moreover, the follower firm may be further worse off when it attempts to enhance competitive status through expanding its loyal segment. Second, in addition to publicizing product associations, consumers can also publicize their opinions on social media through publishing blog posts and comments, which has the effect of directly announcing their identities to the public. Such identity announcement through publicizing opinions allows consumers to derive a social utility even if they do not buy any products. We find that when identity announcement has low effectiveness, it inhibits the positive identification effect of identity suggestion, making the follower firm with a small loyal segment more likely to suffer a profit loss from consumer social sharing. When identity announcement has high effectiveness, it not only inhibits the positive identification effect of identity suggestion, but eliminates the negative misidentification effect.

3 - Will Digital Technology Replace Human Retail Agents

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Our paper aims to answer the strategic question by solving a game-theory model of market competition: Will digital technology replace human retail agents? The threat of digital technology on retail agents started from the 1990s when the Internet took away customers from retail travel agents and airline companies stopped paying travel agents commission fees. Many agents exited the market. But the Internet did not kill all the retail travel agents, and some agents survived by offering premium services and charging service fees to their clients. Facing the threat from more digital technology such as artificial intelligence, many people wonder if machines will replace humans in many industries. Our model shows that, just as the Internet did not kill the retail travel agents, digital technology will not completely replace human retail agents. As our model would predict, the Internet helped some travel agents practice service and fee discrimination among different consumer segments. And as our model shows, as long as there is unique value from human touch, human agents may survive by charging service fees to their clients.

4 - The Role of Imagery in Equity Crowdfunding

Yusan Lin, Penn State University, University Park, PA, United States, yusan@psu.edu, Miwako Nitani, Tavy Ronen, Tawei Wang

This paper examines the role of imagery in crowdfunding from 2014-2016. While previous papers have documented the correlation between entrepreneurs' social networks and the probability of campaign success, the underlying mechanism has not been fully investigated. This paper addresses this gap in the literature by exploring the role of images originating from social media networks in crowdfunding campaigns. We focus on fashion and beauty related companies and argue that the probability of campaign success depending on reliable imagery. By leveraging deep learning neural networks to understand the contents of imagery, we show that by transmitting reliable imagery regarding the main product line, fundraising campaigns on crowdfunding platforms are more likely to be successful. Finally, we document how crowd investors interpret those signals and use for their investment decisions.

■ FB07

Room 237, Alter Hall

Sharing Economy II

Contributed Session

Chair: Chenchen Di, University of Illinois, Urban-Champaign, IL., cdi2@illinois.edu.cn

1 - The Impact of Ride-sharing Services on New Car Demand: An Empirical Analysis of the US Market

Isamar Troncoso Cortez, PhD Student, University of Southern California, Los Angeles, CA, United States, itroncos@marshall.usc.edu, Sivaramakrishnan Siddarth, Jorge Mario Silva-Risso

Ridesharing services, led by Uber and Lyft in the US market, are one of the most visible and successful sectors of the sharing economy. Many financial analysts find their rapid growth and future prospects to pose a serious threat to mainline automakers, though, to our knowledge, no documented empirical evidence directly supports this claim. To fill this gap in the literature, we analyze new car transaction data at the product segment level, from more than 1,200 car dealers in 68 different geographical markets in the US, spanning a five year period during which ridesharing services - led mostly by Uber- were gradually introduced in different markets. We supplement this with Google Trends data on market-specific ride-sharing usage intensity. Together, these data provide a rich variation in the treatment effect across markets, which enables us to identify the impact of ride-sharing entry on new car demand at the product segment level. We estimate a fixed effects model on the number of transactions for each product segment at each dealer to identify the difference-in-difference coefficient associated with the impact of UberX entry on its sales. We find that ridesharing services resulted in a two percent decline in the overall demand for new cars, and that the impact varied by product segment. The entry-compact segment was affected the most, with sales declining by almost eight percent, which is consistent with the notion that the primary users are millennials in urban areas for whom ridesharing is a realistic alternative to owning a car. This idea is further reinforced by the finding that other car segments, such as luxury, luxury SUV, and trucks, show little or no impact.

2 - The Bright Side of Waiting in a Peer-to-peer Sharing Market, Despite Being Mostly Dark

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Peer-to-peer (P2P) online sharing markets, which enable consumers to exchange their unused resources, such as cars and apartments, with their peers for a rental, are gaining momentum. Previous studies have examined the impact of the design of the markets and the observable attributes of the traders, such as gender and age. In this paper, we focus on the impact of a new factor—the multi-stage reservation process—which is universally needed before any transaction carried out on all the P2P sharing platforms. In particular, we study how the time taken by the resource owner to respond to the renter affects the matching outcome. We utilize a unique policy on a popular P2P car-sharing platform in China, which mandates that any request made between 08:00 and 24:00 must be responded to within 15 minutes. Our results show that the owners take on average 15.3 more minutes to respond outside of the quick-response hours (i.e., 00:00-08:00). Surprisingly, conditional on owners accepting the requests, this additional response time boosts, rather than decreases, the probability of renters finalizing the transaction by 9.4%. Our analyses suggest that the positive effect of longer response time is likely driven by renters' strategic inference of favorable information from waiting. We also discover that longer response time can lead the renters to more likely withdraw their reservations. We discuss the implications of our findings to the platform and different participants.

3 - Product Line Design in a Competitive Sharing Market

Chenchen Di, UIUC, 201 E Armory Ave. Apt 26, Champaign, IL, 61820, United States, cdi2@illinois.edu, Yunchuan Liu

P2P platforms enable product sharing and collaborative consumption among consumers. With the emergence of sharing markets, the incumbents adjust the product line design and adopt different sharing business models. In this paper, we consider a competitive market where two firms contemplate sharing their products and redesigning their product lines with multi-dimensional qualities. In addition to traditional products, a firm may introduce a new shareable product with both traditional features that most products have and shareable features that facilitate consumer sharing. We start with a benchmark model where both firms produce single traditional products respectively. Then we extent the model to a competitive sharing market where firms may introduce a new shareable product. Interestingly, we show that if the low-end competitor offers shareable product and participates in sharing, the high-end firm can be better off even it only produces traditional product with the same quality level. When we compare the competitive sharing model with the benchmark, sharing can facilitate low-end firm to increase qualities of traditional products, in turn to increase the quality differences between product lines and to alleviate cannibalization. Moreover, we endogenize rent for sharing and show that the traditional product firm will increase general product quality when its competitor offers shareable product.

■ FB08

Room 238, Alter Hall

Consumer Choice Models 1

Contributed Session

Chair: Joseph Jason Bell, University of Iowa, 382 Westgate Street, Apt 5, Iowa City, IA, 52246, United States, jason-bell@uiowa.edu

1 - Form + Function: Aesthetic Product Design via Adaptive, Geometrized Conjoint

Fred M Feinberg, Handleman Professor of Marketing and Statistics, University of Michigan, 701 Tappan St., Room R5324, Ann Arbor, MI, 48109, United States, feinf@umich.edu, Namwoo Kang, Max Yi Ren, Panos Papalambros

Some "attributes" critical to product design are notoriously elusive. Conjoint shines in calibrating the importance of concrete elements like price, MPG, and warranty length, but struggles with perceptual ones like "style" and "design". These holistic, visually-conveyed attributes trade-off against traditional ones in consumers' minds, so are critical to eventual market choices. Getting them right consumes vast R&D and consumer research resources; yet current preference elicitation methods cannot reliably assess them. Here, we leverage real-time adaptive rendering — via a parameterized geometric model — to measure this interplay between key design and traditional attributes in the passenger vehicle market. The proposed "bi-level adaptive conjoint" method uses crowd-sourced data to both measure vehicle style preferences based on 3D geometrization and reveal tradeoffs between design/style attributes and functional ones (e.g., price and fuel efficiency). Bayesian part-worth estimation, online training via ranking SVM, and a crowd-based experiment allow the proposed method to pinpoint which styling elements differentially drive individual-level consumer reaction.

2 - An Empirical Model of Screening Rule Choice

Joseph Jason Bell, University of Iowa, 382 Westgate Street, Apt 5, Iowa City, IA, 52246, United States, jason-bell@uiowa.edu, Sanghak Lee, Gary J Russell

Consideration sets contain a wealth of information about competition between alternatives and brands. Consideration set formation is often thought to proceed using non-compensatory rules, which very often include discontinuities. Because of this, modeling consideration sets can be chal- lenging. In this essay, we overcome this challenge with a model where consumers choose from among a set of rules, and evaluate the rules by anticipating their impact. Our econometric specification allows us to simulate the screening behavior of consumers, understand patterns of brand competi- tion, and perform counterfactuals. We estimate the model with Bayesian techniques using a unique dataset from the automobile industry where considerations sets are observed.

■ FB09

Room 239, Alter Hall

Pricing Strategies I

Contributed Session

Chair: Praveen K. Kopalle, Dartmouth College, 100 Tuck Hall, Tuck School of Business, Hanover, NH, 03755, United States, kopalle@dartmouth.edu

1 - The Risk Signal of Price Among Complementary Products: Evidence from Innovative Short-term Insurances

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The authors propose and investigate the risk-revealing role of price in the context of complementary products, such as optional insurances (e.g., short-term insurances, product insurances or extended warranties). We argue that consumers use the price of an optional insurance as a cue to infer the risk associated with the product, service, or activity to be insured (i.e., core product). Thus, high prices for optional insurances should be interpreted as a risk signal and should negatively influence the choice probability of the core product. Yet, the observed high prices for optional insurances suggest that it is common practice to neglect dependencies between the choice of the core product and the price of the optional insurance. In exploring the risk-revealing role of price, we address this pricing problem and contribute to research on the allocative and informational role of price. We test our conceptual framework with a series of experimental studies, a choice-based conjoint study, and a simulation study on innovative short-term insurances. The key results demonstrate the existence of the risk-revealing role of price and its effect on consumer behavior. We find that an increasing insurance price not only negatively affects purchases of the optional insurance but also of the core product. Our results further show that the risk signal emerges from the insurance price and not from the mere presence of an optional insurance in a purchase situation. Finally, we explore the properties of the risk signal (i.e., its boundaries and strengths) and discuss consequences for optimal pricing policies. We show that the current industry practice involves a conflict of interest if the product to be insured and the optional insurance are sold by different suppliers.

2 - The Impact of Prior Price Dispersion and Basket Size on the Effectiveness of Retailer's Obfuscation Strategies

Saurabh Bhattacharya, Lecturer, Newcastle University Business School, 5 Barrack Road, Newcastle, NE1 4se, United Kingdom, saurabh.bhattacharya@ncl.ac.uk, Matthew Gorton

Obfuscation is a strategy used by retailers to decrease the price sensitivity of consumers, by increasing their search costs, but in a way in which does not damage the reputation of the firm. Typical examples include providing different sizes of packaging for the same product categories across different stores, charging different delivery options for internet purchases etc. Prior research establishes that such pricing strategies limit the use of price learning mechanisms by consumers. With regard to price learning, extant research in obfuscation has, however, not considered the importance of the degree of past price dispersion in the product category in which the obfuscation strategy is applied. We propose that the lower the previous price dispersion in a product category, the higher will be the price learning for a consumer, which will decrease the probability of consumers purchasing a brand when a retailer applies an obfuscation strategy to mask higher per unit prices. Additionally, we propose that the relationship between price dispersion and learning is moderated by the consumer's basket size. Such that even when the dispersion in prices is low, consumers' price learning may still be weak, increasing the likelihood of purchasing a product when an obfuscation strategy is employed. Based on AC Nielsen consumer panel and retail scanner data for a large US market, we demonstrate empirical support for our proposed model in the carbonated beverage product category where obfuscation strategy is common. Managerial implications are discussed.

3 - The Impact of Discriminatory Pricing Based on Consumer Risk: An Empirical Investigation using Indirect Lending Through Retail Networks

Christopher Amaral, PhD Candidate in Marketing, Queen's University, 143 Union Street, Kingston, ON, K7L 3N6, Canada, 15ca8@queensu.ca, Ceren Kolsarici, Mikhail Nediak

There is strong evidence in the marketing literature that suggests that consumers often differ in their willingness to pay (Besanko, Dubé, and Gupta 2003), highlighting the potential for firms to profit by varying prices by consumer segment. While segments can be formed using various factors, one potential factor that has received less academic attention in the price discrimination literature is risk. The concept of risk is especially applicable in the context of consumer credit, where lenders can classify borrowers into risk segments that are priced differently. To the extent that this pricing strategy reduces credit rationing and improves financial institution profitability, price discrimination based on risk may be advantageous. Our research aims to determine the value of price discrimination based on customer risk. The current research surrounding risk based pricing is scant and empirical investigations exploring the topic are even more limited (Edelberg 2006). To our knowledge, there is no empirical investigation of the effects of risk based pricing that models (1) the financial institution's decision to approve a loan (2) the customer's decision to accept a loan (3) the customer's decision to default and (4) the agent's decision to select an offer for presentation to customers. Our results suggest that price sensitivity decreases with higher levels of customer risk. This difference in willingness to pay provides the financial institution with suitable conditions for risk based pricing. Furthermore, we find that price discrimination based on risk will lead to double-digit increases in profitability and increase access to credit for lower-credit quality borrowers.

4 - Can't Take the Heat? Field Experiment in Residential Energy Conservation

Praveen K. Kopalle, Professor of Marketing, Dartmouth College, 100 Tuck Hall, Tuck School of Business, Hanover, NH, 03755, United States, kopalle@dartmouth.edu, Jesse Burkhardt, Kenneth Gillingham

In this study, we examine the results of a field experiment on minute level and appliance specific electricity consumption. The experiment took place during critical peak load pricing days in 2013-2014 in a neighborhood in Austin, Texas. The study includes five treatment groups: (i) installation of Nest Thermostat, (ii) setting up an online account to track energy consumption at the appliance level, (iii) sending a text message, (iv) sending an actionable text message, and finally, (v) sending a text message that has peak load pricing information. The households were randomly assigned to each of the five treatment groups and one control group. We ran a triple differences model and included household and day fixed effects. Using data at the appliance-minute-level, we estimate a price elasticity of electricity demand of -0.17, and find that over 60 percent of this response can be attributed to air conditioning. The results of the field experiment are also consistent with more recent research at the intersection of marketing and neuro-science.

■ FB10

Room 605, Alter Hall

Customer Relationship Management I

Contributed Session

Chair: Guilherme Bucco, Dona Gabriela, 263, Ap.303, Porto Alegre, Brazil, guilherme.brandelli@yahoo.com.br

1 - Dependence of Mere-measurement Effects on Past Experiences: An Empirical Investigation in Financial Service Industry

Minjee Sun, University of Toronto, Rotman School of Management, 105 St. George st, Toronto, ON, M5S 3E6, Canada, minjee.sun15@rotman.utoronto.ca, Mengze Shi, Yupin Yang, Xubing Zhang

Conducting surveys to collect customer feedbacks may provide firms an unintended benefit: mere participation of customers in the survey can change their subsequent behaviors. This effect is commonly referred to as mere-measurement effect (or, survey participation effect). A widely accepted explanation for the effect is self-generated validity, which states that completing a customer-satisfaction survey will increase the accessibility of previous experience and lead to subsequent behaviors consistent with the answer. However, the literature has neglected how the valence of previous experience may affect the direction of mere-measurement effect, in particular, the mere-measurement effect under negative product performance remains unexplored. In this research, we investigate the impact of product performance on the mere-measurement effect using a unique dataset from a financial securities firm. The data contains a unique natural experiment in which a random sample of customers participated in satisfaction surveys, and the fluctuation in product experience (i.e. stock portfolio performance) is observable. We estimate the mere-measurement effect and the dependence of mere-measurement effect on customers' past portfolio performance. Taking several issues of the data into consideration, we apply Zero-inflated Negative Binomial models and sample matching techniques. Our results show that the mere-measurement effect indeed depends on the previous portfolio performance, and the choice of measures (e.g., the activeness of investments, the size of investments, and retention).

2 - Improving Customer Retention Targeting using Control Charts

Jaap E. Wieringa, Full Professor, University of Groningen, Faculty of Economics and Business, Department of Marketing, Groningen, 9700 AV, Netherlands, J.E.Wieringa@rug.nl, Niels Holtrop

An extensive body of literature has focused on selecting the targets for customer retention campaigns to reduce customer churn. However, while the extant is literature is rich on methods to select who to target, far less attention has been paid to when to target these customers. This is particularly relevant in non-contractual settings, where churn can occur at any instant. We build upon existing work using probabilistic customer retention models, and extent these models with insights from the statistical quality control literature. In particular, we develop a gamma-gamma control chart model to not only select which customers to target with retention efforts, but also to determine the time at which the retention effort should begin. We apply our model to purchase history data from a firm in the greetings and gifts industry. Beyond calibrating the model, we also conduct a field experiment to test the external validity of our approach compared to a targeting-as-usual and control group. We find that our approach decreases churn by 4-6% compared to the other two groups. While not the main goal of our model, we also find a modest spending increase amongst customers targeted by our model compared to the control groups. Finally, we explore heterogeneity in the response to our targeted e-mails.

3 - The Role of Time-varying Contextual Factors in Latent Customer Attrition Models

Patrick Bachmann, University of Zurich, Andreasstrasse 15, Zurich, 8050, Switzerland, patrick.bachmann@business.uzh.ch, Markus Meierer

Valuing customers is essential to any firm and enables marketers to identify key customers. Customer lifetime value (CLV) is the central metric for valuing customers. It describes the long-term economic value of customers and gives managers an idea of how customers will evolve over time.With the Pareto/NBD model, modeling customer lifetime value for non-contractual businesses has become a straight-forward task, however this simplicity comes at a price. Individual-level predictions of customer lifetime value often lack precision. A possible explanation is that standard probabilistic customer attrition models do not consider important contextual factors, such as direct marketing or regularity purchase patterns. However, there is no generalization of the Pareto/NBD model that allows time-varying contextual factors to be considered.This study proposes a closed-form maximum likelihood extension to the Pareto/NBD model that allows both time-invariant and time-varying contextual factors to be modelled in continuous non-contractual settings. These contextual factors can influence either the purchase or the attrition process, or both. A benchmark using multiple retailing datasets shows a significant improvement in forecast accuracy for future customer activity when explicitly modeling time-varying contextual factors.Our findings have strong implications for both, marketing practice and research. Besides giving detailed recommendations on when to use which modeling approach, we also provide practical advices for applying probabilistic customer attrition models.

4 - Customer Portfolio Optimization Based on Latent States Segmentation

Guilherme Bucco, Federal University of Rio Grande do Sul (UFRGS), 855 Washington Luiz St., Porto Alegre, 90010-460, Brazil, gbbucco@gmail.com, Rodrigo Heldt, Cleo Schmitt Silveira, Fernando Bins Luce, Joao Luiz Becker

Customer contribution margin, return, and risk are key measures for evaluating customer-company relationships. However, they are seldom analyzed simultaneously in customer management, since customer lifetime models disregard the return rate provided by customers, and portfolio optimization approaches disregard the contribution margin. We developed a framework to (1) segment customers combining these three key customer measures through a Hidden Markov Model (HMM), and (2) use the latent segments to optimize the customer portfolio. By using HMM we provide a non-arbitrary segmentation and a stable latent structure of segments from the key customer measures, which are the observable variables. The latent segment-based optimization involved constraints which ensured managerial feasibility by guaranteeing viable segments weights and an overall desired profitability. The proposed framework was tested with a database from a large company (80,000+ customers) of the financial services industry. We compared the results (1) with the actual company portfolio, and (2) with the previous efficient frontier, which is based on the segmentation traditionally adopted by the company. Given the more homogenous segmentation generated by the framework, the efficient frontier obtained is superior to the actual portfolio and the previous frontier. Thus, by using the suggested framework, we reached a more robust segmentation, allowing more efficient customer portfolio recommendations for managers to target and prioritize.

■ FB11

Room 606, Alter Hall

E-Commerce I

Contributed Session

Chair: Qiyuan Wang, University of British Columbia, 2111, Lower Mall, Vancouver, BC, V6T 1Z4, Canada, qiyuan.wang@sauder.ubc.ca

1 - Adapting Online Shops to Window Shoppers

Christian Schulze, Associate Professor, Frankfurt School of Finance & Management, gGmbH, Adickesalle 32-34, Frankfurt am Main, 60322, Germany, email@christian-schulze.de, Donald Ngwe, Thales Santos Teixeira, Sandra Di Stefano

Many shopping websites focus on helping consumers, who are looking for specific items (i.e., are in a so-called directed shopping mode). Prominently placed search bars, references to related products from the same category, and extensive product descriptions cater to these customers. In many cases, focusing on directed shopping results in high conversion rates, but also small shopping baskets, and low margins due to low prices. However, a substantial portion of purchases are the result of undirected shopping (e.g., in fashion, food, home interior, toys), akin to “window shopping” in the offline world. Undirected shoppers often don’t enter the store with the goal of buying a specific product, but have more diffuse goals, such as “rewarding themselves” or “being inspired”. The setup of most online websites with their focus on low search effort and low prices is probably not well-positioned to capitalize on these undirected shoppers’ visits. In this study, we use real-world, randomized field experiments to investigate the benefits of offering special websites targeted at shoppers in “undirected” shopping mode: How does offering an additional starting page targeted at undirected shoppers in “window shopping” mode affect conversion rate, basket size, and profit margin? Moreover, we investigate the “how-to” of running websites for undirected shoppers: How can firms determine, which starting page types to show to a consumer (e.g., asking them about their preferences, inferring shopping mode from access channel, time of day, etc.).

2 - Measuring the Value of Social Credit on Online C2c Platforms

Jie Zhao, Associate Professor, School of Management, Guandong University of Technology, Guangdong, China, zhaojie@gdut.edu.cn, Junhong Chu

We quantify the value of Sesame credit in the online C2C accommodation sharing market in China. Specially, we collected data on several C2C accommodation sharing platforms, xiaozhu.com, muniao.com, mayi.com, and Airbnb (China). Several features make our empirical context an ideal setting for measuring the value of social credit. (1) These platforms started operations 2-3 years before the Sesame Credit was introduced in 01/2015, so our data cover 2-3 years before and 3 years after the introduction. (2) Some platforms encourage landlords to display Sesame scores thus we observe some of the landlords with Sesame scores, while other platforms do not display any Sesame scores. (3) Multi-homing is common in China’s accommodation sharing market with the same properties being listed in several platforms. Using AI and ML, we are able to identify the same properties listed in multiple platforms. We first apply the DiD approach to compare a property’s performance before and after the landlord’s Sesame score was displayed. To address the possible selection bias in Sesame credit display, we conduct a difference-in-difference-in-difference analysis. We use all properties that have their landlords’ Sesame scores displayed in at one platform, and that are also listed in at least one platform that does not allow landlords to display Sesame scores. We then compare these properties’ performance in the same platform (before and after the Sesame score display), and across platforms with and without Sesame scores displayed. We find that Sesame score can be an effective means to build trust and increase transactions.

3 - Demand Estimation for Online Retails with Large Product Sets

Qiyuan Wang, University of British Columbia, 2111, Lower Mall, Vancouver, BC, V6T 1Z4, Canada, qiyuan.wang@sauder.ubc.ca, Chunhua Wu, Charles B Weinberg

The online retailing industry is characterized by high levels of product variety. Typically hundreds, if not thousands of products are available to consumers in a given category. High variety presents significant challenge for demand estimation. In particular, consumers choose from a limited set of products and many product varieties have zero sales in one or more time periods. Traditional discrete choice demand models (e.g. logit model) assume that consumers are aware of all available products and then make a choice to maximize their utility. But when consumers' search is costly and limited, consumers only know a subset of all available products. Thus, this assumption is violated and, as the literature shows, the traditional demand model generates significant estimation bias in such contexts. We propose a new method to address this issue. To overcome this problem, we propose that we can use consumers search data to uncover the hidden product demand structure by clustering products into different groups. Each group can be treated as a choice set. Products within the same group are close substitutes for each other and products from different groups are not directly related. In addition, our approach leads to a systematic approach to treating products with zero demand. Then demand estimation can be performed at group level. We first examine the parameter estimates of our approach using numerical experiments and show that our approach recovers the parameters well. We then apply this proposed method to a dataset from online flooring retailer and compare the estimation results between our method and other methods. We conclude with implications for demand estimation and managerial practice.

■ FB12

Room 745, Alter Hall

Methods – Targeting, Advertising, & Attribution

Contributed Session

Chair: Michael Thomas, Santa Clara University, 500 El Camino Real, Santa Clara, CA, 95053, United States, mwthomas@scu.edu

1 - T-patterns in Business

Srinivas Tunuguntla, University of Wisconsin - Madison, 975 University Ave, Madison, WI, 53706, United States, stunuguntla@wisc.edu, Neeraj Arora, Glenn Fung

Sequence of events that occur over time may have recurrent patterns. In this paper we develop a scalable methodology to uncover such time patterns and demonstrate their value in business applications. We build upon prior work by \citet{magnusson2000discovering} and identify four limitations of the existing T-pattern algorithm that preclude it from being useful for typical business problems. The four categories of limitations are (i) scalability (ii) supervised learning (iii) heterogeneous individuals (iv) distributional assumptions, and propose a solution for each limitation. We use simulations to exhibit the properties of our proposed algorithm and its ability to uncover true T-patterns. The simulations demonstrate the gains accrued from our proposed algorithm when compared to the original T-pattern algorithm. We use insurance claims data from a well-known insurance company to test the algorithm. We show that the algorithm successfully detects T-patterns that routinely occur in the context of insurance claims. Using each T-pattern as a binary feature in machine learning models we classify the claims into the two groups of satisfied and dissatisfied customers. This reveals T-patterns that separate dissatisfied customers from satisfied ones and identifies touch-points that could minimize customer dissatisfaction with the claims process.

2 - Inference for Factor Model Based Average Treatment Effects

Kathleen Li, The Wharton School, 3730 Walnut Street, Philadelphia, PA, 19104, United States, katli@wharton.upenn.edu

In this paper we consider using a factor-model-based method, also known as the generalized synthetic control method, to estimate average treatment effects. This method is best suited for cases where there is only one (or a few) treated unit(s), a large number of control units, and large pre and post-treatment sample sizes (i.e., long panel). These settings of a long panel data are quite common in marketing due to the prevalence of daily and weekly data at the customer, store or company level. Existing inference methods lack theory and use a bootstrap or permutation procedure that either assumes that idiosyncratic errors have the same variance for the treated and control units or require that the treated units's error variances be the same during the pre and post-treatment periods. Our inference for the factor model based average treatment effects addresses both issues, allowing the method to be more widely applied, and provides previously unknown distribution theory. We also propose a modified model selection criterion to accurately select the number of factors even in finite samples. Simulations confirm our theoretical analysis, and an empirical application examines the effect of opening a showroom by e-tailer on its online sales.

3 - Mass Advertising as a Natural Experiment

Michael Thomas, Assistant Professor, Santa Clara University, 500 El Camino Real, Santa Clara, CA, 95053, United States, mwthomas@scu.edu

Increasingly, firms have the ability to make high quality, micro-level predictions of demand for their products which improves their ability to target advertising. However, firms may choose to target advertising at a higher level of aggregation than their predictions allow in order to benefit from the significant discounts that often accompany mass advertising purchases. In this paper, we argue that firms making such a choice generate a natural experiment which can be used to obtain consistent estimates of the response to advertising without the need for experimentation. We present the supply-side conditions which incentivize firms to generate this natural experiment as part of their optimization strategy, present an empirical model for exploiting the natural experiment, and apply the strategy to multiple product categories. Estimates from this "coarseness" strategy agree with recent literature which suggests that many standard approaches to estimating the response to advertising may produce biased results due to unobservables.

■ FB13

Room 746, Alter Hall

Multi-Sided Platforms II

Contributed Session

Chair: Hai Long Duong, NUS, 1 Business Link, Singapore, 117592, Singapore, dhlong.hp@gmail.com

1 - Strategic Merchant Decisions on a Retail Deal Platform

Min Kim, R.H. Smith School of Business, University of Maryland, Robert H. Smith School of Business, 3330 Van Munching Hall, College Park, MD, 20742, United States, minkim@rhsmith.umd.edu, Jie Zhang

Retail deal platforms have become a popular venue for merchants to sell products at (deep) discounts online and for shoppers to search for and purchase deals. Yet research on merchants' strategic decisions on these platforms remains scarce. In this study, we conduct an empirical investigation on merchants' key promotion decisions on a retail deal platform by taking into account their strategic considerations in a competitive environment and the two-sided market nature of the platform. We propose a dynamic game model in which each merchant makes two decisions: the number of deals offered (including zero) and the depth of discount, based on its expectations of decisions made by the other merchants and the expected future profit streams. We estimate the model using data from a mobile retail deal platform specializing in fashion products. Based on the model estimation results, we conduct counterfactual policy simulations. We find that reducing internal and external administrative costs borne by the merchants increases overall merchant's profits and could also increase the total eco-system payoffs, which creates win-win opportunities for both the platform and merchants. Moreover, preferential commission rates to the merchants based on their market shares affect payoffs of the eco-system. These findings provide valuable recommendations on how to improve existing merchants' cost management and commission structures of a platform to achieve higher payoffs for merchants and the platforms.

2 - The Adoption of a Multisided Platform by Different Types of Users: A Spatiotemporal Analysis

Ludovic Stourm, HEC Paris, 1 rue de la Libération, Jouy-en-Josas, 78350, France, stourm@hec.fr, Paulo Albuquerque

The recent years have seen the explosion of the sharing economy with platforms such as AirBnB, Uber and BlaBlaCar, which essentially act as matchmakers between individuals willing to rent a resource (apartment, labor, space) and individuals willing to monetize the resources they own. In this research, we construct a spatiotemporal model of diffusion to empirically analyze how such a multisided platform is adopted by different types of users over time and space. In particular, our model can be used to measure the distinct influence of existing users in one side of the platform on the adoption decision by new users in another side. We apply our model on a unique dataset from a European car-sharing platform with about 400,000 users split in two groups: car owners and car renters. We present the results of this analysis and investigate how the initial distribution of users affects the speed of diffusion of the platform.

3 - Entry Decisions of Firms on Business-to-consumer Platforms

Ruobing Ling, National University of Singapore, Business Link, NUS, Singapore, 01-01,BIZ 2 Bu, Singapore, 117592, Singapore, ruobingl@u.nus.edu, Junhong Chu

Two-sided markets have experienced a dramatic expansion in various industries. For most of the Business to Consumer (B2C) platforms, the B-side always needs to learn about the platform's value and potential through advertising or detailing. In this paper, we build a dynamic discrete choice model to investigate the dynamic entry process of the B-side. Using a unique dataset from the earliest and largest B2C platform for health checkups based in China, we empirically test how the risk-neutral physical examination (PE) centers and hospitals make their entry decisions based on the future flow of benefits. Specifically, we study the impact of various factors through the hospital-specific negotiation and detailing process. To address the potential endogenous issue, we model the discount level hospitals offer to the platform and their decisions to enter into the platform simultaneously, and use the control function approach for the city-level direct and cross network size. Our results show that competition effect between hospitals does not play an important role in this process. However, we find a significantly positive cross-network effect in that more patient registrations lead to more hospital signups. Further, hospitals that gain order/orders through the platform before formal collaboration are more likely to join after detailing by the platform's salesforce. Although higher discount level could bring larger demand, the hospitals prefer lower discount level when they first join the platform. We discuss the implications of our findings from the perspective of B-side for B2C platforms.

4 - Making Lemonade from Lemons: Response to Adverse Actions in Two-sided Market, the Case of Singapore's Taxi Industry

Hai Long Duong, Research Fellow, National University of Singapore, Nus Business School, 15 Kent Ridge Drive, Singapore, 119245, Singapore, dhlong.hp@gmail.com, Junhong Chu, Dai Yao

In a platform market, how does an adverse action from one side affect the other side? In this paper, we study the impact of booking cancellations and passenger no-shows on taxi drivers' labor supply and productivity in Singapore's taxi industry. We employ a novel big data set covering three months of taxi bookings from the largest taxi operator in Singapore. Our analysis shows that drivers work longer time and earn more per hour following cancellations or no-shows - as if they strive to make up for the loss from such adverse actions. Interestingly, working longer time and increasing productivity are substitutable rather than complementary devices, and are chosen by taxi drivers in their own favor: experienced drivers, with better skills in job search than novices, tend to work more diligently to increase productivity; and solo drivers, with a more flexible schedule as opposed to sharing drivers, tend to work more hours. Furthermore, these effects are strong in the immediate following hour and fade away afterwards. Our results demonstrate the resiliency of platform markets and shed new light on the behaviors and interactions at the micro-level among agents on both sides.

■ FB14

Room 607, Alter Hall

Machine Learning – Customer Retention

Contributed Session

Chair: Christopher Berry, Canadian Broadcasting Corporation, 810 60 Bathurst Street, Toronto, ON, M5V 2P4, Canada, christopher.berry@cbc.ca

1 - When the Data Are Out: Assessing Behavioral Changes Following a Data Breach

Dana Turjeman, PhD Candidate, University of Michigan, Ann Arbor, MI, United States, Turji@umich.edu, Fred M Feinberg

As the quantity and value of data increase, so do the severity of data breaches and consumer privacy invasions. While firms publicize their post-breach protective actions, little is known about the social, behavioral, and economic aftereffects of major breaches. Specifically, do individual consumers alter their interactions with the firm, or do they continue with "business as usual"? Our data stem from a matchmaking site with substantial covert activity that was breached in 2015. The data we use include de-identified profiles of paying members from the United States, and their activities on the website since joining, and up to 3 weeks after, the disclosure of the data breach. We extend Wager and Athey's (2017) Causal Forest model into a Temporal Causal Forest in order to assess changes in users' engagement. Though the aggregate raw post-breach effect in number of activities (messages, searches, chat messages) appears nearly negligible, our analysis reveals nontrivial individual-level reactions, as well as heterogeneity in responses to the breach announcement. Analysis of activities that relate to disguise and precaution reveals a significant increase in the number of users that have deleted their photos to avoid personal identification.

2 - The Incremental Value of Unstructured Data in Predicting Customer Retention

Evert de Haan, Assistant Professor, Goethe University Frankfurt, Theodor-W.-Adorno-Platz 4, Frankfurt am Main, 60323, Germany, dehaan@wiwi.uni-frankfurt.de, Elena Menichelli

In CRM, one challenge is to accurately predict future customer behavior. Traditionally these predictions have been made using data from the customer database and quantitative data from surveys. Qualitative data are instead unused in most of the cases, since it cannot be directly included in econometric models because of its unstructured nature. An important qualitative data source, which has been neglected up to now, is the voice of customers, e.g. customers' actual stated opinions in open questions and in online comments. In our study we use data from a European telecom provider, in which we illustrate (1) ways to get insights from these unstructured data, (2) methods to include these insights in traditional econometric models, and (3) the incremental monetary value of using these data due to more accurate customer retention prediction. We show that including these data indeed helps to more accurately predict customer retention, when it comes to who will churn and who won't (i.e. the hit rate) as well as the timing of customer churn (i.e. at what moment in time the customer will churn). All this leads to better targeting customers at the right moment in time. Based on our analyses, we show that including unstructured qualitative data in churn prediction models can increase the profitability of the firm by €315,000 annually, due to cost savings and customer equity improvements.

3 - When Does Beauty Pay. A Large Scale Image Based Appearance Analysis on Career Transitions

Nikhil Malik, Student, Carnegie Mellon University, 5000 Forbes Avenue, Pittsburgh, PA, 15213, United States, nmalik1@andrew.cmu.edu, Param Vir Singh, Dokyun Lee, Kannan Srinivasan

We investigate the dynamic effects of beauty over an individual's career. Using a fine grained longitudinal sample on career milestones and educational background of 7436 individuals selected from an online professional social network and employing computer vision methods for rating attractiveness of individuals, we find that men enjoy a beauty premium early in their career which disappears later in the career. In contrast, women do not receive a beauty premium early in their career. Rather they receive a beauty premium later in their career. We show these effects through a survival analysis where attractive men are found to progress faster in their career early on and women are found to progress faster in their later career in comparison to their unattractive counterparts respectively. We find that the overall beauty premium is greater for women. These results are robust to a number of control variables and individual unobserved heterogeneity. We provide theoretical reasoning that rationalizes these findings.

4 - Public Media and the Filter Bubble

Christopher Berry, Canadian Broadcasting Corporation, 250 Front Street, Toronto, ON, M5V 3G7, Canada, christopher.berry@cbc.ca

Public media produces a public good in the form of social cohesion. Filter bubbles erode social cohesion. Recently, filter bubbles have grown stronger, more profitable, and more hackable. Filter bubbles, in part generated by deep learning algorithms, can be addressed with deep learning algorithms, and there are novel managerial implications for public media.

■ FB15

Room 603, Alter Hall

CB - Perceptions & Choice

Contributed Session

Chair: Hari Ravella, Virginia Tech, Blacksburg, VA, 24061, United States, ravella@vt.edu

1 - How Non-ownership Physical Possession Impacts Object Valuation

Charan K. Bagga, Assistant Professor, University of Calgary, 2500 University Dr NW, Calgary, AB, T2N 1N4, Canada, charan.bagga@ucalgary.ca, Neil Bendle, June Cotte

Physical possession is known to exert a positive effect on object valuation regardless of whether the object is legally owned. If physical possession affects object valuation independent of legal ownership, it raises questions with crucial implications for marketing: How do the non-ownership physical possession types of renting and borrowing impact valuation? Evidence from four experiments demonstrates that the valuation (i.e., willingness-to-pay) for rented objects is greater than the valuation for non-possessed or borrowed objects. Borrowed objects are found to be valued more than non-possessed objects only when the knowledge available for the non-possessed objects is low. The authors find that psychological ownership mediates the relationship between valuation and non-ownership physical possession. Additionally, psychological ownership varies for different possession types (i.e., ownership, renting, and borrowing) as its contributing routes (control, self-investment, and knowledge) operate differently for each possession type. As further evidence of the psychological ownership based theoretical account, the authors show that rented objects are not valued higher than non-possessed objects if the control or self-investment routes of psychological ownership are suppressed. Finally, the authors examine the moderating influence of product hedonism-utilitarianism, and consumers' tightwad-spendthrift tendency on the valuation of rented and borrowed objects. The authors find that tightwad consumers have a greater willingness-to-pay than spendthrifts for rented objects, but not for borrowed objects. Further, the nature of the product (whether it is perceived as hedonic or utilitarian) does not affect the willingness-to-pay for rented and borrowed objects.

2 - The Effects of Bariatric Surgery on Delay Discounting Modeling in Obesity

Ratnalekha Viswanadham, PhD Candidate, INSEAD, Boulevard de Constance, INSEAD, Fontainebleau, 77305, France, ratnalekha.viswanadham@insead.edu, Yann Cornil, Liane Schmidt, Liane Schmidt, Christine Poitou, Pierre Chandon, Michèle Chabert, Judith Aron-Wisnewsky, Karine Clément, Hilke Plassmann, Hilke Plassmann

We investigate through a delay discounting model-based approach whether bariatric surgery impacts patients' self-control abilities, which may contribute to the success of this weight loss intervention beyond modifying the digestive tract. Lean controls and bariatric surgery obese candidates perform a delay-discounting task while their brains were scanned under functional MRI with incentive-compatible and monetarily-equivalent food and monetary rewards. We fit from neuroeconomics literature the "as-soon-as-possible" model, a single-parameter delay discounting model derived from the hyperbolic model that accounts for not only present bias of delay discounting but also time invariance of intertemporal choices (i.e. when both a smaller-sooner reward and larger-later reward are offset by the same amount of time). Results show, through discounting parameter comparisons, that pre-bariatric obese patients exhibit more delay discounting behavior for food than lean controls. Both groups exhibit no difference in monetary rewards, and this behavior remains consistent after surgery for obese patients. Discounting behavior differences between the groups for food rewards diminish six months after surgery, which is evidence of an effect of the surgery on behavioral aspects of obesity. Results by the conference will include mediating effects of biological markers and neural correlates to gain a more comprehensive understanding of domain and physiological differences in delay discounting.

3 - Pay Now or Pay Later – The Role of Payment Time in Pay What You Want Pricing

Raghabendra KC, Cambridge Judge Business School, University of Cambridge, Cambridge, United Kingdom, rk492@cam.ac.uk, Vincent Mak, Elie Ofek

Pay What You Want (PWYW) pricing has garnered substantial attention from academics, businesses, policy makers, and the media over the past decade. Existing research has unearthed various mechanisms at play in a PWYW exchange and provided substantial information on when and how businesses can take advantage of a PWYW pricing strategy. What is yet to be investigated is how the impact of these mechanisms varies with the payment decision time. We focus on the difference between before and after the seller's delivery of value to the customer. We propose that, compared with when the payment decision is to be made before the delivery of value, when a seller suggests the payment decision be made after the delivery of value, the customer perceives a higher amount of trust placed on them by the seller. This increased perceived trust is then reciprocated by the customer with an increased payment for the received value. In a series of experimental studies, including two field experiments, we find confirming evidence that the customer's reciprocal response is enhanced with a delayed payment decision. Our research offers a number of novel findings that are useful to practitioners in for- and non-profit businesses who are interested in PWYW pricing. Furthermore, our research suggests that signals of trust placed on customers by a firm could result in enhanced reciprocal behavior; this implies that perceived trust could be used as a novel marketing tool, with further managerial implications.

4 - Factors Moderating the Effectiveness of In-store Mobile Promotions

Hari Ravella, Virginia Tech, 7054 Haycock Road, Falls Church, VA, 22043, United States, ravella@vt.edu, Dipankar Chakravarti

Mobile marketing has seen explosive growth in recent years (Shankar 2016). While the growing popularity of mobile communications testifies to its marketplace impact, it raises important questions about the mechanisms that drive consumer (shopper) response to in-store mobile promotions versus other more traditional in-store promotion formats such as shelf coupons and end-of-aisle displays. The present paper argues that, in contrast to traditional in-store promotions that tend to be passive, in-store mobile promotions tend to be intrusive and demand the recipient's attention. Mobile strategy research reported in Forbes (Conner 2013) suggests that 90% of text messages get read within 3 minutes of delivery, perhaps aided by an urge to access new information upon the alerting ping. Notwithstanding its irritation invoking potential, a promotional message that has penetrated the attention barrier then has significant potential to precipitate purchase behaviors. We argue that relative to an equivalent in-store promotional offer delivered in a traditional format, an in-store mobile promotion has a significantly higher likelihood of deflecting consumers off planned purchase routines and provoking purchases of alternative brands not previously part of their consideration sets. We also argue that such mobile promotion effects are likely to be larger for consumers who are lower (versus higher) on innate deal proneness, as well as for hedonic versus utilitarian products. We test our predictions using consumers recruited from a web panel who participate in a computer-simulated supermarket shopping task.

■ FB16

Room 231, Alter Hall

2018 ISMS/MSI Gary Lilien Practice Prize II

General Session

Chair: John H Roberts, University of New South Wales, 6/61 Kirribilli Avenue, Kirribilli, Sydney NSW, 2061, Australia, johnr@agsm.edu.au

■ FB17

Room 31, Alter Hall

UGC IV - Online Reviews

Contributed Session

Chair: Lakshmi Vana, London Business School, 106 Sutherland Avenue, London, NW9 2QP, United Kingdom, lvana.phd2011@london.edu

1 - Review Helpfulness Product Type and Authenticity

Can Uslay, Rutgers Business School, Newark, NJ, 08854, United States, can.uslay@business.rutgers.edu, Sevincgul (Sev) Ulu, Sengun Yeniyurt

Consumers increasingly rely on online WOM and helpful reviews for their purchase decisions. This study examines the influence of product type and authenticity on perceived helpfulness. Analyses of seventeen-thousand observations of 40 -roducts under two gender-specific product categories suggest that product category (male versus female), valence, and review-type (verified or not) significantly affect review helpfulness. Building on research on selectivity model and authenticity, we found that women utilize a higher threshold to find a review helpful, and they care more about review credibility than men do. Therefore, gender-specific product type is important to understand the nature of helpful votes. We also examine the interaction of rating and gender-specific products on helpfulness, with results suggesting that women are more likely to vote for negative reviews than men. Verified-review received more helpful votes for women products and it shows that female consumers have become more discerning in their trust of reviews, and they expect to see evidence and clues of authenticity than men do. We used Negative Binominal Regression which allows us to manage the features of count data as well as address the heteroscedasticity in linear regression and the over-dispersion problem in the Poisson regression model.Implications: Findings confirm the importance of considering demographic variables when modeling information search behavior. First, findings highlight that gender-specific product types and authenticity of a review contribute to helpfulness. Customizing information presented by gender can provide benefits to companies. Online retailers can use new offers tailored to gender-specific requirements to increase perceived helpfulness of reviews and the overall platform.

2 - Converge or Diverge Competition in Service Quality

Lakshmi Vana, Assistant Professor of Business Administration, Dartmouth College, 100 Tuck Mall, hanover, NH, 03755, United States, prasad.vana@tuck.dartmouth.edu, Sungtak Hong

We use restaurant reviews from Yelp to address the question of how restaurants use service quality to react to competition. By focusing on businesses that offer nearly the same menu of products (e.g., coffee chains), we makes use of customer ratings as a proxy for service quality and study how restaurants adjust their service quality as local competition intensifies (i.e., as more stores enter a geographic market) within a price tier and in a different price tier. The findings suggest distinct non-linear relationships between the service quality and competition within and across price tiers and document the potential mechanism.

Friday, 1:30PM - 3:00PM

■ FC01

Room 32, Alter Hall

Panel: Where Industry Meets Academia: Biopharma Marketing Science Research Needs in a Changing Environment

Panel Session

Moderator: George Chressanthis, Axtria, 315 E. State Street, Berkeley Heights, NJ, 0, United States, george.chressanthis@axtria.com

Moderator: Murali K Mantrala, University of Missouri, Columbia, MO, 65211, United States, mantralam@missouri.edu

1 - Where Industry Meets Academia: Biopharma Marketing Science Research Needs in a Changing Environment

George Chressanthis, Axtria, Berkeley Heights, NJ, United States, george.chressanthis@axtria.com

The biopharmaceutical industry has long been used by academicians as an incubator for new marketing science innovations as evidenced by a small representative sample of the total studies performed references cited here. A few reasons for this keen interest is not only the importance of this industry to overall societal welfare but also the availability of granular data that allows for the applications of new marketing science ideas that would be more difficult to perform in other industries. However, the biopharmaceutical industry has been undergoing dramatic shifts caused by changes in the external environment that are altering the metrics that define brand success and new developments in scientific R&D that have moved drug portfolios toward focusing on large molecule specialty medicines. For example, biologics account for more than 30% of total US drug spending, yet comprise less than 1% of all dispensed prescriptions. More new drug applications are classified now as orphan drugs that cater to personalized targeted therapies and small patient populations. Brand success and treatment paradigms as assessed by payers and providers are increasingly being determined by measures of value such as improvements in health outcomes, overall treatment costs, and cost-effectiveness. These issues are especially acute in the area of new oncology drugs where there is significant focus by biopharmaceutical companies, given their higher costs/risks of R&D and problems of affordability/access for payers and patients. This change in assessment has meant the inclusion of claims data and electronic health records to augment traditional commercial data in the conduct of biopharmaceutical sales and marketing analytics in order to achieve process outcomes (e.g., sales force optimization, marketing-mix, promotion-response modeling, etc.). Biopharmaceutical company commercial operation organizations have been reshaping their sales and marketing processes in response to these and other environmental changes. Yet, one commercial area that has lagged behind in response to these developments is new marketing science innovations that industry practitioners can apply to create solutions within this changing environment. Insights from industry executives from Bayer, Genentech, GSK, Janssen, Merck, Novartis, Pfizer will be shared in this special panel session.

Panelists

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■ FC02

Room 33, Alter Hall

Digital Economy VII: Leveraging Data from Digitalization

General Session

Chair: Eva Ascarza, Columbia Business School, New York, NY, 10027-6902, United States, Ascarza@gsb.columbia.edu

1 - The Impact of Subscription Programs on Customers' Purchase Behavior

Raghuram Iyengar, University of Pennsylvania, 3730 Walnut Street, 700 JMHH, Philadelphia, PA, 19104, United States, riyengar@wharton.upenn.edu, Young-Hoon Park, Qi Yu

Firms use various methods to boost sales and to keep their customers alive. Recently, subscription programs have become increasingly popular among retailers including Amazon (Prime), Sephora (Flash), and Barnes & Noble (B&N Membership). This type of programs bundle a series of benefits, e.g. free shipping, member-exclusive discounts, etc., for a fixed periodic fee. Despite the popularity of subscription programs, their effects on sales and customer retention remain unclear. In this research, we leverage a unique dataset from a fast moving consumer goods company to study the causal effect of customers' adoption of subscription program on their subsequent purchases. The company launched a standard subscription program in its online channel in 2015, allowing customers to have coupons, free samples, member-exclusive promotions, free shipping, along with other benefits with an annual fee of $50. In order to evaluate the causal impact of this program and to account for the fact that high-value customers self-select into the program, we adopt a quasi-experiment setting. We first match each member with a non-member with similar demographics and purchasing records and then estimate a difference-in-differences model on the matched sample. We find that customers on average increase their monthly purchases by $27 after join the subscription program. Moreover, there is substantial heterogeneity in the treatment effects. The subscription program is more effective on customers with higher initial purchases than those with lower initial purchases. Customers also increase their consumption variety after joining the program, suggesting that customers switch their purchase from the firm's competitors and increase their share of wallet. We confirm this mechanism by demonstrating that customers more willing to try new products experience a larger increase in their purchases and consumption variety.

2 - The Value of First Impressions: Leveraging Acquisition Data for Customer Management

Nicolas Padilla, Columbia Business School, 3022 Broadway, Uris Hall, 5th Floor, New York, NY, 10027, United States, npadilla19@gsb.columbia.edu, Eva Ascarza

Firms increasingly have access to richer customer data. What a decade ago was merely a transaction added to a customer database has become a collection of behaviors that a customer engages in while she is making a purchase (e.g., whether her purchase was online or offline, whether she used a tablet or computer, whether she bought a new product or an old best-seller). These data can be used to form the ``first impressions” of a customer based on her initial transaction. We posit that a customer's first impressions carry valuable information for the firm by explaining a large proportion of the heterogeneity in future behavior, both in terms of what the customer is expected to do (i.e., her lifetime value) and how responsive she will be to marketing actions. The latter point is especially relevant for contexts in which firms do not observe many purchases per individual (e.g., retail) or where targeting occurs soon after customer acquisition. In these contexts, models that only rely on unobserved sources of heterogeneity are unable to help the marketer target newly acquired customers with precision. We develop a model incorporates latent dimensions extracted from observed heterogeneity—capturing the effect of first impressions—both in individual propensity to buy as well as responsiveness to the firm's marketing actions. Applying the model to data from a retail context, we show that the focal firm would significantly improve the return on their marketing actions if it targeted just-acquired customers based on their first impressions.

3 - Hospital Competition and Quality Under Regulated Prices: Evidence from the Entry of High-Speed Train in South Korea

Maria Ana Vitorino, University of Minnesota, Minneapolis, MN, United States, vitorino@umn.edu, Hyesung Yoo, Song Yao

This paper provides new evidence on the effect of hospital competition on the quality of clinical care under regulated prices by exploiting the entry of the high-speed train in South Korea. We use a difference-in-differences estimator that exploits the differential effects of the entry of the train on patients living in different regions of the country and examine the effect of increased hospital competition on health outcomes, as measured by 30-day mortality rates following cardiovascular surgery.

4 - Measuring Competition for Attention on Social Media: NWSL Players on Twitter

Federico Rossi, Purdue University, West Lafayette, IL, United States, 1087767, Gaia Rubera

Despite the increasing use of social media among personalities such as politicians, athletes, and entertainment celebrities, little is known on how hard these popular users compete to draw the attention of other users. In this research we investigate the level of competition for users' attention in social media. Using data from Twitter accounts of the U.S. soccer players from the National Women Soccer League (NWSL), we study how the players' performance on the field and their social media activity affects the amount of content generated about them. We consider the amount of tweets mentioning an account as proxy for the level of attention captured by the account's player. In particular, we estimate a demand model where Twitter users decide how to allocate their attention among players by generating content that specifically mentions their account. We show that the attention substitution between players depends on their Twitter activity and their performance, but also on personal characteristics, such as physical attractiveness and sexual orientation. We also model the supply side, and show that the competitive pressure on players to earn attention is directly responsible for a significant amount of tweets that they would not otherwise send.

■ FC03

Room 34, Alter Hall

Advances in Understanding Consumer Search

General Session

Chair: Pedro Gardete, Stanford University, Stanford, CA, 94305, United States, gardete@stanford.edu

1 - Estimation of Preference Heterogeneity in Markets with Costly Search

Stephan Seiler, Stanford University, Stanford, CA, United States, sseiler@stanford.edu, Xiaojing Dong, Ilya Morozov, Liwen Hou

We study estimation of preference heterogeneity in markets where consumers engage in costly search to learn product characteristics. Costly search amplifies consumer preferences and translates into more extreme purchase probabilities, thus generating a seemingly large degree of preference heterogeneity. We develop a model of search that allows for flexible heterogeneity in preferences and estimate its parameters using a unique panel dataset on consumers' search and purchase behavior. The results reveal that ignoring search costs leads to an overestimation of standard deviations of product intercepts by 30 percent. Using the example of personalized pricing, we illustrate that this bias has important consequences for targeted marketing.

2 - Searching for Substitutes: Does Accounting for Consumer Search Matter for Merger Policy?

Elisabeth Honka, UCLA Anderson School of Management, Los Angeles, CA, 90024, United States, elisabeth.honka@anderson.ucla.edu, Kalyan Rallabandi, Nathan Wilson

When firms selling differentiated products seek to merge, a key element of the antitrust investigation is establishing the extent to which their different products compete. In many cases, this involves estimating econometric demand systems using observational data. The estimation results often play a significant role in the decision-making of both antitrust agencies and judicial courts. In this paper, we evaluate the predictions from a demand system which endogenizes consumer search and compare them to those from a full-information model. We do so in the empirical context of durable household appliances. These markets have been the site of significant mergers and acquisitions activity in recent years. Our unique data contain information on consumers' purchases, considered brands, product characteristics, and demographics for consumers buying refrigerators, dishwashers, washing machines, and water heaters between 2008 and 2013. Using our empirical results, we evaluate whether accounting for consumers' limited information impacts the enforcement margin in hypothetical merger situations.

3 - Optimizing for Path-dependence in Consumer Cross-category Search

Raluca M. Ursu, New York University, 44 West 4th Street, Tisch Hall, New York, NY, 10012, United States, rursu@stern.nyu.edu, Daria Dzyabura

In a single shopping session, consumers may be searching for products from several categories. Examples include in store and online grocery shopping, department store visits, or shopping on platforms such as Amazon or Etsy. Existing models of consumer search, starting with the seminal work of Weitzman (1979), only consider consumer search within one category, where goods are substitutes, and the consumer ultimately purchases at most one product. However, multi-category retailers must optimize their strategy to maximize consumers' entire baskets. In addition, existing theory models only consider product specific search costs that are independent of time, which is in contrast to the consumer behavior literature that has demonstrated consumers' fatigue while evaluating products (Redden, 2007). In this paper, we develop a model of consumer search across categories where search costs increase over time. We analyze the resulting model of cross-category search and provide the optimal search strategy for the consumer. We then consider the impact of firm recommendations and show that they can increase the size of the basket purchased. We find that the optimal ranking algorithm to maximize sales recommends least preferred categories first when search costs are increasing. The intuition is that that preferred categories are good candidates for search even in late periods, while less preferred ones can only be searched early, while search costs are still low. We provide a theoretical proof for the optimality of this ranking algorithm. Finally, we also conduct a series of lab experiments to validate our results empirically.

4 - Avoiding Lemons in Search of Peaches: Designing Piecemeal Search

Pedro Gardete, Stanford University, 655 Knight Way, Stanford, CA, 94305, United States, gardete@stanford.edu, Megan Hunter

In this paper we develop and estimate a search model with two distinguishing features: First, consumers learn about each available alternative in a piecemeal fashion, possibly re-visiting alternatives repeatedly in the search process. Second, consumers take cross-characteristic correlations into account while searching, such knowledge of a given attribute is informative about the remaining ones. The search model is estimated on clickstream activity on the website of a used vehicle seller. The model is then used to consider an information design problem faced by the seller, namely, which attributes to feature prominently on the frontpage vs. which attributes to relegate to vehicle profile pages, the latter attributes requiring search to be learned. The model is especially useful to consider information design counterfactual scenarios because different available information induces different search decisions by consumers.

■ FC04

Room 35, Alter Hall

Entrepreneurial Sales: Direct Selling Distributors as Social Media Agents, Entrepreneurs, and High Flyers

General Session

Chair: Anne T. Coughlan, Northwestern University, Evanston, IL, 60208-2008, United States, a-coughlan@kellogg.northwestern.edu

1 - Using ICT to Empower Women Entrepreneurs in South Africa

William F. Crittenden, Northeastern University, Boston, MA, United States, w.crittenden@northeastern.edu, Haya Ajjan, Victoria L. Crittenden

The role of Information Communication Technologies (ICT) in the empowerment of women entrepreneurs in emerging economies is a promising area of research. This study investigates the use of ICT (social and mobile apps) as a mean to enhance social capital creation and maintenance specifically within the direct selling channel. Using a survey of approximately 300 direct sellers in South Africa, findings suggest that, in general, technology use does enhance the women's ability to create new relationships and to maintain existing community ties with other direct sellers. Thus, women who might otherwise not initiate communications with someone whom they were not acquainted with are enabled to do so through ICT affordances. Strengthening social capital had effects on empowerment. It was clear that the strong ties women entrepreneurs create positively influences the authority and freedom to run their direct selling businesses, the mastery of the different work aspects of the business, and the impact these women can make in their direct selling community. In addition, women entrepreneurs who felt part of the broader community and were willing to spend time to support that community were more likely to experience larger sense of empowerment. Results provide insights into the value of understanding ICT role in leading positive changes in social capital creation, bonding, as well as the empowerment of women entrepreneurs.

2 - Understanding Social Media Sentiment, Positioning, and Engagement and Their Impact on DS Sales Performance

Dana Harrison, East Tennessee State University, Johnson City, TN, United States, harrisondl@etsu.edu, Haya Ajjan, Anne T. Coughlan

Digital platforms have disrupted traditional distribution channels; increasing exposure to social networks and altering salesperson interactions. Independent sales consultants in direct selling (DS) channels in particular are increasingly operating in a digitally connected marketplace where social media based fan pages have become an important online information source for consultants and consumers. Although the number of DS consultants has steadily grown, DS firms experience considerable annual turnover. Despite this, DS companies make significant investments in their consultants and depend upon their relationship and performance for long term success. Interest in understanding the role of social media in DS value creation is therefore of strong interest. This study uses a novel respondent matched dataset consisting of 176 sales people from a single DS firm, which integrates a variety of data types (structured, unstructured, subjective, and objective) from three different sources: sales consultants' and consumers' interactions on a Facebook fan page over 5 year period; a consultant survey; and objective sales performance data provided by the DS company. Using PLS SEM, this research investigates how affective dimensions (positive or negative sentiment) of exchanged Facebook online messages, social network characteristics (relational and positional centrality), and online engagement through "likes" and "shares" are related to organizational survey perceptions and objective sales performance. Results provide insights into the value of understanding social media network positioning, message sentiment and engagement, as well as the relationship to sales performance and consultants' satisfaction.

3 - High Flyers: An MOA Analysis of Top Performing Direct Selling Distributors

Manfred Krafft, University of Muenster, Muenster, Germany, m.krafft@unimuenster.de, Anne Coughlan, Julian Allendorf

Direct selling (DS) companies place strong reliance on their distributors both to generate retail sales (acting as salesperson) as well as to recruit/mentor other new distributors (acting as sales manager), both of which require relatively uncommon skill sets. Combined with the DS firm's willingness to register almost all prospects who wish to join, identifying the characteristics of High Flyers is very useful: DS firms can use this information to train and support potential and actual High Flyers, and to maximize their retention. We analyze a broad, multi company dataset with thousands of distributors, collected by the Direct Selling Association, to investigate this issue. DS income and the size of a distributor's downline (number of other distributors recruited/mentored), two key measures of high performance, are explained by a set of drivers linked to the MOA (Motivation, Opportunity, Ability) framework, which has been used to explain performance in sales, operations, and other performance situations. We find that High Flyers are most strongly distinguished from other distributors through the Motivation element, with Ability the next most important framework element - these two accounting for approximately 90% of the model's variance. The results show that a strong DS Opportunity is of significant value both to High Flyers and non High Flyers, but that personal drivers in the Motivation and Ability areas are the major differentiators between the two groups. We discuss managerial implications as well as academic insights arising from our work.

■ FC05

Room 232, Alter Hall

Mobile, Algorithm, and Artificial Intelligence (AI) Session IV: Recommendation Algorithm and Deep Learning

General Session

Chair: Xueming Luo, Temple University, Philadelphia, PA, 19122, United States, luoxm@temple.edu

Co-Chair: Kunpeng Zhang, University of Maryland, College Park, MD, 75248-4055, United States, kzhang@rhsmith.umd.edu

1 - Design of Fashion: Can Brand Value be Separated from Style Value?

Kannan Srinivasan, Carnegie Mellon University, Tepper School of Business, 5000 Forbes Avenue, Pittsburgh, PA, 15213, United States, kannans@andrew.cmu.edu, Zijun (June) Shi, Dokyun Lee, Param Vir Singh

In fashion, consumers value both the brand and the style of an item. On the firms' side, they strive to build up brand value and design fashion items for each new season. However, little empirical study has been done on quantifying the brand value, style value, and especially the substitutability between them in the fashion market. In this research, we seek to understand 1) how brands are valued in the fashion market, 2) how substitutable are brand and style features, and 3) how to design a fashion look that attracts attention in the online community.To do so, we collect a dataset from a major online fashion social networking community. We first employ deep learning based computer vision techniques to create style features, which quantify a fashion look's styles, including clothing style (e.g., compatibility between clothing items, creativity), model style (e.g., facial and body attractiveness), and photo style. We then incorporate them in a dynamic structural model to investigate brand value in relation to style features in the fashion market. Specifically, we develop and estimate a dynamic structural model to analyze the content creation and consumption behavior of influencers in a fashion social network community.Our findings suggest significant effects of brands and style features on the trendiness of a fashion look. We find interesting substitutability patterns between style features and brand levels. For managers and influencers in the fashion market, our results provide guidelines on how to engineer a fashion "look" that can attract the most attention.

2 - Leveraging Deep Learning Algorithms and Field Experiment Response Heterogeneity to Enhance Customer Targeting Effectiveness

Kunpeng Zhang, University of Maryland, College Park, MD, United States, kzhang@rhsmith.umd.edu

Firms seek to understand customer heterogeneity in the response to marketing campaigns, which can boost customer targeting effectiveness. Motivated by the success of modern machine learning techniques, this paper presents a framework that leverages deep learning algorithms and field experiment response heterogeneity to enhance customer targeting effectiveness. We recommend firms run a pilot randomized experiment and use the data to train various deep learning models. By incorporating recurrent neural nets and deep neural nets, our optimal deep learning model can capture both temporal and network effects in the purchase history, after addressing the common issues in most predictive models such as imbalanced training, data sparsity, temporality, and scalability. We then apply the learned optimal model to identify customer targets from the large amount of remaining customers with the highest predicted purchase probabilities. Our application results support that the optimal deep learning model can identify high-value customer targets and significantly lift the sales performance of marketing campaigns, compared to industry common practices of targeting by past purchase frequency or spending amount. We demonstrate that companies may not achieve optimal customer targeting not because they offer inferior campaign incentives, but because they leverage worse targeting rules and select low-value customer targets. Overall, deep learning algorithms can be integrated with field experiments to discover a more effective customer targeting rule.

■ FC06

Room 234, Alter Hall

Apps and Engagement

Contributed Session

Chair: Seoungwoo Lee, A.B. Freeman School of Business, Tulane University, New Orleans, LA, slee35@tulane.edu, Jie Zhang, Michel Wedel

1 - How to Market Mobile Apps: The Impact of Mobile Marketing Strategies on Mobile Branded App Adoption

Ning Fu, State University of New York at Binghamton, P.O. Box 6000, Binghamton, NY, 13902, United States, nfu4@binghamton.edu, Qi Wang, Xia Wang

With a growing number of branded mobile apps launched on the market, marketers are facing fierce competition in attracting consumers to download their apps. As such, many marketers have devoted increased marketing efforts to promote their apps. However, little is known about the effectiveness of mobile marketing strategies on consumers' adoption of branded apps. In this study, we investigate if three mobile marketing strategies–mobile advertising, mobile regular couponing and mobile group-buying couponing–create different impacts on consumers' adoptions and how social influences in the virtual environment (i.e., the installed base of adopters) and in the physical environment (i.e., the crowdedness in the mall) strengthen or weaken the effectiveness of three strategies. Based on a proprietary data collected from a large Chinese shopping mall, our study shows that the adoption rate of its branded app is increased with a large number of regular mobile coupons and group-buying coupons issued, but decreased with a large number of mobile advertising issued. As the number of adopters grows, we find that while the positive effect of mobile regular couponing becomes stronger, the positive effect of mobile group-buying couponing and the negative effect of mobile advertising become weaker. Most interestingly, the social influences of people in the mall (i.e., the crowdedness) create opposite moderating effects on the effectiveness of three mobile marketing strategies. Specifically, as the mall becomes crowded, the positive effect of mobile group-buying couponing and the negative effect of mobile advertising becomes stronger, but the positive effect of mobile regular couponing become weaker.

2 - Feeling Cared, Digitally: The Effect of Family Connectedness on Seniors' Mobile Platform Engagement

Lingling Zhang, University of Maryland-College Park, University of Maryland-College Park, 7699 Mowatt Lane, College Park, MD, 20742, United States, lingzhang@rhsmith.umd.edu, Yiping Amy Song, Pallassana K Kannan

The world's population is growing older, ubiquitously and irreversibly. At a time when life is increasingly shaped by technologies, online media platforms offer a unique opportunity for seniors to enrich their life after retirement and reduce loneliness by connecting with either close (i.e., family members) or distant (i.e., strangers) social relationships. As parent-child relationship is a crucial factor to the quality of life for seniors and strongly impacts their daily activities, it is naturally interesting to ask to what extent the parent-child relationship influences seniors' engagement with online content and activities. To answer this question, we collaborate with a leading mobile media platform that serves senior citizens in a major Asian market. The data covers detailed real-time individual-level activities over a period of two years. Importantly, the platform enables an objective measure of parent-child interactions, which was challenging to obtain in extant research. Our results not only quantify the impact of the parent-child relationship on seniors' online activities but also identify varying effects: the parent-child interactions tend to promote seniors' individual use but demote their social activities on the platform, perhaps because of the substitution effect between different types of social interactions. Our research contributes to the emerging literature that relates offline social connections with online technology adoption and engagement. It has direct implications for policy makers and industry leaders on how to design and promote technology platforms to enhance the social care of seniors.

3 - Strategic Upgrading Decisions for Mobile Apps

Seoungwoo Lee, Assistant Professor, A.B. Freeman School of Business, Tulane University, 7 McAlister Drive 402V, New Orleans, LA, 70118-5665, United States, slee35@tulane.edu, Jie Zhang, Michel Wedel

This study examines upgrading decisions of mobile apps in conjunction with their versioning decisions and identifies opportunities to improve app publishers' profits and the app distribution platform's revenue. We build a joint model of app publishers' upgrading and versioning decisions that incorporates various trade-offs associated with these decisions, and a demand model of app downloads that takes into account cross-effects of versioning and upgrading decisions between the free and paid versions. We calibrate the models using data collected from over 500 apps. Based on results of the demand model, among other things, we find that upgrading one version of an app increases its demand while decreasing the demand for the other version, if it is available. We also find a contemporaneous cannibalization effect between the free and paid versions. These effects speak to the importance of jointly studying the upgrading decisions between the free and paid version of an app. Our joint model of versioning and upgrading decisions provides estimates of various revenues and costs associated with the two decisions. Based on the model estimation results, we conduct a variety of policy simulations to examine the soundness of certain current practices and to identify opportunities to improve app publishers' profits, the app distribution platform' revenue, and the eco-system payoff.

■ FC07

Room 237, Alter Hall

Social Influences

Contributed Session

Chair: Min Zhang, No.111, Second Ring Road, Chengdu, China, MinZhang152@163.com

1 - Exploring Implicit Brand Networks Using Online Social Network Data

Jurui Zhang, University of Massachusetts-Boston, 100 Morrissey Boulevard, College of Management, Boston, MA, 02125-3393, United States, jurui.zhang@gmail.com, Raymond Liu

Online social networking sites such as Twitter and Facebook provide platforms not only for individuals to connect with friends, but also for consumers to connect with brands. This rich network information provides marketers new opportunities to infer implicit brand networks. This study explores implicit brand networks using 3,000 musicians' Twitter account information including more than 1 million mostly followed accounts by fans and more than 2 million hashtags posted on Twitter. Based on the network structure, we detect musician clusters with similar network characteristics. We further explore what factors are effective in predicting musician communities. Discriminant analysis shows that musicians' online metrics such as the number of tweets and the number of friends and the content of users' online comments are important predictors for musician communities. We also explore how musicians' implicit network structures influence their online popularity. We find that ego network density greatly impacts a musician's online popularity. These results have important implications for brand management in the big data environment.

2 - Cultural Capital and Social Influence in Online Reviews

Ashlee Humphreys, Northwestern University, Evanston, IL, United States, a-humphreys@northwestern.edu, Rebecca Jen-Hui Wang

Decades of research suggest that cultural capital is a meaningful resource, as it provides a mechanism for achieving status and power within and amongst social groups. Cultural capital can therefore explain differences in taste amongst individuals, groups, and even cities (Bourdieu 1984; Lamont and Molnar 2002; Florida 2010). Much of the existing literature focuses on the association between cultural capital and expressions of tastes, but not on the social nature of those expressions themselves. That is, extant findings show that cultural capital shapes the way one might review a business, but whether a word-of-mouth (WOM) message produced by someone with high cultural capital is more or less influential remains an open question. In this paper, we conceptualize cultural capital and social capital in the context of social media and online communities. Using a dataset of online reviews and reviewers, we quantify the two constructs. We then explore how cultural capital manifests in a reviewer's linguistic characteristics and ratings tendency, as well as social influence and social approval such as networks of friends and ratings.

3 - Should Companies Encourage Competition in Prosocial Crowdsourcing Platform? Empirical Investigations of How Competition Outcomes Affect Prosocial Behaviors

Yilong Zheng, State University of New York at Oswego, Rich Hall, 7060 NY-104, Oswego, NY, 13126, United States, yilong.zheng@oswego.edu, Qi Wang, Jinfeng (Jenny) Jiao

A growing number of online prosocial-crowdsourcing platforms have adopted contest approach to seeking the wisdom of crowds for solving social problems. Different from many crowdsourcing platforms on which online users are driven by winning the competition, an ego-centric motivation, participants on prosocial-crowdsourcing platforms are driven by both winning the competition and helping others, two motivations–ego-centric and altruistic motivations–that can conflict with each other. Such a unique characteristic of prosocial-crowdsourcing platforms can lead to different impacts of competition outcomes (i.e., winning or losing) on prosocial behaviors. In this study, we examined how competition outcomes influence contestants' subsequent participation in the winning prosocial solution. Using data extracted from an online prosocial crowdsourcing platform, we tested our hypotheses regarding the main effect of competition outcomes and the moderating effects of participation type (i.e., group vs. individual participation) and social interactions (i.e., peers' positive vs. negative comments). We showed that while winning the competition significantly increases participants' likelihood to carry out the proposed project in reality, losing hurts their motivation in doing so. Interestingly, we also found that although participating in a group strengthens the positive effect of winning, it also intensifies the negative effect of losing. When it comes to the moderating effect of social interactions (i.e., positive and negative comments that contestants receive during the competition process), we found that although positive comments attenuate the positive effect of winning, they can help mitigate the negative effect of losing. To our surprise, negative comments are found to strengthen the positive effect of winning.

4 - Framing Effect of Network Literature on Readers' Willingness to Tip: The Mediating Role of Perceived Value

Min Zhang, School of Economics and Management, Southwest Jiaotong University, Chengdu, China, MinZhang152@163.com, Yuan Yuan Chu, Yu Shi Jiang, Li-li Fan

Network literature has become increasingly popular with the rise of social media in China, and it has generated a new consumer culture-"tipping." In the Internet context, the relationship between tipper and receiver is essentially a kind of buyer-seller relationship. The tipping culture, which has brought evolutionary changes in Internet marketing ideas and marketing modes, has an important influence on consumer psychology and behavior. Consumers encountering different message framings of network literature on the Internet have distinct message processing and cognitive responses that will influence their willingness to tip (WTT). Results of two studies show: (1) that the construal level can moderate the framing effect, and a regulatory fit effect exists between message framing and the construal level, although WTT is generally more motivated by negative message framing than positive message framing, and (2) that perceived value mediates the message framing effect on consumers' WTT, and the construal level also moderates this mediation process and has a regulatory fit effect. This research sheds light on a new economic model to promote the Internet wealth flows that are characterized by "tipping" and gives practical implications to optimize Internet marketing strategies and motivate consumers' rational behavior.

■ FC08

Room 238, Alter Hall

Consumer Choice Models II

Contributed Session

Chair: Rajeev Kohli, Columbia University, 506 Uris Hall, Graduate School of Business, New York, NY, 10027-6902, United States, rk35@columbia.edu

1 - A Model of Multi-category Choice and Quantity Consumed in Snacks

Sriharsha Kamatham, UT Dallas, Richardson, TX, 75080, United States, sxk152031@utdallas.edu, B.P.S. Murthi, Marina Girju

When snacking, consumers may eat a large variety of snacks within a day. We develop and estimate a model of category choice and quantity consumed using individual-level snack consumption data. We use a model derived from random utility maximization theory that helps us understand variety seeking in a multi-category consumption context. The model is derived from the multiple discrete-continuous framework proposed by Bhat (2005, 2008), Kim et al. (2002), enabling us to study variety seeking using the nested structure of snack brands and product categories. In the model, we are able to estimate the effects of state dependence and satiation with respect to calories consumed, in addition to the effect of individual characteristics and contextual variables. We find that different product categories exhibit different levels of inertia and satiation. The model suggests different mechanisms for targeting heavy snack consumers.

2 - Uncovering Shopping Goal Structure from Consumer Purchase Histories

Yang Pan, University of Iowa, S252 John Pappajohn Business Building, Department of Marketing, Iowa City, IA, 52242, United States, yang-pan@uiowa.edu, Gary J Russell

Consumer behavior in a retail setting is goal-directed behavior. Motivational theories of social psychology suggest that shopping goals influence consumers' behaviors and actions. Shopping goals can be abstract or concrete under deliberate or implemental mindset. Concrete shopping goals also vary across consumers. Overall, within the same retail setting, different consumers may vary in their shopping goals, which will be reflected in consumers' intrinsic category preferences that can be identified from consumer shopping histories. In this paper, we study shopping goals in a specific retail setting: a convenience store chain primarily located in the Midwestern United States. We assume the basket choice within each shopping trip follows a Multivariate Logistic Model. From this, we derive that the short-run basket counts within each week follow the Poisson distribution. We then identify the short-run basket model by a two-step procedure. In the first step, we analytically aggregate the short-run basket model over time to obtain the long-run basket model, which also takes the form of Poisson. We use the long-run basket data to obtain a consistent estimation of consumers' category preferences, which provide us some insights into the structures of concrete shopping goals. In the second step, we combine short-run basket data and the estimates from the first stage to identify the rest of the parameters in the short-run model. We report on an application of the model to consumer choice histories from the convenience store retailer.

3 - The Effect of Perceived Cost on Package Choice and Purchase Quantity Decisions

Haruka Kozuka, PhD Student, Keio University, Minato-ku, Shiba, 5-11-4, Tokyo, 1080014, Japan, haruka.11.kozuka@keio.jp

The purpose of this study is to clarify how consumers' perceived cost affects package choice and purchase quantity decisions. This paper assumes that unit cost consumers perceived from package size and type is a determining factor of consumers' decisions — "which" and "how many" packages they should purchase. Then the research proposes a choice model which extends Bhat's (2005) choice model by incorporating the influence of unit cost. For model estimation, this paper uses experimental data collected from consumers' package choice of a certain brand with three different packages design. The result of model comparison shows that the fitness of our choice model is better than a choice model not incorporating the effect of unit cost. In the result of model estimates, we find that unit cost, such as the cost for inventory, quality deterioration and shortage, influences on satiation of product utility. In addition, it indicates that consumers' heterogeneity affects the impact of unit cost on decision making.

4 - Randomized Algorithms for Lexicographic Inference

Rajeev Kohli, Ira Leon Rennert Professor of Business, Columbia University, 506 Uris Hall, Graduate School of Business, New York, NY, 10027-6902, United States, rk35@columbia.edu, Khaled Boughanmi, Vikram Kohli

The inference of a lexicographic rule from paired comparisons, ranking or choice data is a discrete optimization problem that generalizes the linear ordering problem. We develop an approach to its solution using randomized algorithms. First, we show that maximizing the expected value of a randomized solution is equivalent to solving the lexicographic inference problem. As a result, the discrete problem is transformed into a continuous and unconstrained nonlinear program that can be solved, possibly only to a local optimum, using standard nonlinear optimization methods. Second, we show that a maximum likelihood procedure, which runs in polynomial time, can be used to implement the randomized algorithm. The maximum likelihood value determines a lower bound on the performance ratio of the randomized algorithm. We employ the proposed approach to infer lexicographic rules for individuals using data from a choice experiment for electronic tablets. These rules obtain substantially better fit and predictions than a previously described greedy algorithm, a local-search algorithm, and multinomial logit and probit models.

■ FC09

Room 239, Alter Hall

Pricing Strategies II

Contributed Session

Chair: Yu-Hung Chen, Doctor, National Taiwan University, Taipei, 10617, Taiwan, yhchen@ntu.edu.tw

1 - Information Good Pricing and Consumer Deliberation

Shan-Yu Chou, Professor, National Taiwan University, Dept of Bus Admin, 1 Sec. 4 Roosevelt Road, Taipei, 106, Taiwan, chousy@ntu.edu.tw, Chyi-Mei Chen, Chung-Ting Tsou

This paper intends to analyze the pricing mechanisms of information goods when firms facing consumers with uncertain use frequency and need to incur a deliberation cost to discover their use frequency. There are two mechanisms, selling, where up-front payment allows unrestricted use, and pay-per-use, where payments are tailored to use. Following Balasubramanian et al. (2015), we assume that paying-per-use impose some disutility on consumers, termed as psychological cost. We show that adopting both selling and pay-per-use schemes in a monopoly yields the highest profit when the deliberation cost is sufficiently low and the psychological cost is sufficiently high. If the deliberation cost is not low enough, then the monopolistic firm will optimally use a single pricing scheme, either selling only or pay-per-use only to induce impulse buying to avoid the costly consumer deliberation. In this situation, if consumer deliberation cost is high enough, selling scheme is preferred to pay-per-view scheme and optimal for the firm in that consumers, facing selling scheme, will voluntarily make purchasing decisions without deliberation even without price discounts. On the other hand, if deliberation cost is not sufficiently high, then pay-per-view may yield a higher profit than selling provided the associated psychological cost is low enough. In the duopoly model, we show that when consumer deliberation cost is low relative to psychological cost, then in equilibrium the two competing firms can both make profits by differentiating their pricing schemes, one offering selling-only scheme and the other offering pay-per-view only. When consumer deliberation cost relative to psychological cost is not low enough, the two firms cannot soften price competition by employing different selling schemes. In particular, the firm employing pay-per-view, facing the associated consumer psychological cost, cannot make profits.

2 - Optimal Design for Pay-what-you-want Pricing

Ranjit M. Christopher, Asst. Professor, University of Missouri - Kansas City, 4768 Oak St, Apt 518, Kansas City, MO, 64112, United States, christopherra@umkc.edu, Fernando Sobral Machado

Pay-What-You-Want (PWYW) is an interesting pricing mechanism where firms relinquish pricing power entirely to consumers. Despite recent attention in the topic, the existing empirical research has lacked solid grounding on a theoretical model of consumer choice and has provided partial and mixed evidence on the conditions under which PWYW may be profitable. In this research, we employ a three-pronged approach to address how firms can use managerially controllable variables such as payment anonymity and price recommendations to optimize the design of PWYW pricing to maximize firm goals such as market penetration and revenues. First, we propose a simple theoretical model to derive conditions under which consumers will opt-out of the PWYW exchange, free ride, or make a freely chosen positive payment. Our model explicitly accounts for variations to both consumers' ease of participating and their valuation of the good under a PWYW exchange contingent on the type of design employed. Second, by specifying consumers' ease of participation and their valuation as latent variables and functions of both the reservation price of the good under fixed-pricing and design variables, we derive a statistical estimation procedure to identify the parameters of the theoretical model. Third, using a controlled experiment, we generate a sample of consumer responses to a generic PWYW design in order to calibrate model parameters, validate our theory, and compute optimal values for managerially controllable pricing design variables. Finally, we discuss how managers can employ our approach to optimize PWYW pricing specific to a product/market context.

3 - Why Doesn't Every Paywall Pay Off? The Spillover Effect of a Paywall on Print Subscription

Reo Song, California State University-Long Beach, 1250 Bellflower Boulevard, CBA 354, Long Beach, CA, 90840, United States, reo.song@csulb.edu, Ho Kim

This paper investigates how installing a paywall for the online content of a publisher affects the sales of its print edition. We call this the 'spillover effect of a paywall.' We first conduct a theoretical analysis to examine how the spillover effect of a paywall is influenced by the price and content characteristics. Theoretical analysis shows that the print subscription price negatively influences the spillover effect, while the digital subscription price can have either positive or negative influence, depending on the different types of spillover effect. It also shows that content attributes directly influence the spillover effect. We then develop an empirical model to examine the spillover effect of a paywall in the U.S. newspaper industry. Empirical analysis finds that both the print and digital price have a negative influence on the spillover effect of a paywall, suggesting that the print and digital editions of a newspaper are complementary. Furthermore, the spillover effect is nearly twice as sensitive to the change in digital price as it is to that in print price (elasticity: 2.22 for digital subscription price; 1.38 for print subscription price), although the average digital subscription price is lower than the average print subscription price by a factor of 4.4. Empirical analysis also finds that newspapers with a larger print circulation, more unique content, and a more politically conservative view perform best with a paywall.

4 - Revenue Sharing for Radiation Treatments Between Equipment Vendors and Hospitals

Yu-Hung Chen, National Taiwan University, No.1, Sec. 4, Roosevelt Rd, Taipei, 10617, Taiwan, yhchen@ntu.edu.tw, Ling-Chieh Kung, Jun-Yu Yu, Hsin-Jung Tsai, Yu Jen Wang

We study the contracting problem between an equipment manufacturer and a hospital for radiation treatment. The manufacturer has private equipment reliability information that prevents the hospital to pay a high price for a reliable machine. In this environment, we show that the popular revenue sharing contract can serve as a signaling device and enhance the system efficiency. It is shown that signaling through revenue sharing is more effective for not-for-profit hospitals than for for-profit ones.

■ FC10

Room 605, Alter Hall

Customer Relationship Management II

Contributed Session

Chair: Nanda Kumar, University of Texas at Dallas, Richardson, TX, United States, nkumar@utdallas.edu

1 - Chasing Mirages? Impact of Loyalty Programs on Customer Trust and Repurchase Intentions

Shawn Mathew, Independent Researcher, Kochi, India, shawnmathew@iima.ac.in, Joshy Joseph

Loyalty programs count among the most popular marketing schemes used by firms to lure and retain customers, yet a large majority of the programs fail to enthuse customers in the longer run due to the lack of appropriate perceived benefits. Badly designed loyalty programs are perceived to be shams by even the most loyal customers because they produce liabilities under the guise of rewards (e.g. build-up of airline loyalty points at extra cost without possibilities of complete redemption). This perception of inbuilt unfairness in the loyalty programs has a negative impact on customer trust and repurchase intentions, specifically when the reward redemptions are not upfront and hidden in the fine print. This ongoing research uses a mixed method approach to derive from qualitative interviews, lab experiments and a field survey to analyse the impact of loyalty programs, which create perceptions of unfairness, on the customer's relationship with the brand. The studies are based in the Airline domain and specifically looks at loyalty programs which results in accruing loyalty points without fair chances of complete redemption. The results can provide insights into complex trade-offs customer face while making choices and the possible negative impact of such loyalty programs. The article contributes both conceptually and empirically to research on loyalty programs, to establish the impact on customer trust and repurchase intentions in such scenarios. The research insights will help marketing managers and researchers evaluate and improve loyalty program effectiveness.

2 - Predicting Commitment: Understanding Donor Conversion to Contractual Giving

Gwen Ahn, University of Michigan, 710 East University Executive Residence ER4610, Ann Arbor, MI, 48109, United States, geunhae@umich.edu, Fred M Feinberg

Charities seek donations in many forms, relying on a variety of donation "products" to achieve their funding targets. Especially prized is committed giving (subscription) - donors' agreeing to a pre-set amount every month (or year) - as opposed to sporadic non-committed giving of any amount at any time. A pivotal and complex feature of the charity-donor relationship is that donors can flexibly shift among any of the product types. Of particular long-term import are donors who start giving sporadically, but convert to a commitment to donate a specific amount on a regular basis. Understanding and enhancing donor subscription is important for charities: not only subscription donations comprise a sizable proportion of their revenue, they also allow stable financial planning by reducing year-to-year volatility. We focus on this process of individual-level donor conversion. Using hierarchical clustering to classify donation trajectories suggests that donors who convert show significant upticks in activity just prior to conversion. The conversion process itself can be modeled via survival analysis, and shows that number of donations is a strong predictor of eventual conversion. However, survival analysis's presumption that every unit will experience the event - i.e., that all donors will eventually convert to an ongoing commitment - is unrealistic, as many non-committed donors are likely 'dead', that is, to remain forever in that state. We propose novel extensions of the classic hierarchical Bayes survival model to accommodate this critical feature.

3 - Re-examining Net Promoter Score: Are Passives Truly Passive?

Hyunhwan Lee, Marketing PhD Candidate, University of Miami, School of Business Administration, Coral Gables, FL, 33124-6520, United States, hlee@bus.miami.edu, Joseph Johnson, Michael Tsiros

Since its introduction, Net Promoter Score (hereafter, NPS) has gained wide industry acceptance as a measure of customer satisfaction. Many managers continually track NPS to monitor the health of their businesses. One reason for its popularity is its simplicity. Using just one question, we can assess a firm's NPS as the difference in the percentage of promoters and detractors. NPS researchers claim that promoters are growth catalysts because they spread positive word of mouth while detractors are a drag on growth because they spread negative word of mouth. Passives are ignored in NPS calculations. Is it not worth listening to passives? Do they not talk much? Surprisingly, there are no studies that examine these questions. By ignoring the passives, firms may be ignoring a segment that holds the key to their future growth. Using text mining and machine learning methods on survey data from the vacation industry, we find that passives talk more and discuss different topics compared to promoters and detractors. By listening to its passives, a firm can improve its satisfaction score because passives give more quality feedback than others. We validate our findings using 18 years of Amazon reviews across 24 product categories. Our findings imply that focusing on promoters and detractors alone is a misleading indicator of a firm's growth potential. Therefore, we propose a revised metric, Weighted Promoter Score (WPS). WPS weights NPS by the proportion of each segment and tracks a firm's growth 'potential' better than NPS.

4 - The Adverse Impact from the Measurement and Dissemination of Customer Satisfaction Ratings

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Credence qualities are product or service attributes that cannot be observed and fully assessed by consumers even after consumption. The primary purpose of many services, such as automotive repair, health care, and education, is to deliver credence qualities to consumers. However, many of these same services also deliver experience qualities (such as the comfort of the waiting room, friendliness of the service provider and entertainment value of a lecture), which are service attributes that can be evaluated by consumers immediately after consumption. In this paper, I find that as the saliency of experience qualities increases (e.g., due to the service providers conducting surveys of customer satisfaction), service providers increase their total provision of quality. However, an increase in salience of experience attributes alters the mix between investments in experience vs. credence qualities, so that firms invest more in experience attributes but less in credence attributes. The interesting and counterintuitive implication of this result is that consumers can be worse off when their satisfaction is assessed and these ratings are used by the service provider to guide investment decisions. Such an adverse impact arises when the (unobservable) credence attributes have a sufficiently large impact on consumers' overall utility (and thus the shift in investment away from credence attributes strongly undermines consumer welfare).

5 - Effect of Appeal Content on Fundraising Success and Donor Behavior

Nanda Kumar, University of Texas at Dallas, Richardson, TX, United States, nkumar@utdallas.edu, Sriharsha Kamathan, Juncai Jiang, Parneet Pahwa

Many fundraisers, for instance, K-12 public schools and charter schools particularly in high poverty areas do not have the resources to reach out to donors nor do they have the time to strategize to achieve their fundraising objectives. Teachers and students in these schools have a variety of needs which are not met because of inadequate funds. Aside from requesting the local community for financial support, many teachers in these schools use platforms such as DonorsChoose.org to appeal to the broader community for financial assistance. These appeals typically provide a brief description of the students in the school, the needs that they have and how the fundraising effort will impact their learning objectives. The goal of our study is to uncover the elements of the appeal that drive both the success of the fundraising effort and donor behavior. We want to understand how the length of the appeal, the sentiment of the appeal impacts the success of the fundraising effort and the amount donated by the donors. We also want to examine how the information that is displayed on the platform impacts the amount donated by donors.

■ FC11

Room 606, Alter Hall

E-Commerce 2

Contributed Session

Chair: Yong Chin Tan, Singapore Management University, 113 Lorong 1 Toa Payoh, #05-460, Singapore, 310113, Singapore, yc.tan.2014@smu.edu.sg

1 - Effect of Freight Subsidies on High Value and Expensive to Ship Products

Fan Yang, University of British Columbia, 2111, Lower Mall, Vancouver, BC, V6T 1Z4, Canada, fan.yang@sauder.ubc.ca, Chunhua Wu, Charles B. Weinberg

In practice, many firms use partitioned pricing strategy, listing both product price and other price component such as shipping fee, separately. For this study we focus on an online seller of building products and examine the impact of a freight subsidy on clickstream behavior and on sales. One key issue is consumers' sensitivity to the two price components—the price of the product itself and to freight. As freight costs on average account for 17% ($260) of the product sales price, knowing the differential response, if any, to product promotions and freight promotions is crucial. Studies of consumer products, e.g. the sale of online books, has found such a differential response, but that is for relatively low value products. In this paper, we develop a structural model to estimate consumers' sensitivity to the two different partitioned components using clickstream data (including purchase data with detailed price and cost information) from an online shopping platform. The company implemented two freight subsidy promotions during the time of our study. Focusing on the results for freight subsidies, we find that shoppers are responsive to price promotions on freight in terms of conversion rate, however the effects on search behavior and total revenue are more nuanced. Managerial implications of these results are presented.

2 - Optimal Utilization of Daily Deal Promotion in Competitive Environments

Seong Kyoung Shin, Purdue University, West Lafayette, IN, 63117, United States, shin182@purdue.edu, jia li

Over the past years, daily deal platforms such as Groupon have been popular and become the important format to connect customers and local merchants that offer activities, goods and services. Although daily deal promotion generates incremental revenue, it is harshly criticized due to deep discounts, cannibalization and high commission. However, plenty of merchants still use daily deals because most local merchants not only have difficulties to advertise their business, but also to face intense competition. Previous literature investigates whether daily deals are beneficial to merchants or not, but a competitive environment is not taken into consideration. In this research, we would like to understand the value of daily deals for local merchants in competitive markets based on transaction data of merchants in China. Specifically, we develop a model to figure out whether daily deals can be helpful for merchants to compete with others and how merchants make the optimal decisions when they offer daily deals. Our data reveals whether customers redeem daily deal vouchers upon their visits, which helps us examine the role of daily deals in competitive circumstance. Thus, we can explore not only how merchants to utilize daily deals strategically, but also how daily deal platforms manage their business more successfully.

3 - Information Targeting in Customers' Online Purchase Journey

Yong Chin Tan, Singapore Management University, Singapore, Singapore, yc.tan.2014@smu.edu.sg, Srinivas Reddy, Sandeep R. Chandukala

Online retailers often provide additional information related to product popularity (e.g., number of customers who viewed / purchased) or scarcity (e.g., number of units available) to persuade customers to purchase. However, the impact of providing these information in an online environment is not well understood. For example, it is unclear if these information should be presented in early stages of the decision-making process when customers engage in exploratory browsing, or later stages after they have narrowed their consideration sets. In addition, the impact of presenting these different types of information on customers' online purchase journey have not been investigated. Using a series of field experiments, the current study examines how the type of information, the way it is presented, and where it is presented in customers' decision-making process influences website engagement, product consideration, purchase conversion, and post-purchase product returns. The moderating effects of various product and customer characteristics are also explored, allowing retailers to target information presentation based on these characteristics.

■ FC12

Room 745, Alter Hall

Methods – Mediation, Moderation & Segmentation

Contributed Session

Chair: Spyros Zoumpoulis, INSEAD, 15 Rue Daubenton, Paris, 75005, France, spyros.zoumpoulis@insead.edu

1 - Asymmetric Relations and the Friendship Paradox

Malek Ben Sliman, Ph.D. Candidate, Graduate School of Business, Columbia University, 5j Uris Hall, Graduate School of Business, New York, NY, 10027, United States, MBensliman20@gsb.columbia.edu, Rajeev Kohli

The friendship paradox says that your friends have more friends than you do. The result relies on the symmetry of friendship - if I am your friend, then you are also my friend. We generalize the paradox to allow asymmetric (leader-follower) relations, such as those between Twitter followers and their leaders. We show that a person has, on average, as many leaders as followers, and that this common average is no greater than the average number of followers per leader and leaders per follower. The result implies that, for example, the people you follow on Twitter are potentially more influential than you (because they have more followers than you) and the people who follow you are more connected and potentially better informed than you (because they follow more people than you). In the friendship paradox, the difference between the average number of friends of friends and the average number of friends increases with the variance in the number of friends. In the present generalization, the difference between the average number of followers per leader and the average number of followers increases with the variance in the number of followers; and the difference between the average number of leaders per follower and the average number of leaders increases with the variance in the number of leaders. We analyze a sample of over 28 million Twitter users and 193 million followers and leaders. On average, a person in the sample has about 19 followers and leaders each, 1,250 followers per leader and 281,000 leaders per follower. We examine the distributions of the number of leaders, the number of followers, the leaders of followers, and the followers of leaders. All four distributions have long tails. A log-normal distribution characterizes the number of leaders in the data. The distributions for the number of followers and the average number of leaders per follower are both bimodal. This is consistent with a large fraction of users having very few followers, a smaller fraction belonging to interest-based communities, and a still smaller fraction of users being celebrities with large numbers of followers.

2 - Latent Variable Moderation Analysis in Marketing Research

Constant Pieters, Tilburg University, Tilburg, Netherlands, c.pieters@tilburguniversity.edu, Rik Pieters, Aurelie Lemmens

Moderation analysis is common in marketing. It examines whether the effect of variable X on Y is conditional on another variable Z. At least one of the variables X and Z is often a latent construct, measured with multiple items. In such "latent moderation models", the challenge is to identify the underlying moderation effect, while correcting for measurement error in the items. Improperly accounting for measurement error increases the potential Type M (magnitude) and Type II error. Our study examines the various methodologies used in marketing research to deal with latent moderation, and how well these methodologies are able to capture the true underlying conditional effect. First, a review of 98 articles published in Journal of Marketing and Journal of Marketing Research between 2000 and 2017 reveals that about 90% of hypothesized moderation effects are tested with an "observed moderation" approach, which does not account for measurement error. The remainder of the tests use a "latent measurement moderation" approach or a "latent structural moderation" approach, which do account for measurement error. Second, typical data from the reviewed articles is simulated for Monte Carlo simulations. These show that the observed moderation approach attenuates the estimated moderation effect by about 25%, whereas there is minimal bias for the latent moderation approaches. Ironically, the latent moderation approaches increase the multicollinearity between the predictors in the model. Whereas multicollinearity increases the standard error of the main effects and moderation effect, which is well-known, it also increases the reliability of the moderation effect, which decreases the bias. Unsurprisingly, multicollinearity decreases the power to find true main effects, but surprisingly it also increases the power to find true moderation effects. These results demonstrate the importance of controlling for measurement error in moderation models: reducing estimation bias while maximizing statistical power to find the true moderation effects.

3 - Efficiently Evaluating Targeting Policies using Field Experiments

Spyros Zoumpoulis, 15 Rue Daubenton, Paris, 75005, France, spyros.zoumpoulis@insead.edu, Duncan I. Simester, Artem Timoshenko

Firms often want to target different customers with different actions, and the marketing literature contains many models designed to optimize targeting policies. While these models are sometimes validated using simulations or historical data, the gold-standard approach to comparing alternative targeting policies is to implement the alternative policies on randomly selected groups of customers and then compare the aggregate outcomes. We show that we can improve the efficiency of these comparisons by using the same experiments but changing the analysis. Instead of comparing the aggregate outcomes, it is more efficient to compare the outcomes within each customer segment, where the segments are defined using the candidate policies. Differencing within segment reduces variation introduced by between-segment differences, and we can then aggregate the within-segment differences across segments. Our key contribution is to show that the choice of the segments is important: we propose segmenting the participants using the actions recommended by the candidate targeting policies. This can greatly improve efficiency. We illustrate this benefit theoretically, and also empirically, using data from a recent large-scale field experiment (4.1 million households) we designed. We also show how this segmentation approach extends to an alternative experimental design and identify limitations that may hinder its implementation.

■ FC13

Room 746, Alter Hall

New Products and Adoption

Contributed Session

Chair: Baek Jung Kim, New York University, New York, NY, bkim2@stern.nyu.edu, Masakazu Ishihara, Vishal Singh

1 - What Can Pre-release Search Traffic Profiles Tell Us?

Oliver Schaer, Research Student, Lancaster University, Bailrigg, Lancaster, LA1 4YX, United Kingdom, o.schaer@lancaster.ac.uk, Nikolaos Kourentzes, Robert Fildes

Pre-release forecasting is a vital task for organisations to adjust advertising strategies and operational decisions. Past studies have demonstrated the predictive value of pre-release buzz for forecasting the adoption of new products. Previous approaches that rely, for example, on functional principal components, or similar approaches, do not investigate specifically for potential similarities of pre-release buzz and product success. We propose to construct profiles of pre-release buzz patterns and associate them with product success. The resulting model allows forecasting the success of a new product by observing its relatively easy to measure pre-release buzz. This approach will not only provide marketers with useful information about their own products but will also allow to gain insights about the competition, as pre-release buzz is publicly available, for example via online discussions and searches. We test our approach on video games sales where we aim to investigate how using pre-release search traffic clusters from Google Trends differs compared to profiles of (i) product features clusters and (ii) life-cycle sales. Finally, we assess the predictive horizon of the approach, as to demonstrate when such signals become available.

2 - Integrating Learning Process into Case-based Decision Theory

Kanoko Go, Niigata Sangyo University, 4730 Karuigawa, Kashiwazaki, Niigata, 945-1393, Japan, kgo@econ.nsu.ac.jp, Yutaka Hamaoka

In marketing, consumer decision-making models based on consumer demand theory (Lancaster 1971) and the multi-attribute attitude model (Fishbein 1963) are popular. These models assume that consumers dissect products into their attributes, assess their importance, and then integrate this into the overall product evaluation. However, if the product was a complex or new product, or if consumers lacked sufficient knowledge and/or ability to process product information, these assumptions may not hold. To model consumer decision-making in such situations, Gilboa and Schmeidler (1995, 2001) proposed case-based decision theory (CBDT)—a decision rule that consumer utilize their past experience in similar circumstancess.We confirmed original CBDT model fits better than the multi-attribute attitude model for consumer evaluation of a really new product under an experimental setting and panel data of detergent. Although original CBDT assumes consumers retrieve past experience from their memory, consumers acquire product information from external information source to reduce uncertainty. We integrated learning process into Case-Based Decision Theory (CBDT) and validated it with "IRI Marketing Data Set" which records the several consumer commodity goods and marketing variables.3

3 - Dynamic Adoption and Usage of the Online Crowdfunding Platform: Evidence from United States Public School Teachers

Baek Jung Kim, New York University, 40 West 4th Street, Tisch Hall, New York, NY, 10012, United States, bkim2@stern.nyu.edu, Masakazu Ishihara, Vishal Singh

Public school education (K-12) is crucial for communities to thrive and for the US economy to offer broad opportunity, but education budgets have declined dramatically in a number of states since the Great Recession. Consequently, public school teachers have had to find alternative resources to compensate for these budget cuts and have turned increasingly to online crowdfunding—raising money from a large number of people, usually in small increments, via the internet. In addition to financial need, peer effects (or network effects) have contributed to the popularity of this platform, meaning that once one teacher in a school starts to use crowdfunding, the rest of the teachers often follow. To investigate the impact of education budget cuts and peer effects on the use of online crowdfunding platforms, we used a crowdfunding website's data on approximately 400,000 teachers from 70,000 public schools (in all fifty states) for 13 years (from 2002 to 2014) in combination with the Common Core Data to get fiscal and demographic information on public schools. Based on the data, we build a dynamic structural model of public school teachers' decisions regarding platform adoption and project posting.Using estimates provided by the structural model, we conduct a policy experiment to examine the marginal effects of education budget cuts and its geographical variation on teachers' adoption and usage decisions. Specifically, we quantify not only the temporary effect, but also the long-term effect that accounts for the peer influence as a multiplier effect. Our findings will help the government improve the geographical inequality of public school funding.

■ FC14

Room 607, Alter Hall

Market Competition

Contributed Session

Chair: Jianhui Li, Johns Hopkins University, Baltimore, MD, jli123@jhu.edu

1 - Certification Reputation and Entry an Empirical Analysis

Xiang Hui, MIT, Cambridge, MA, 02139, United States, xianghui@mit.edu, Maryam Saeedi, Giancarlo Spagnolo, Steven Tadelis

How does quality-certification affect product quality in markets? We exploit a policy change on eBay to analyze how a more stringent certification policy affects entry and behavior across many markets segments. We find that first, entry increased in markets where it was harder to get certified, until a new steady state was reached. Second, the quality distribution of entrants exhibits fatter tails after the policy, and overall quality is slightly higher. Last, some incumbents respond by increasing the quality of their service to maintain certification. The results inform the design of certification policies in electronic and other markets.

2 - Spatio-temporal Propagation of Asymmetric Inter and Intra-channel Effects of Competitive Price Promotions

Priyanka Gupta, Nanyang Business School, 50 Nanyang Avenue, Singapore, 639798, Singapore, priyanka012@e.ntu.edu.sg, Sadat Reza

Cross-price elasticities have been widely examined in the empirical marketing literature. Typically, time-series observations on store-category combinations are used in a vector autoregressive framework to estimate the temporal, either short or long term, cross-price promotional effects. An important assumption in applying such framework is that the store level outcomes are independent of each other. In many contexts, particularly in cities where there are a large number of closely situated retailers, such independence assumption may not be tenable. Therefore, a more suitable empirical framework must take into account the spatial connectedness among these retailers. Spatial connectedness also raises another set of questions on the asymmetry of inter and intra channel effects of price promotions. Related questions have been examined in the context of market entry, but to our knowledge there is no empirical investigation on inter- and intra-channel cross-price elasticities using a framework that allows for spatio-temporal dependence of outcomes. In this study, we use a spatial panel vector-autoregressive model to examine both temporal and spatial impulse responses of cross-price promotions. We discuss the necessary identification restrictions required for estimation of spatial and temporal impulse response functions. Our results indicate that at an individual store level, the asymmetric cross-price promotion effects that have been widely discussed in the literature are not generalizable. We also find that there is significant asymmetry in the inter- and intra-channel effects, whereby a dominant channel is less affected by the smaller channel, but the reverse effect is significant. We discuss the managerial implications of our findings.

3 - Dynamic Pricing of Complementary Goods with Product Incompatibility

Jianhui Li, Johns Hopkins University, 3100 Wyman Park Dr, Baltimore, MD, 21211, United States, jli123@jhu.edu

In many complementary goods markets, including tied goods, hardware and software, platform and applications, products are often incompatible across brands or technologies. In the Men's shaving market, razors and blades are incompatible across brands and across different technologies with the same brand. Product incompatibility has important implications on the optimal pricing strategies of razors and blades. Consumers are locked in by their razor adoption decisions. Firms would set the price of razor low to attract more consumers and then receive a high revenue stream in the future by setting a higher price for blades. This paper empirically studies the impact of product incompatibility on market competition and consumers' welfare in complementary goods markets. Four questions are answered: What are the consumers' technology adoption and upgrading patterns under product incompatibility in complementary goods market? What are the optimal pricing strategies for complementary goods? How does product incompatibility affect the optimal pricing strategies? And how does product incompatibility affect consumers' welfare? In the empirical application of US Men's shaving market, I develop a dynamic structural model of consumer demand and oligopoly pricing game of razors and blades. The model is estimated using a household level consumer panel data from 2004 to 2015. I solve for the counterfactual market equilibrium in which razors and blades are compatible across brands. Firms will also re-optimize their pricing strategies of razors and blades. On one hand, firms lose the market power in the blade market. On the other hand, the market expansion effect of product compatibility may help firms gain higher profits. Combining the changes in the consumers' welfare and firms' profits, the net welfare effect is evaluated to illustrate the impact of product compatibility. I find that product incompatibility contributes to the Razor and Blade business model.

■ FC15

Room 603, Alter Hall

CB – Perceptions & Gift Giving

Contributed Session

Chair: Stav Rosenzweig, Ben-Gurion University of the Negev, Department of Management, Guilford Glazer School of Business & Manageme, Beer Sheva, 84105, Israel, stavro@som.bgu.ac.il

1 - Sari – A Garment that Adorns Indian Woman: With Special Focus on its Role as an Artifact in the Rites of Passage of an Indian Bride in the Context of Her Wedding

Sunitha Ratnakaram, O.P. Jindal Global University, 302, Tower C2, Tulip Grand Apartments, near O.P. Jindal University, Sonipat, 131001, India, sratnakaram@jgu.edu.in

Sari is the most magnificent fabric that adorns Indian women since ages. Understanding the role of sari as an artifact that helps in the rites of passage for the bride during her wedding is the focal point of the study. For conducting this study, I chose qualitative method of research. Wedding dress is an accompaniment that travels along with the bride into her next phase of life (Frisie, 2001) it will become a trusted companion during the transformation from a single woman to married woman. In all the rituals that will be narrated a thread can be easily found captures the beautiful transformation of a girl to a bride to a woman. This transformation can be explained using the well framed rites of passage as a part of socialization by Arnold van Gennep in his work The rites of Passage (Gennep, 1960). Rites of passage have three phases: separation, transition, and reincorporation, as van Gennep described. "I propose to call the rites of separation from a previous world, preliminal rites, those executed during the transitional stage liminal (or threshold) rites, and the ceremonies of incorporation into the new world postliminal rites." "The first phase (of separation) comprises symbolic behavior signifying the detachment of the individual or group ... from an earlier fixed point in the social structure (Gennep, 1960). There is often a detachment or "cutting away" from the former self in this phase, which is signified in symbolic actions and rituals. The transition (liminal) phase is the period between states, during which one has left one place or state but has not yet entered or joined the next. "The attributes of liminality or of liminal personae ("threshold people") are necessarily ambiguous (Gennep, 1960). This is the very stage where the transition of girl comes in the form of the bride. In the third phase (reaggregation or reincorporation) the passage is consummated [by] the ritual subject. Having completed the rite and assumed their new identity, one re-enters society with one's new status.

2 - Dynamic Model of Consumer Learning and Forgetting for Seasonal and Limited Releases

Minjung Kwon, NYU, 40 West 4th Street, New York, NY, 10012, United States, mkwon@stern.nyu.edu, Masakazu Ishihara, Andrew Ching, Makoto Mizuno

Previous literature on forward-looking Bayesian learning models has assumed consumers don't forget information about brand quality once learned, e.g., Erdem and Keane (1996). However, given that our memory is often imperfect, the existing models potentially overestimate the role of the strategic sampling; that is, consumers may forgo current utility to get information about brand quality, because the failure to account for forgetting results in the underestimation of the variance of quality belief. We propose and estimate a dynamic structural model of consumer learning and forgetting using scanner data for the beer category where one can observe seasonal and limited release products that are typically unavailable for an extended period between seasons. The periodic availability of those products provides a unique opportunity to examine the role of forgetting over time, because the brand-switching patterns may imply periodic needs for the strategic sampling; that is, consumers switch across brands early on in each season even if they had settled on a small subset of brands because uncertainty had been mostly resolved in the previous season. In addition, we propose a novel identification strategy for forgetting. By assuming a "one-period" learning process and distinguishing between "informative" and "prestige" advertising effects (Ackerberg 2003), we rely on the variation in the advertising effects over two consecutive seasons to identify the forgetting of the previous use experience. Under the perfect recall of product quality, the advertising effects should remain constant over time, conveying only "prestige" effects after the initial use experience despite an extended period of the products being unavailable. By contrast, if the use experience is forgotten during the off-season, the addition of "informative" effects should increase advertising effects in the beginning of the subsequent season.

3 - Does Information Mitigate Behavioral Gaps Due to Market Inexperience? Evidence from a Field Experiment

Uyen Tran, University of Chicago, 5807 South Woodlawn Avenue, Office 307, Chicago, IL, 60637, United States, utran@chicagobooth.edu

In this paper, we evaluate the effect of price information on consumer search and purchasing behavior. We collect detailed individual-level purchasing and search data on 2,449 consumers in the UNC-Chapel Hill textbook market. A random subset of these consumers are provided with information about the price of their assigned textbooks from various retailers before the semester begins. We use these data to compare the search and purchasing outcomes of consumers who receive information from their instructors (treatment group) with outcomes of consumers who do not receive this information (control group). We find that (i) information leads to more online search activity and online purchases, (ii) the informational treatment reduces the gap in online search behavior between consumers across experience levels, and (iii) the treatment increases take-up of the textbook at the extensive margin. Additionally, we solicit beliefs about the price distribution of general textbooks from the same participants and find that although the treatment helps inexperience consumers update on the mean of the textbooks, they do not update their beliefs about the distribution of prices.

4 - Consumer Response to Taxation of Energy-consuming Products: Evidence from a Natural Experiment

Stav Rosenzweig, Ben-Gurion University of the Negev, Department of Management, Guilford Glazer School of Business & Manageme, Beer Sheva, 84105, Israel, stavro@som.bgu.ac.il, Aviv Steren, Ofir Rubin

Policy makers use a variety of tools to help consumers make socially desirable choices. In recent years, one such tool that became increasingly popular is the use of tax incentives to encourage consumers to purchase energy-efficient products. Indeed, the International Energy Agency consistently advocates that encouraging consumers to adopt energy-saving technologies should be a dominant policy. Economics literature, however, points to a major caveat in such policies. It suggests that as energy-consuming products become more energy-efficient, their usage costs decrease, and the result is increased usage that offsets energy savings. This phenomenon is known in the literature as the rebound effect. Taking a consumer behavior perspective, we test this notion in a natural experiment setting. We use a national tax policy on cars, implemented in Israel in 2009. The policy applied a differential tax on private cars depending on their energy efficiency, thereby incentivizing the purchase of energy-efficient cars. Using a difference-in-differences method, we show that consumers used their new cars significantly more following (versus before) the implementation of the policy. This increased usage was evident above and beyond the effect of usage costs, and regardless of whether their cars were efficient or not. We observed no increased usage of used cars, for which the tax policy did not apply. These results suggest that the reason for the increased usage of energy-efficient products is not necessarily an economic incentive (the decrease in usage costs) but rather a behavioral shift. We examine potential mechanisms for this change in behavior.

■ FC16

Room 231, Alter Hall

Users and Retention

Contributed Session

Chair: Jayson S. Jia, University of Hong Kong, Hong Kong, jjia@hku.hk, Jianmin Jia, Xin Lu, Yiwei Li, Nicholas Christakis

1 - The Impact of User Location and Usage Experience on Shopping App Selection and Usage Behavior

Sue Ryung Chang, Assistant Professor, University of Georgia, C326 Benson Hall, Athens, GA, 30602, United States, suechang@uga.edu, Mingyung Kim, Jeonghye Choi, Minakshi Trivedi

With recent advances in location tracking (a.k.a., geolocation) and mobile Internet technologies, many retailers have begun to incorporate customers' location and mobile usage behavior to offer more relevant information at the optimal time and place through mobile shopping applications. In this study, we consider two broad categories of shopping apps—location-based (local deal apps and traditional retailer apps) and location-independent apps (online retailer apps). We investigate the impact of user location (locational factor) and shopping app usage experience (behavioral factor) on customers' shopping app category selection and usage behavior. Specifically, we examine two layers of user location (i.e., real-time location and location familiarity) and usage experience (i.e., real-time search and shopping app category familiarity) to distinguish the effects of contemporaneous and prior factors. Using a two-stage selection model, we study the drivers of selection and usage of location-based versus location-independent app categories. Finally, we offer distinct strategic guidelines for the different types of mobile retailers to leverage both locational and behavioral factors.

2 - An Exploratory Analysis of User Retention and Engagement in Mobile App Market

Ashish Kumar, Aalto University, School of Business, P.O. Box 21230, Helsinki, 00076, Finland, ashish.kumar@aalto.fi, Preeti Krishnan Lyndem, Dhrithi Mahadevan

Despite the initial development and growth of mobile app market driven by the developed countries, today the mobile app usage is driven by developing markets. However, due to intense competition, app developers in the this market face the tremendous pressure of retaining and engaging app users. In this study, we address the issues of mobile app user retention and engagement in the developing market. In this regard, first, we propose a conceptual framework of app user retention and engagement drawn from multiple theories consisting of consumption value, technology acceptance model, and balanced centricity. Second, we collect data from multiple sources consisting of revealed data that captures app users' actual activities, perceptual data that capture app users' psychological intention to engage with the app, and interview data that captures the perspectives of app developers in managing app. Third, we use a multi-method approach to analyze our data. Results from analyses suggest that mobile user retention is affected by not only the core functionality of the app but also the add-on functionalities that the app provides. In fact, these add-on functionalities increase the user retention. Furthermore, our results suggest the importance of a psychological mechanism behind app user engagement where we find usefulness and ease of use of the app drive positive affect towards the app which in turn drive user engagement and loyalty towards the app. Finally, an exploration of app developer's perspective into the app business model reveals that customer-centricity is not an optimal strategy for mobile app growth. Given app developer's vision to provide app as a platform above and beyond just as a service, balanced centricity and stakeholder marketing are suitable strategies.

3 - A Large Scale Descriptive Study of Shopping Search Patterns

Jiang Qian, PhD Student, University of Houston, 4750 Calhoun Rd, Houston, TX, 77004, United States, jqian@bauer.uh.edu, Rex Yuxing Du, Ye Hu

We analyze daily search volume data from Google Shopping Insights from January 1, 2014 through December 31, 2016, which includes 2,000 of the most popular products from a wide range of categories (e.g., apparel, handbags, and electronics). The data is further broken down into 210 DMAs and two platforms, mobile vs. desktop. Our descriptive analysis of this massive dataset reveals many empirical regularities about consumer shopping search behavior. We have found, for example, the volume of shopping-related searches tends to peak on Monday and decline monotonically through the rest of the week. The share of mobile searches increases on weekends and traditional shopping holidays (e.g., Black Friday and New Year) but decreases on online shopping "holidays" (e.g., Amazon Prime Day and Cyber Monday). Younger and older people search less but are more likely to use mobile devices. DMAs with higher population density search more on a per capita basis. Mobile search share is higher in DMAs with lower medium household income or a higher percentage of African American or Hispanic population.

4 - How Structural Embeddedness Drives Social Network Behavior and Happiness

Jayson S. Jia, Assistant Professor, University of Hong Kong, Pok Fu Lam Road, Hong Kong, Hong Kong, jjia@hku.hk, Jianmin Jia, Xin Lu, Yiwei Li, Nicholas Christakis

Truly understanding how social networks shapes behavior, communications, and relationships in societies and markets requires more than understanding the structure of an individual's social network, but also how that individual's social network is embedded with the social networks of those around them. We combine the natural experimental context of a major earthquake with mobile telecommunications meta-data of 28,038 customers who are in 3-person family plans of a major Chinese telecommunications carrier to show that pre-earthquake structural embeddedness can drive post-disaster communications, social network activation, and behaviors. As a theoretical contribution, we develop a new structure-based conceptualization of embeddedness using triadic motifs, which differs from previous frequency-based operationalizations of structural embeddedness (e.g., the number of common friends). We find that stronger structural embeddedness in families drives more family-oriented communications, and also results in greater happiness. Besides capturing the relative importance of friends versus family, these behaviors also show the extent to which families are inward versus outwardly focused, which affects the structure of the macro-network; greater embeddedness results in stronger intra-family network activation, but this de-emphasizes activation of non-family ties which are critical for information diffusion. Our overall contributions include providing causal evidence for the impact of embeddedness on social network behavior, developing new conceptualizations of embeddedness, which remains understudied empirically despite being a fundamental concept in social networks research, as well as showing how social network activation patterns can have important down-stream consequences such as psychological happiness within families and information diffusion for society at large.

■ FC17

Room 31, Alter Hall

Meet the Editors Session I

Panel Session

Chair: Xueming Luo, Temple University, 1801 Liacouras Walk, Philadelphia, PA, 19122, United States, luoxm@temple.edu

1 - Marketing Science

K. Sudhir, Yale University, New Haven, CT, United States, k.sudhir@yale.edu

2 - Journal of Marketing

V. Kumar, Georgia State University, Atlanta, GA, United States, vk@gsu.edu

3 - Journal of Marketing Research

Rajdeep Grewal, University of North Carolina, Kenan-Flagler Business School, 300 Kenan Center Drive, Chapel Hill, NC, 27599, United States, grewalr@unc.edu

Friday, 3:30PM - 5:00PM

■ FD01

Room 32, Alter Hall

Marketing Science in Health Care

General Session

Chair: Steven Mark Shugan, University of Florida, Gainesville, FL, 32605, United States, steven.shugan@warrington.ufl.edu

Co-Chair: Jihwan Moon, UNSW, Level 3 Quadrangle School of Marketing UNSW, Sydney, Australia, jihwan.moon@unsw.edu.au

1 - Morphing Randomized Controlled Trials

Gui Liberali, Erasmus University, Chris Bennekerslaan 27H, Rotterdam, 3061EB, Netherlands, liberali@rsm.nl, John Hauser

Efficient experimental designs of trials of pharmaceutical drugs reduce the pressure on health research funding and minimize patient harm because they require smaller samples than randomized controlled trials (RCT). Fewer patients are exposed to untested (and potentially harmful) drugs. Multi-armed bandit solutions (MABs), which learn more rapidly, minimize patient mortality and accelerate the identification of the optimal policy. However, MABs present two challenges: (1) MABs often require each individual outcome to be observed before the next patient is assigned, but major patient outcomes are often observed several months later after the treatment; (2) because MABs allocate less sample to suboptimal assignments, the overall statistical power is lower between inferior treatments. We address the first challenge with fractional observations. Drawing on morphing research in marketing science, we propose fractional observations as an interim outcome. Such outcome is observed well before the trial ends. We address the second challenge by acknowledging that statistical power in a RCT is not ethically neutral. In a MAB, statistical power focuses on the best treatment relative to suboptimal treatments. Furthermore, ethical considerations should include post-experimental as well as within-experimental considerations. We evaluate our proposed method by analyzing large-scale randomized controlled trials of a new treatment for myocardial infarction. The trial included 41,021 patients in 15 countries and 1,081 hospitals. Our method significantly outperforms traditional RCTs by reducing mortality at the required level of statistical power on the optimal treatment. We close with a discussion of implications for marketing science problems that now rely on RCTs.

2 - Hype News May Drive Real News: The Oz Effect in Healthcare

Zijun Shi, Carnegie Mellon University, 5562 Hobart Street, Apartment 405, Pittsburgh, PA, 15217, United States, zijuns@andrew.cmu.edu, Kannan Srinivasan, Xiao Liu

This paper aims to understand how public information affects consumers' healthcare choices, by delving into the multi-dimensional language features of different information sources. We combine several datasets, including multi-media data from The Dr. Oz Show, consumer reviews, research articles, survey data, news articles, etc. Our textual analysis leverages both traditional natural language processing techniques and state-of-the-art deep learning models. Surprisingly, we find that the "Oz effect"-the phenomenon that The Dr. Oz Show is highly effective in increasing sales of the recommended healthcare products-is not present. In contrast, more credible information-news articles and scientific research articles-plays an important role in steering consumers' choices. Lowering the complexity, ambiguity and emotion of the research articles is especially effective in increasing the sales of the focal product. Moreover, subjectivity, ambiguity, sentiment, or mentioning the product's name in a news article all has a significant positive effect on sales. Furthermore, we propose an alternative explanation of the "Oz effect". Instead of affecting sales directly, the "hype news" in the show indirectly affects consumers' purchasing decisions through "real" news articles. Our findings have managerial implications on advertising content design strategies and policy implications on media content regulation.

3 - Healthcare Markets: For-profit vs. Nonprofit Hospital Competition

Jihwan Moon, UNSW, Level 3 Quadrangle School of Marketing UNSW, Sydney, Australia, jihwan.moon@unsw.edu.au, Steven Shugan

We find unusual competitive interactions between for-profit and nonprofit hospitals contribute to nonprofit hospitals having higher profits and prices than for-profit. The nonprofits' legal inability to distribute profits to stakeholders allows nonprofits to sacrifice profits for market share, thus creating formidable competitive advantages. Specifically, given the nonprofits' willingness to forego profits for output, nonprofits deter for-profit entry into premium specialty medical services (PSMS) markets, or for-profits cede market share to nonprofits foreseeing low post-entry competitive prices in costly PSMS markets. Consequently, nonprofits dominate PSMS (e.g. epilepsy, cardiology, orthopedics, and neurosurgery services) markets, commanding both greater output and higher prices. Those gaps increase as competition intensifies because nonprofits seeking output invest more aggressively. Predictably, the most profitable U.S. hospitals are nonprofit. Last, focusing on PSMS, nonprofits employ national advertising while for-profits use local advertising for basic services. Our research involves both game-theoretic analyses and empirical tests with several healthcare databases.

4 - A Structural Model for Evaluating E-cigarettes Consumption

Vithala Rao, Cornell University, Ithaca, NY, 14850, United States, vrr2@cornell.edu, Jialie Chen

Compared to cigarettes, current regulations on e-cigarettes are minimal. The advocates of e-cigarettes claim that they help in ceasing smoking habits. On the other hand, a recent survey shows that a majority of smokers adopt e-cigarettes mainly to bypass the smoking regulations. Thus, it is imperative for policy makers to understand consumers' motivations to adopt e-cigarettes and explore the impact of e-cigarettes on their smoking behaviors. To address these issues, we construct a dynamic structural model that incorporates both consumers' rational addiction and regular and electronic cigarettes purchase behaviors. We use our estimated structural model a set of counter-factual experiments to explore the implications of potential policies for e-cigarettes. We find that consumption of e-cigarettes counter-acts, rather than promote, smoking cessation. Motivated by this finding, we conduct counterfactual analyses to evaluate two policy regulations on e-cigarettes: (1) e-cigarettes taxes and (2) price regulation. We find that both policies are effective in reducing overall consumption of cigarettes and e-cigarettes.

■ FD02

Room 33, Alter Hall

Digital Economy VIII: Network Dynamics and the Value of Information

General Session

Chair: Mina Ameri, University of Texas at Dallas, Richardson, TX, United States, mina.ameri@utdallas.com

1 - A Structural Model of Network Dynamics: Tie Formation, Product Adoption, and Content Generation

Mina Ameri, University of Texas at Dallas, 800 campbell Rd, Richardson, TX, 75080, United States, mina.ameri@utdallas.edu, Elisabeth Honka, Ying Xie

We develop a structural model for the co-evolution of individuals' friendship tie formations and their concurrent online activities (product adoptions and production of user-generated content) within a social network. Explicitly modeling the endogenous formation of the network and accounting for the interdependence between decisions in these two areas (friendship formations and concurrent online activities) provides a clean identification of peer effects and of important drivers of individuals' friendship decisions. We estimate our model using a novel data set capturing the continuous development of a network and users' entire action histories within the network. Our results reveal that, compared to a potential friend's product adoptions and content generation activities, the total number of friends and the number of common friends this potential friend has with the focal individual are the most important drivers of friendship formation. Further, while having more friends does not make a person more active, having more active friends does increase a user's activity levels in terms of both product adoptions and content generation through peer effects. Via counterfactuals we assess the effectiveness of various seeding and stimulation strategies in increasing website traffic while taking the endogenous network formation into account. We find that seeding to users with the most friends is not always the best strategy to increase users' activity levels on the website.

2 - How Much is an Image Worth? Airbnb Property Demand Estimation Leveraging Large Scale Image Analytics

Shunyuan Zhang, Carnegie Mellon University, 5562 Hobart Street, Apartment 614, Pittsburgh, PA, 15217, United States, shunyuaz@andrew.cmu.edu, Dokyun Lee, Param Vir Singh, Kannan Srinivasan

We investigate the economic impact of images and lower-level image factors that influence property demand in Airbnb. Using Difference-in-Difference analyses on a sixteen-month panel dataset spanning 7,711 Airbnb properties, we find that units with verified photos (taken by Airbnb photographers) generate approximately 6.9% more demand, or $4,281 per year on average. Leveraging computer vision and deep learning techniques to classify the image quality of more than 510,000 photos, we show that 48.9% of this effect comes from the high image quality of verified photos. We further examine the heterogeneity in this effect and find that adopting verified photos benefits low-end properties more, relative to high-end properties and benefits properties with few reviewers more, relative to properties with many reviews. Next, we identify 12 image attributes from photography and marketing literature to characterize unit images to evaluate the economic impact of these human-interpretable attributes. The results suggest that these attributes have a direct impact on demand even after controlling for many observables and thus there is significant value in optimizing images in e-commerce settings. From an academic standpoint, we provide one of the first large-scale empirical evidence that directly connects systematic lower-level and human-interpretable image attributes to demand. This contributes to, and bridges, the photography and marketing (e.g., staging) literature, which has traditionally ignored the demand side (photography) or did not implement systematic characterization of images (marketing). Lastly, these results provide immediate insights for housing and lodging e-commerce managers (of Airbnb, hotels, etc.) to optimize product images for increased demand.

3 - Privacy Preference and Consumer Information Disclosure: Evidence from Online Lending

Chu (Ivy) Dang, The Chinese University of Hong Kong, Rm1151, Cheng Yu Tung Building, Hong Kong, 999077, Hong Kong, dangchu@baf.cuhk.edu.hk, Tesary Lin, Mantian Hu, Pradeep Chintagunta

Companies increasingly collect customer data in order to optimize their marketing decisions. On the other hand, consumers sometimes refuse to provide their data due to privacy concerns, even when firms offer compensation for this information. Canonical economic theory predicts that consumers who withhold information are more likely to be those who experience harm from disclosing their type during market interaction; for example, in credit markets people who are more likely to default will have a stronger incentive to avoid disclosing any information. However, this is no longer true when people have intrinsic privacy preferences. Knowing customers' privacy preferences is key both for designing optimal incentives for data collection and for inferring consumers' latent characteristics. However, research on measuring privacy preferences using field data is scant; while at the same time, stated privacy preferences are known to be much higher than consumers' revealed preferences. To measure consumers' revealed privacy preference while at the same time estimating its relationship with consumer risk type, we use data from an online lending company, where applicants can choose to share personal information in exchange for a lower interest rate. Consumers' risk types are backed out from their repayment decisions conditional on loan characteristics, while privacy preferences are measured by their data sharing decisions. To separate the direct benefits of getting a lower interest rate from privacy preferences, we formulate a structural model to characterize consumers' loan application-repayment process. Counterfactual analysis is conducted to find the optimal incentive for personal data provision.

4 - Cheap Talks on the Crowdsourcing Platform

Yuting Zhu, MIT, 100 Main St, E62-535, Cambridge, MA, 02142, United States, yzhu44@mit.edu, T. Tony Ke

We consider a crowdsourcing platform that matches consumers with private quality preferences with service providers that differ in quality. Consumers can report their quality preferences via cheap talks when posting their jobs, which influence service providers' application and pricing strategies. By exaggerating one's quality preference, a consumer attracts not only more applications from service providers, but also those with higher quality, at the cost of a higher expected price. We find that the exaggeration occurs in equilibrium only when it is possible for consumers to re-negotiate with service providers on their asking prices. In general, re-negotiation improves ex post matching efficiency but may distort consumers' ex ante incentive to truthfully reveal their quality preferences.

■ FD03

Room 34, Alter Hall

Frontiers in Sales Force Incentives Design

General Session

Chair: Olivier J. Rubel, UC Davis Graduate School of Management, Davis, CA, 95616, United States, orubel@ucdavis.edu

Co-Chair: Rajdeep Grewal, University of North Carolina, Chapel Hill, NC, 27599, United States, grewalr@unc.edu

1 - Motivating Salespeople to Work Smart and Work Hard: A Behavioral Economics + Agency-Theoretic Approach

Yeji Lim, University of Missouri, Cornell Hall 435, Columbia, MO, 65211, United States, yeji.lim@mail.missouri.edu, Murali K. Mantrala

In an era when Buyers, whether in B2B or B2C markets, can easily obtain information from online sources about alternatives to meet their needs, and are becoming much more sophisticated in their demands of sellers, it has become imperative for sales forces to enhance their selling effectiveness (i.e., work "smarter"). In this research, we focus on investigating incentive mechanisms to induce salespeople to increase their effectiveness. In contrast, extant agency-theoretic models for sales force compensation planning focus on stimulating more selling efforts towards desired sales objectives and do not address the enhancement of selling effectiveness. Indeed, the standard models invariably assume that selling effectiveness or ability is a given and constant. Recent behavioral economics theories, however, suggest that selling effectiveness as well as cost of thinking could certainly vary with choice of thinking style, e.g., deliberative or intuitive thinking. Moreover, the sales response should be viewed as a function of both thinking efforts and selling effort. In the present research, we allow for such extensions of the standard agency-theoretic model to investigate salespeople's trade-offs between thinking and selling efforts, and corresponding profit-improving sales compensation plans. We generate and discuss a number of new insights into mechanisms for enhancing selling effectiveness versus stimulating selling effort and conclude with several recommendations for sales management and directions for future research.

2 - Multi-Period Salesforce Compensation: Disaggregate Versus Aggregate Incentive Contracts

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We study multi-period salesforce incentive provision when agents can vary their effort levels dynamically over two periods. Compensation can be granted to the agent either period-by-period for the outcome of each period (disaggregate contract), or at the end of the second period for the outcomes for both periods (aggregate contract). The principal balances incentive provision and the agent's dynamic gaming; this determines when it is optimal to use an aggregate contract, which may be either a "gradual" contract with rewards at all output levels or an "extreme" contract that concentrates the reward at the highest possible output level

3 - Managing Conflicts between Sales and Marketing: Customer Acquisition in Business Markets

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Industry practitioners have suggested that performance-based incentives could address conflicts at the marketing and sales interface, without, however, providing any specific direction on how to do so. Specifically, should incentives for marketers depend on sales, leads or both? Similarly, should leads inform salesperson incentive plans, and if so, how? We address these managerial questions and show how performance-based incentives can resolve conflicts related to customer acquisition by business-to-business firms. Specifically, to coordinate efforts between the sales and marketing functions, managers should incentivize marketers only based on the number of leads they generate, through a straight commission. In contrast, we find that a quota-based commission plan on sales approximates salespersons' incentive schemes, where the quota depends on the number of leads generated by marketers. Finally, we find that the proposed incentive schemes fully mitigate inefficiencies at the marketing-sales interface such that equilibrium profits under the decentralized and centralized structures coincide.

■ FD04

Room 35, Alter Hall

Business Strategies for Digital Goods

General Session

Chair: Daniela Schmitt, University of Mannheim, Mannheim, 68161, Germany, daniela.schmitt@bwl.uni-mannheim.de

1 - The Impact of Music Streaming on the Similarity of Listening Behavior across Consumers

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Streaming platforms offer consumers massive variety, e.g., Spotify's library contains over 30 million songs. Users are unlikely to know about all available titles and need to search for music that matches their tastes. A natural question is to what extent the platform lowers these consumer search frictions in a way that caters to individual, idiosyncratic tastes. Conversely, the streaming platform may have incentives to promote the same music to everyone, effectively concentrating listening on a handful of artists; for example, the most popular playlist on Spotify, "Today's Top Hits", has 18 million followers. Given the rapid growth of these platforms, and concerns about their increasing economic power over producers and consumers, the extent to which platforms encourage uniqueness or promote homogeneity in consumption is an important question. This paper addresses this question by investigating changes in listening similarity for pairs of consumers, around the time of their adoption of streaming technology. We find strong evidence that Spotify broadly decreases similarity in listening histories across consumers. This result remains robust to alternative dimensions over which similarity is measured (e.g., artists, genre, etc.), and persists for at least 5 months after adoption.

2 - A La Carte or All You Can Eat: Investigating Pricing Strategies for Digital Content

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The marginal cost of delivering digital content is zero. In this context, should a profitmaximizing firm charge a single access fee for all content, price content individually, or offer bundles? The upside of offering individual products or bundles is that consumers with a clear preference would not feel like they are paying for something they do not need and may thus be more likely to purchase. There is also a potential to sell multiple products to the same customer, thus increasing revenues to the firm. Yet, it seems that the decision difficulty associated with choosing among different options may prevent some of the potential gains from materializing, thus making a single all-access fee more appealing. We investigate this question using data from a field experiment at an adult online content provider. Visitors to the website were randomly assigned to either single product subscriptions, bundles of thematically linked products, or unlimited access. The subscription prices were also varied experimentally. Using this source of variation, we investigate both short-run and long-run consequences of the different pricing strategies for digital content. Surprisingly, customers do not seem to be price sensitive as subscription numbers are as high (or sometimes higher) at higher price points. We also find support for our conjecture that allaccess fees may be preferable to individual subscriptions.

3 - Have You Seen this Ad? The Impact of Display Ad Viewability on Advertising Effectiveness

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Viewability, i.e., pixel percentage in view and exposure time of an online display ad, is a recently available feature in advertisers' campaign dashboards. This study evaluates the impact of ad viewability on advertising effectiveness and, therefore, provides guidance for practitioners to target the right viewability values for their campaign goals. To study the question how ad viewability affects advertising effectiveness, we conduct three large-scale empirical studies, (1) an online experiment, conducted in November 2017 (2) a field experiment to be carried out in February 2018 and (3) an observational study using an industry data set collected between January and April 2016. All three studies use display ads of telecommunication providers to examine the impact of viewability on advertising effectiveness. While Study 1 and 2 make use of a self-designed unknown brand, Study 3 uses data from a display ad campaign of a major European telecommunications company. Furthermore, Study 1 and 2 measure cognitive user reactions, such as ad and brand recognition, as well as behavioral intention (i.e., click and buy intention), and Study 3 measures the effect of viewability on the behavioral outcome variable website visits. We find ambiguous results at a preliminary stage of this research. The results for ad recognition of Study 1 strongly support a long exposure time. However, an exposure time of 10 seconds outperforms longer exposure times in the case of brand recognition. Study 3 suggests an inverted U-shaped effect of both more pixel in view and longer exposure times on website visits. As these findings are mixed, we hope to resolve these conflicting results and explore boundary conditions with regard to the effect of viewability on advertising effectiveness in Study 2.

4 - Optimizing the Composition of Paid Content in a Freemium Model

Daniela Schmitt, University of Mannheim, Mannheim, 68161, Germany, daniela.schmitt@bwl.uni-mannheim.de, Florian Stahl, Raghuram Iyengar

Many companies try to sell subscriptions for their digital products using a freemium revenue model. Such a business model typically implies offering a low-end version of the product for free and a high-end version for a fee. For instance, a news publisher may offer some content for free to all customers while placing other content behind a paywall. Little is known about how the characteristics of the content determine whether it would be free or paid. Using individual-level consumption data from an online news publisher that employs a freemium model, we quantify the impact of the quality and quantity of paid content on the demand for subscriptions. Using the findings from our empirical analysis, we develop a framework for setting a freemium strategy (i.e., the ratio of free versus paid content) optimal for revenue maximization.

■ FD05

Room 232, Alter Hall

Mobile, Algorithm, and Artificial Intelligence (AI) Session IX: Digital Touchpoints and Advertising

General Session

Chair: Xueming Luo, Temple University, Philadelphia, PA, 19122, United States, luoxm@temple.edu

Co-Chair: Sha Zhang, University of Chinese Academy of Sciences, China, zhangsha@ucas.ac.cn

1 - Mobile Integrated Kiosks: How Inspirational Communication Content Increases Unplanned Spending

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Mobile integrated kiosks allow information to flow seamlessly across in-store technology, the retailer's website, and the retailer's mobile app. A better understanding of the effects of such informational flow on shopper behavior can enable retailers to leverage these kiosks and mobile phones in their communications to augment unplanned shopper spending and sales. Of theoretical and managerial importance are the relative effects of inspirational (i.e., content meant to spark ideas or show creative uses of products such as food recipes) versus promotional (e.g., deals) communication content on shopper behavior. This paper develops a series of hypotheses relating to the effects of communication content delivered through mobile integrated kiosks on unplanned spending and product purchases and tests them through field experiments, eye tracking data, and lab studies, using moderated mediation analysis. The results show that inspirational content increases unplanned spending and sales more than promotional content. Building on categorization theory, the authors show that these effects are mediated by activation of higher order categories and purchases of substitute products related to the inspirational communication content. Interestingly, these effects are pronounced for shoppers who spend less on groceries and for those who process information concretely. The results suggest that retailers can increase sales by creating and suggesting inspirational ideas to shoppers through mobile integrated kiosks and by targeting low-budget frequent and concrete processing shoppers.

2 - How Mobile Touchpoints Shape Online Customer Journeys: The Impact of Mobile Engagement on Journey Length, Composition and Revenues

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In recent years, multi-touchpoint customer journeys and attribution modeling have drawn more attention from researchers and practitioners due to their relevance for multichannel resource allocation decisions in practice. As of now, the proliferation of mobile devices and touchpoints is another factor in researchers' agenda. Recent research reveals that customer's usage and relational patterns with mobile devices substantially differ from those on non-mobile online platforms and channels. Thus there is already ample evidence from the research in practice that the adoption and use of mobile touchpoints (apps as well as mobile ads and notifications) should also influence and shape customer journeys and journey outcomes, such as: conversion and revenues on online platforms. Despite its substantial relevance, in marketing literature, there is still no thorough empirical research focusing on this issue. In our research we focus on the impact of the inclusion/introduction of mobile apps and touchpoints in online customer journeys on conversion, revenues, journey length and touchpoint composition. We use long-term clickstream and transactional data encompassing multiple online touchpoints from a large scale insurance company . Our data captures multi-touchpoint data from online customer journeys capturing the periods before-after the firm introduces its mobile apps, mobile advertising and notifications in its touchpoint portfolio. We use dynamic response models to investigate the impact of mobile touchpoint use on conversion and revenues, and difference-in-differences analysis and latent transition models to examine how online customer journeys evolve in terms of length and composition with the use of mobile apps and other mobile touchpoints.

3 - Mobile Entertainment: The Impact of Augmented Reality Games on Prevalent Hedonic Products

Martin Spann, Ludwig-Maximilians-University, Institute for Electronic Commerce, Geschwister-Scholl-Platz 1, 80539, Germany, spann@spann.de, Cristina Mihale-Wilson, Patrick Felka, Oliver Hinz

New technological advancements such as Augmented Reality (AR) and Virtual Reality (VR) have introduced a new category of hedonic products to the entertainment industry. Examples are new AR-based games such as Pokémon Go or the upcoming release of Harry Potter: Wizards Unite. The main objective of this study is to determine the impact of this new category of AR-based games on traditional hedonic products such as television or cinema. Therefore, we measure the impact of AR-based games on other categories of hedonic products (instantiated by products like e.g., television, cinema and online games) by studying rich, unique data sets which allow us to monitor the activity level of the different hedonic products before and after the mass-adoption of AR-based games. Our results reveal that AR-based games have a high disruptive potential for the entertainment industry, and can both, substitute or complement the consumption of other hedonic products. To be more specific, our results show that due to the AR-based games' requirement for the consumer to go outside their home and be active, AR-based games substitute other hedonic products, except for those which (1) require the consumer to travel to a venue away from home, and at the same time (2) serve utterly different entertainment needs as the needs satisfied by AR-based games. We conclude with implications for marketers of AR games as well as traditional hedonic products.

4 - When and How Can New Product Promotions be More Effective?

Sha Zhang, University of Chinese Academy of Sciences, Beijing, China, zhangsha@ucas.ac.cn, Sha Zhang, Xueming Luo

Companies dedicate substantial resources to promote new products to their customers, but new products are typically riskier than classic products. Despite a large body of new product literature, the sales performance of promoting new products remains poorly understood. Grounded in the product advertising and consumer adoption risk theories, we develop a framework addressing three basic questions relevant for managers' new product promotion strategy: Compared with classic product promotions, are new product promotions less or more effective in generating customer purchase response? Does gift complementarity influence the effects of new product promotions? And which customer segments are more responsive to new product promotions? Based on a large-scale randomized field experiment data with approximately 6 million transaction records, we find causal evidence for the framework and hypotheses developed. Specifically, new product promotions result in fewer increases in purchase responses than classic product promotions. Fortunately, high (versus low) complementary free gifts could mitigate such negative effects of new product promotions. Also, new product promotions with high-complementary free gifts are more effective for dormant and loyal customers, but not for new buyers. These findings are robust to a wide array of checks with different modeling estimations, individual heterogeneity, and machine learning techniques with shallow and deep learning algorithms. Additional follow-up studies support the generalizability of the main results. For marketers, the findings demonstrate how to alleviate the downside of new product promotions by matching free gifts and customer segmentations, with actionable insights for managers into the planning and management of new product promotions.

■ FD06

Room 234, Alter Hall

Bayesian Econometrics

Contributed Session

Chair: Kathrin Gruber, Vienna University of Economics, Welthandelsplatz 1, Vienna, 1020, Australia, kathrin.gruber@wu.ac.at

1 - Modeling Unobserved Dropout Rate to Optimize Online Panelist Lifetime Value

Arnaud De Bruyn, Professor of Marketing, ESSEC Business School, Avenue Bernard Hirsch, Cergy, 95000, France, debruyn@essec.edu, Alina Ferecatu, Prithwiraj Mukherjee

Online access panels are of paramount importance in marketing research, and constitute a great asset for market research firms. In this paper, we show that traditional models fail to quantify the true "cost" of an electronic solicitation, and we demonstrate that each additional solicitation not only decreases the likelihood of future participation, but might even increase the dropout rate (a mostly unobserved phenomenon that has a dramatic impact on the lifetime value of an e-panelist). Our model estimates the likelihood that an e-panelist will respond positively to a new solicitation as a function of his past behavior and how many times he has been solicited so far, and integrates a latent "wear out" effect. To obtain individual-level wear out effects, we add a hierarchical Bayesian structure to our e-panel lifetime model. We fit the model on a sample of more than 700,000 e-mail solicitations sent over a period of 3 years, and demonstrate that each additional solicitation contributes to a long-lasting wear-out effect; the unobserved drop-out rate reaches 7% on average at each additional solicitation. To incorporate our model into a more comprehensive e-panel management system, we determine an optimal strategy in terms of both quantity and timing of the solicitations tailored to each individual e-panelist, via machine learning techniques. The proposed management system would help online panel companies maximize e-panelists expected lifetime value.

2 - There Are Many Ways to Answer Survey Items: A Model-based Exploration using Eye-tracking Data

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Response behavior in surveys determines the value of the survey data as input to decision making. Ideally, survey respondents read and understand survey instructions, questions, and response scales, and provide answers that carefully reflect beliefs, attitudes, or knowledge that exist independent of the survey, in principle. However, respondents may also arrive at their responses using cues or rules that facilitate the production of a response, but void it of the targeted information content. We use eye-tracking data as covariates in a Bayesian switching-mixture model to identify different response behaviors at the item-respondent level. The model distinguishes response behaviors that anchor on the previous response, and responses that more directly reflect respondents' preexisting knowledge and experience of interest, while taking persistent heterogeneity in knowledge and experience sets among respondents into account. We find that controlling for anchoring behavior in a survey affects conclusions from the survey data substantially.

3 - Heterogeneous Regularization and Classification Models for Panel Data

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Data for repeated observations on individual units are ubiquitous in marketing, where uncovering unit-specific effects and heterogeneous responses are often focal research questions. In multi-attribute decision-making the idea that individuals selectively attend to information in order to conserve cognitive resources gives rise to sparsity—attributes or attribute levels that have zero influence on individual-level expected utility (i.e., =0). Although a diverse set of models that accomplish regularization through variable selection and/or shrinkage priors exist in the literature, the majority of these applications feature linear models with cross-sectional data for aggregate inference. Given the widespread availability of panel data on marketplace behavior, the authors explore the challenges of generalizing models with regularization for unit-level inference and discrete outcomes; where there are likely to be meaningful differences in sparsity across observational units. In particular, many marketing problems involve choices between nominal levels of an attribute (e.g., brand, flavor, channel), but most existing regularization models account for attribute selection rather than level selection, despite the fact that sparsity is quite likely present over high dimensional nominal attribute levels such as these. The authors propose a heterogeneous level selection model using hierarchical shrinkage priors and demonstrate the differences between the proposed approach and extant classification and regularization models.

4 - Economic Uncertainty and the Demand for Health Insurance

Kathrin Gruber, Erasmus University Rotterdam, Rotterdam, Netherlands, kathrin.gruber@wu.ac.at, Florian Huber, Thomas Reutterer

In times of low interest rates and ongoing policy changes commercial life and health insurers need to understand trends specific to the industry as well as trends and changes specific to their clients in order to develop appropriate business strategies. Some studies have already demonstrated the importance of economic cycles to changes in household's health investment decisions. However, there exists considerable heterogeneity in health investment behaviour due to differences in risk perception for different demographic groups, in particular, for different birth-groups. Within a dynamic cross-sectional panel model we analyze secondary health insurance demand in the commercial U.S. market for different birth-groups. The analysis is based on raw data obtained from the consumer expenditure survey program for the period Q1 1996 to Q4 2017. We cover heterogeneity resulting from household-specific and economic environment-specific covariates by employing a flexible specification of a sparse finite mixture model. Finally, scenario-analysis is performed along different indices measuring economic uncertainty (e.g., newspaper coverage of policy-related economic uncertainty, consumer and business confidence and market volatility measures) to correctly address the short and long-term effects of economic factors on the commercial healthcare sector.

■ FD07

Room 237, Alter Hall

Social Media - Influencers & Motivations

Contributed Session

Chair: Nils Wloemert, Vienna University of Economics and Business, Institute for Interactive, Welthandelsplatz 1, Vienna, 1020, Australia, nils.wloemert@wu.ac.at

1 - A Model for Detecting Influencers in Social Media

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In modern social media development, viral marketing, which aims at efficient information diffusion through word-of-mouth by socially influential people, or influencers, is an important area of study. This article propose statistical models for detection of the communities formed on social media and extraction of topics that people in the community are interested in. Because the proposed model detects influencers from social network and enables marketing in consideration of topics that people are interested in, marketers can spread information on products and brands more effectively. In empirical analysis using Twitter data, we find that one of the communities detected from network structure is a community that collects links from most users despite the small number of users, that is, a community to which many influencers belong. In addition, we reveal topics that users in those communities are interested in, such as latest game machine and electronic devices.

2 - Motives for Gifting in Live Streaming

Xuejing Ma, Peking University, Beijing, China, mxj0628@gmail.com, Hongju Liu, Qiaowei Shen

Recently, live streaming has enjoyed a surge in popularity around the world. Besides free engagements in live streaming such as watching and chatting, viewers can also purchase virtual gifts and send them to broadcasters. Using data from one of the largest live streaming platforms in China, we empirically explore the motives that drive viewers to gift. We find evidence of crowding out effect, i.e., a larger cumulative amount of gifting tends to reduce the probability that a new viewer will gift after joining the session. We propose two alternative explanations for the crowding out effect. On the one hand, viewers may send gifts to broadcasters driven by an image-related motivation. The larger the cumulative amount of gifting, the more a viewer has to spend to get attention from broadcasters and other viewers. On the other hand, viewers may care about the total amount of gifting a broadcaster would receive, in which case the gifting of others and that of themselves are substitutes. Further analysis reveals two segments of viewers. Conditional on gifting, viewers in one of the segments are likely to gift more when the cumulative amount of gifting from others is larger; while for viewers in the other segment, the amount of gifting is negatively related to the cumulative amount of gifting from others.

3 - Online Content Monetization: How Paywalls Affect Human Brand Success

Nils Wloemert, Assistant Professor, Vienna University of Economics and Business, Institute for Interactive Marketing & Social Media, Welthandelsplatz 1, Vienna, 1020, Austria, nils.wloemert@wu.ac.at, Christian Hotz-Behofsits, Nadia Abou Nabout

The increasing use of social media enables influential users to market themselves as human brands (e.g., YouTubers) by creating content (e.g., videos) that is consumed by their followers. Many social media platforms allow human brands to monetize their content through advertising, or subscription fees, or both. Choosing the right monetization strategy is not a trivial task for human brands. While providing content free of charge may increase brand value by attracting a large audience, charging for content may increase the per-view income from customers who are willing to pay for the content. However, charging for content that was previously available free of charge might also lead to a consumer backlash and adversely affect brand value. To disentangle these potential effects, we exploit a quasi-experiment that recently occurred when the world's largest video streaming platform introduced a paywall (i.e., YouTube Red). Specifically, we investigate how the paywall introduction affects (1) brand usage and popularity (e.g., video views, channel subscribers), and (2) social media brand engagement (e.g., Twitter followers, Facebook likes, sentiment of user comments). To estimate these effects, we rely on a data set containing daily usage and engagement metrics from various social media platforms for a period of more than two years. The sample comprises three million videos, produced by 4200 human brands, and two billion textual user comments, analyzed using state-of-the-art sentiment analysis techniques. The results suggest that the proportion of negative comments increased directly after the paywall introduction, but this effect wears out over time. Surprisingly, we find positive effects for brand usage and popularity, suggesting a promotional effect of the paywall introduction.

■ FD08

Room 238, Alter Hall

Consumer Choice Models III

Contributed Session

Chair: John H. Roberts, University of Sussex, Brighton, United Kingdom, johnr@agsm.edu.au; Songting Dong, Huy Nguyen

1 - Modeling Reference Dependence Effect and Regulatory Orientation

I-Hsuan Chiu, Assistant Professor, University of Wisconsin - Milwaukee, Milwaukee, WI, United States, chiui@uwm.edu, Gary J. Russell

One major implication of the value function in prospect theory is loss aversion: losses loom larger than gains of the same size. The empirical examinations of loss aversion from consumer brand choice decisions, however, provide mixed results. For example, Bell and Lattin (2002) show that loss aversion is reduced or disappears when taking into account consumer heterogeneity. In this research, we show that regulatory focus theory can account for the heterogeneity in the reference dependent effect: consumers in a promotion-oriented mindset show a weaker response to loss aversion comparing to those in a prevention-oriented mindset. We consider a decision context where consumers rely on external reference points. To capture the reference dependence effect, we use the random regret minimization (RRM) model developed by Chorus (2012). The RRM model describes a decision process that compares attributes of an alternative to that of all other alternatives in the consideration set. RRM allows for flexibility in evaluating reference dependence effects across all attributes and alternatives, and provides a framework for incorporating regulatory orientations into the model specification. Using data from a choice experiment, we demonstrate that prospect theory describes the within-individual differences with respect to losses and gains, while regulatory focus theory describes the between-individual differences.

2 - Identifying Pivotal Attributes for Choice of Variety

Sanghak Lee, Assistant Professor of Marketing, Arizona State University, P.O. Box 874106, Tempe, AZ, 85287, United States, sasnghak.lee@asu.edu, Sunghoon Kim

Consumers' market basket often contains more than one variety of a product that pursue the same primary purpose while serving differentially with differences in selected attributes. The pivotal attributes for variety are not observable and may vary across consumers. For example, consumers who seek for variety in flavor would buy multiple flavors together (e.g., strawberry yogurt and blueberry yogurt), while others who consider different consumption situations would include various package types (e.g., a 6oz multi pack and a 32oz single pack) in his/her shopping basket. We develop a Bayesian choice model that accommodates demand for variety and identifies the pivotal attributes for variety-seeking. The proposed model relies on the satiation at the pivotal attributes as a source of variety-seeking and allows for consumer heterogeneity in selecting the pivotal attributes for variety. The empirical support for our model is provided using a consumer panel dataset of carbonated beverage products, demonstrating its implication for cross-price elasticity.

3 - A Cross-validity Comparison of Likelihood Methods for Distributions with Intractable Normalizing Constants

Tetyana Kosyakova, Frankfurt School of Finance & Management, Adickesallee 32-34, Frankfurt, 60322, Germany, t.kosyakova@fs.de

Statistical models with likelihood functions that are difficult to evaluate or are intractable have received much attention in the last decades. This problem is known in a wide range of contexts, e.g., in spatial econometrics, statistical genetics, or network analysis. Researchers in marketing encounter this problem, for example, when modeling choices from menus, where demand for items is interdependent because of substitution and complementarity relationships. Computing the normalizing constant of the corresponding likelihood requires the enumeration over all possible choice combinations. Thus, in large menus the computation of the full likelihood becomes computationally prohibitive. Historically, pseudo-likelihood approaches (e.g., Besag 1972, 1974) were used to sidestep this computational challenge. I show that the pseudo-likelihood is not only inefficient but inconsistent when applied in a hierarchical setting, and how algorithms that efficiently approximate ratios of normalizing constants result in improved inference. Finally, I illustrate how the exchange algorithm (Moeller et al., 2006; Murray et al., 2006) enables exact likelihood based inference when the likelihood's normalization constant is prohibitively expensive to compute.

4 - Buying a Larger Package with Quantity Surcharge: Information Friction or Preference Heterogeneity?

Joonhwi Joo, PhD Candidate, University of Chicago, 1401E 55th St., Apartment 812N, Chicago, IL, 60615, United States, joonhwi@uchicago.edu

Sales of larger packages with quantity surcharges occur often in the consumer packaged goods industry. This phenomenon poses a challenge to rationalizing consumer behaviors because the same amount of an identical product can be bought at a cheaper price. I present evidence that consumers lose a considerable amount of money by purchasing quantity surcharged larger packages. I develop and estimate a structural econometric model that combines (i) rationally inattentive consumers with (ii) the address model of consumer demand in the product characteristics space. By simulating consumer demand using model parameter estimates, I decompose the contribution of information friction and preference heterogeneity over package sizes on sales of larger packages with quantity surcharges. The estimated model predicts that only 40% of sales of larger packages with quantity surcharges can be attributed to information friction. I suggest revenue-improving, nonlinear pricing schemes that preserve consumer welfare at the current level. Under the pricing schemes, retailers can raise their revenues by up to 18%, and the corresponding sales of larger packages with quantity surcharge triples. As a methodological contribution, I state and prove the theorem that allows estimating the Rational Inattention (RI) model as if estimating an augmented logit model.

5 - Investigating the Role of Cognitive and Emotional Incoherence in Choice Processes

Huy Nguyen, University of Sussex, Brighton, United Kingdom, johnr@agsm.edu.au, John H. Roberts, Songting Dong

Incoherence has been shown to affect evaluation and choice by increasing the uncertainty associated with potentially inconsistent pieces of information. In this research, we probe the role of incoherence in a field setting and extend the concept. Firstly, we distinguish between the incoherence elicited by two associations which are expected to be positively correlated (e.g., performance and reputation) and contrast it to incoherence when the associations are expected to be negatively correlated (e.g., performance and price). Secondly, we distinguish between incoherence amongst cognitive attributes, incoherence amongst affective attributes, and incoherence between cognitive and affective attributes. For negatively correlated attributes, incoherence may arise if both attributes are high (attribute amplification) or if both attributes are low (attribute attenuation). For affective attributes, we show that for attribute amplification (“mixed feelings”) choice probability is reduced for both an hedonic and a utilitarian product, while for attribute attenuation (“emotional indifference”), it is only reduced for the hedonic category.

■ FD09

Room 239, Alter Hall

Pricing Strategies III

Contributed Session

Chair: Gihwan Yi, Korea Economic Research Institute of America, 800 K Street NW, Suite 300, Washington, DC, 20006, United States, gihwany11@gmail.com

1 - Peak-period Pricing Strategies in the Presence of Customer Impatience and Store and Time Flexibility

Onesun Steve Yoo, University College London, UCL School of Management, 1 Canada Square, London, E14 5AB, United Kingdom, onesun.yoo@ucl.ac.uk, Chris Tang

Should a service firm charge higher prices during peak periods? We examine this question formally by analyzing a stylized duopoly model where firms compete for homogeneously impatient consumers. We consider four settings, defined by whether consumers are (i) flexible in their choice of store (where) and/or (ii) flexible in their choice of shopping time (when). For each setting, we use the concept of a rational expectation equilibrium to characterize how consumers endogenously segment themselves regarding where and when to shop to avoid congestion. We then examine how the firms can profitably influence consumers’ self-segmentation process by employing the peak-period pricing strategy. Our analysis shows that if consumers are not flexible in their store choice, then both firms should employ peak-period pricing. However, if consumers are flexible in their store choice, then it is possible for both firms, neither firm, or one firm to employ peak-period pricing, depending on the level of competitive advantage and differentiation. If consumers are also flexible in time, then it is easier for the firm with the competitive advantage to retain its customers and hence more likely that this firm will employ peak-period pricing. When consumers have store or time flexibility, we find that an increase in impatience will always benefit the firms. We also find that greater impatience makes consumers more willing to avoid congestion, making their self-segmentation less responsive to pricing. Consequently, it is more likely that firms will employ peak-period pricing and set a higher peak-period price. Finally, we incorporate heterogeneity in consumers’ store valuations and find that such exogenous segmentation makes it more likely for firms to employ peak-period pricing, but not necessarily higher peak-period prices.

2 - The Impact of Seat Type Pricing on Revenue in the Korean Cinema Industry

Gihwan Yi, Research Fellow, Korea Economic Research Institute, Seoul, Korea, Republic of, gihwany11@gmail.com, Hoe Sang Chung, Min Kim

This paper investigates returns to second-degree price discrimination in competitive movie-theater markets. In March 2016, the leading movie multiplex chain in South Korea, CGV, adopted a price discrimination policy based on three different categories of theater seating. In contrast, two competing chains, Lotte Cinema and Megabox, charge a single price for all seats. To estimate the impact of second-degree price discrimination on revenue, we collected web reservation data for each theater of the three chains across the nation. The data enable us to identify tickets sold with different price-quality tiers for each show. We find that observed price discrimination improves revenue per show relative to uniform pricing by 6.5% on average. Contrary to expectations, however, we find no statistical evidence that price discrimination decreased total tickets sold nor increased tickets sales of the cheapest seat category. The overall increase in revenue could be attributed to small price differences (less than two US dollars) between seat categories. Our results are consistent with the notion that if the price differences between seat categories are sufficiently small, consumers prefer paying the premium in order to avoid the inconvenient viewing experience in the cheapest seats. Empirical results imply that price discrimination based on seating-quality which uses small pricing differentials can improve revenues in theater venues.

■ FD10

Room 605, Alter Hall

Customer Relationship Management III

Contributed Session

Chair: Valeria Stourm, HEC Paris, 1 rue de la Liberation, Jouy-en-Josas, 78350, France, stourmv@hec.fr

1 - Modeling and Forecasting Repeat Purchase Behavior with Endogenously Determined Marketing Variables

Yuhao Fan, University of Pennsylvania, 3730 Walnut St, Philadelphia, PA, 19104, United States, yuhaofan@upenn.edu, Peter Fader, Daniel McCarthy

In this paper, we investigate endogeneity’s impact on out-of-sample forecasting. We focus on modeling and forecasting repeat purchases in a non-contractual setting, where the firm doesn’t observe customers’ decisions to churn and sends direct marketing to customers to increase purchasing. We evaluate how well the model that does not fully capture the endogeneity performs compared to the model that does, in term of parameter recovery and forecasting accuracy. To do so, we simulate data from the latent attrition models for repeat purchase behavior, allowing the firm to target customers by sending direct marketing. We contribute to the literature that evaluates the relative merits of endogeneity-correction models and models that ignore endogeneity. Moreover, we also forecast with a model that corrects for endogeneity in the calibration periods but does not account for the correlation between the unobserved shock and the endogenous variable in the forecasting periods, which mimics the idea of the instrumental variables. We find that all three models do well in population forecasts. However, the model that ignores endogeneity has higher forecasting accuracy at the individual level than the IV-mimicking model.

2 - The Short Term and Long Term Impacts of Online Referral Program

Xing Fang, Purdue University, 3308 Peppermill Dr, 2B, West Lafayette, IN, 47906, United States, lelandfang@outlook.com, Tianfu Wang

Referral program has become a common CRM tool to acquire new customers and retain existing customers for online retailers. Despite its prevalence, little research has focused on the effectiveness as well as the dynamics between referrers and referees. What types of customers are more likely to initiate a referral? Will the referred customers have impacts on the product portfolios of the referring customers, and vice versa? Using a unique dataset from an online retailer, we investigate both the short-term and long-term effects of referral interactions. We try to quantify the impact of referrals in terms of spending, interpurchase time, as well as portfolio expansion. The evidence will help evaluate the cost-effectiveness of customer referral interactions.

3 - Drivers of Employee Retaliation Towards Customer Incivil Behavior

Arpita Agnihotri, Assistant Professor, Penn State-Harrisburg, 777, Harrisburg Tpike, Middletown, PA, 17057, United States, axa671@psu.edu, Saurabh Bhattacharya

Customer dysfunctional behavior such as incivility and aggression are receiving major attention in the marketing literature, especially when the mistreatment of frontline employees by customers have increased manifold in recent years. Though the impact of such incivil or aggressive behavior on employees' behavioral outcomes such as increased stress levels, reduced job satisfaction, and turnover intention has been researched, a critical behavioral outcome from the marketing perspective, i.e. frontline employees' retaliation behavior towards dysfunctional customers has received scant attention. Employee dysfunctional behavior towards customers, even when the latter is being incivil, is likely to lower customer service and increase customer turnover, thus resulting in lower firm performance. Thus, it becomes imperative to explore the underlying psychological process, which makes a frontline employee retaliating back to the customer. In this study, a boundary conditioned framework was developed in which the relationship between customer incivility and employee retaliation behavior was mediated by the level of employee disgust. Furthermore, the relationship between customer uncivil behavior and employee disgust was moderated by employees' emotional intelligence. The ethnic dissimilarity of the customer with that of the focal frontline employee moderated the relationship between employee disgust and employee retaliation. Two scenario-based experiments with frontline employees in the banking (Study 1, n= 220) and restaurant sector (Study 2, n= 308) of the UK were conducted to test the framework. Results of the moderated mediation analysis establish empirical support for our hypotheses. Managerial implications are also discussed.

4 - Market Positioning using Cross-reward Effects in a Coalition Loyalty Program

Valeria Stourm, Assistant Professor of Marketing, HEC Paris, Jouy-en-Josas, 78351, France, stourmv@hec.fr, Eric T. Bradlow, Peter S. Fader

While single-brand reward programs encourage customers to remain loyal to that one brand, coalition programs encourage customers to be "promiscuous" by offering points redeemable across partner stores. Despite the benefits of this "open relationship" with customers, store managers face uncertainty as to how rewards offered by partners influence transactions at their own stores. We use a model of multi-store purchase incidence to show how the value of points shared among partner stores can explain patterns in customer-level purchases across them. The model is used to empirically test hypotheses on how reward spillovers among partners are driven by: (1) differences in policies on reward redemption, (2) the overlap in product categories between stores, and (3) geographic distance between stores within a city. In addition, we leverage variation generated by a natural experiment, i.e., a devaluation of the program's points, to demonstrate how the value of points influences the positioning of partner stores within the coalition and the purchasing patterns across them. We conclude by delineating some managerial implications for the design of a coalition's reward policies, including a simulation showing that customer-centric targeted rewards can be an effective strategy to compensate for the devaluation.

■ FD11

Room 606, Alter Hall

Emerging Markets

Contributed Session

Chair: Matthew Osborne, University of Toronto, Toronto, ON, Canada, matthew.osborne@rotman.utoronto.ca, Avni M. Shah, Dilip Soman, Jaclyn Lefkowitz, Andrew Fertig, Nina Mazar

1 - Product's Characteristics as Drivers of Trickle-down and Reverse Innovation: Evidence from the Food Industry

Verdiana Giannetti, PhD Candidate, Bocconi University, Via Roentgen 1, Milan, 20136, Italy, verdiana.giannetti@phd.unibocconi.it, Gaia Rubera

Nowadays, growth for multinationals comes largely from introducing innovations in emerging countries. However, this practice proves particularly challenging for firms traditionally operating in developed countries. Adding further complexity, such firms also have to defend their positions in developed countries from the rise of emerging countries' firms. Hence, it is now crucial to understand how to accelerate the diffusion of innovations from emerging countries to developed ones (i.e., reverse innovation) and vice versa (i.e., trickle-down). A faster diffusion would in fact unlock additional sources of cash flow by disclosing new markets for innovations. Using data on 127,782 food-products' launches in 51 countries in 2001-2014, the paper answers four questions: (1) Which diffusion process occurs faster: trickle-down or reverse innovation? (2) Which characteristics of innovations accelerate trickle-down and reverse innovation? (3) Is there heterogeneity in the effects of such characteristics across specific emerging (developed) countries? (4) Does the speed of trickle-down (reverse innovation) influence the performance of innovations? Results show that: reverse innovation occurs faster than trickle-down; price, number of claims, and package size all play a role in accelerating these two diffusion processes; heterogeneity exists across emerging as well as across developed countries; a faster diffusion process results in better performance.

2 - Microlending in Emerging Markets

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Small and micro-entrepreneurs in emerging markets often rely on microcredit to start and sustain their business. They usually form groups with their neighbors and local business partners, and agree to loan guarantees for the group members borrowing from microlenders. This paper explores microlenders' and small and micro-entrepreneurs' incentives to participate in a lender-borrower relationship in a market in which small and micro-entrepreneurs assume the debt obligation of their group members conditional on default. We show that in equilibrium, this group loan mechanism leads to within group insurance as well as strategic default. We study the effect of this group loan mechanism on microlenders' loan offers, and discuss the implications for microlenders and small and micro-entrepreneurs.

3 - Can Making Family Salient Improve Retirement Contributions? Evidence from Field Experiments in Mexico

Matthew Osborne, University of Toronto, 105 St George St, Toronto, ON, M5S 3E6, Canada, matthew.osborne@rotman.utoronto.ca, Avni M. Shah, Dilip Soman, Jaclyn Lefkowitz, Andrew Fertig, Nina Mazar

Despite good intentions, consumers regularly struggle to reach their retirement savings goals. While this is a persistent and pervasive issue all over the world, the task of improving retirement contributions is particularly challenging in Mexico, where less than 0.5% of active pension holders make more than the minimum contribution to their retirement accounts. In this paper, we conduct three large-scale field experiments aimed at designing interventions to help overcome biases surrounding excessive discounting in retirement contributions. Using redesigned retirement account statements, some of our experiments provide evidence that various nudges traditionally associated with improving savings (e.g., gain frame, loss frame, fresh start framing, small amounts, and wallet cutout) do not always lead to positive outcomes: We observe that traditional nudges have either no effect, or even a significant negative effect, on an individual's propensity to make voluntary contributions to his or her retirement savings account when the individual is relatively unengaged or unmotivated to save for his or her future. Promisingly, we find evidence for a novel mechanism to help overcome disengagement from the savings decision: increasing the salience of making savings choices to save for one's family. We find that family messaging prompts significantly improve voluntary contribution rates in comparison to the control condition and in relation to other treatments in comparison to the control condition. These effects are significant both in the short term (over a three-month period following the prompt) and in the longer term (six months later). To provide a theoretical framework to interpret our findings, we develop a stylized model of consumption and savings where individuals receive current period utility from bequests to family members, but underestimate future utility from such bequests. We show that nudges which correct this bias can be especially effective on unengaged individuals if these individuals heavily weight bequest utility relative to their own consumption utility.

■ FD12

Room 745, Alter Hall

Mobile Apps

Contributed Session

Chair: Yujie Deng, Clemson University, Central, SC, deng2@clemson.edu, Chungsang Tom Lam

1 - The Impact of Mobile Payment Service

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Although mobile payment has received considerable attention from companies, little research has investigated how it might influence a company's performance. In this study, we attempt to shed light on this important topic by studying the impact of the introduction of a mobile payment service on consumer purchase behavior. Based on existing theories of money and time, we construct a conceptual framework and a set of testable hypotheses. To test the hypotheses, we analyze a unique data set from a gasoline retail chain offering a mobile payment service. Our results show that mobile payment can increase companies' overall sales. We also find that mobile payment can activate the domain of money, thereby encouraging consumers who are price sensitive to choose pre-paid fuel card services. This impact is moderated by the time saved through the mobile payment service. Furthermore, consumers who adopt a mobile payment service tend to purchase less in each transaction; this is especially true for regular product users. We also provide managerial implications.

2 - Customer Experiences in Customer Journey on Mobile Platforms

Rakhi Thakur, Associate Professor, S.P. Jain Institute of Management and Research, Bhavans Campus Munshi Nagar, Dadabhai Road Andheri West, Mumbai, 400058, India, rakhi.thakur@spjimr.org

Customer experience has been attracting a lot of interest with the belief that creating strong, positive experiences within the customer journey is likely to improve customer loyalty. Monitoring customer reactions to firm offerings are one of the key elements of understanding and managing customer experience. Assessment of customer satisfaction resulting from a comparison of the actual delivered performance with customer expectations is one of the most commonly used yardsticks for the same. Scholars have reported significant effects of satisfaction on customer behaviour, loyalty, and firm performance. Non-monotonic patterns of impact of satisfaction and customer delight have also received considerable attention in this space. This study aims at understanding the moderating role of varied customer experiences in satisfaction - loyalty paradigm with a focus on mobile devices. The investigation specifically explores continuance and online review intention as two dimensions of loyalty. This research involves multiple studies to identify relevant experiences, followed by conceptualisation and testing of the proposed model. The investigation uses scenarios of mobile travel review portal apps (TripAdvisor, HolidayIq) and mobile shopping apps (Amazon, Flipkart) in customer journey during pre-purchase, purchase and post-purchase phases. This research found that the effect of satisfaction on continuance intention is stronger among customers with higher degrees of positive experiences. Further, it was observed that propensity to write online reviews is non-linear among customers with higher degrees of experiences and may not vary directly with satisfaction levels. This study contributes to evolving scholarly research on customer experiences, especially on mobile devices.

3 - Consumer Multi-homing in Streaming Service

Nuoya Su, Peking University, Beijing, 100871, China, sunuoya@pku.edu.cn, Xing Li

Constructing a unique panel data set of consumers'usage of mobile applications across different streaming platforms, we study the effect of content exclusivity, switch cost and preference heterogeneity on consumer's multi-homing decision facing competing platforms. Chinese music streaming app industry provides an ideal setting. We make use of the execution of copyright protection, which marks the beginning of the two-sided structure and creates differential impacts on users with different pre-existing conditions. Managers can make better decisions in terms of entry and exclusivity choice with a better understanding of consumers' multi-homing behavior. Our insights are especially important for managers in emerging markets where the property right starts to get protected and market order is being constructed.

4 - The Optimal Way to Generate the "Recommended List" for Platforms Like Apple's App Store

Yujie Deng, Clemson University, 389 Cross Creek Rd, Apt J, Central, SC, 29630, United States, deng2@clemson.edu, Chungsang Tom Lam

We investigate how platforms like Apple's App Store or Google Play Store generate their "recommended list". In particular, we seek to explain why it is reasonable for them to intentionally add random noise to the generation of the list instead of truthfully reporting according to the measured quality of the app. Most literature in this field focus on the impact of the best seller apps lists on sales or rank but very few of them try to find the mechanism behind these lists. Platforms seek to maximize users' satisfaction from using the apps. Reporting the best apps according to the platform's aggregated information can help the users to identify the best quality apps in the market. However, adding randomness allows individuals to have access to apps which originally cannot make the list at the cost of coarsening the information. This is especially beneficial in a market with a lot of individual heterogeneity. We prove that the variance of this optimal noise is increasing in individual differences, and decreasing in aggregate app differences. And if individual preferences are highly correlated, optimal noise decreases. We extend the model to investigate more into the optimal list length, optimal number of lists, and individual-specific recommendation list.

■ FD13

Room 746, Alter Hall

New Products and Innovation I

Contributed Session

Chair: Masataka Yamada, Nagoya University of Commerce and Business, 149-773 Takenoyama, Iwasaki-cho, Nisshin-shi Aichi-ken, 470-0131, Japan, myamada@phd.stern.nyu.edu

1 - The Perils of New Product Promotions: A Field Experiment

Sha Zhang, Assistant Professor, University of Chinese Academy of Sciences, Beijing, China, zhangsha@ucas.ac.cn, Chenxi Li, Xueming Luo

Promoting new products to consumers has been a standard strategy by default since it is widely assumed that people have an intrinsic desire for new over old. However, there are inherent risks in promoting new products, and firms struggle to quantify the effects of new product promotions. This study exploits large-scale randomized field experiment data on new product promotions with approximately 17,492 customers and over 6 million daily transactions. The results suggest that new product promotions will result in fewer increases in purchase responses than classic product promotions. Fortunately, high (versus low) complementary free gifts could mitigate such negative effects of new product promotions. In addition, new product promotions with high-complementary free gifts are more effective for dormant and loyal customers, but not for new buyers. These findings are robust to a battery of checks with different modeling estimations, individual heterogeneity, and machine learning techniques with shallow and deep learning algorithms. For marketers, the findings highlight some perils of new product promotions and demonstrate how to improve new product promotion effectiveness by matching free gifts and customer segments.

2 - Harbingers of Failure ... and Success

Chaoqun Chen, Southern Methodist University, Dallas, TX, United States, chaoqunc@smu.edu, Eric Anderson, Blake McShane

We extend the work of Anderson et al. (2015) who find evidence of "harbingers of failure" — consumers who tend to purchase new products that are destined to meet a doomed fate-along four lines: (i) we replicate their findings in a dataset that covers over 400 U.S. retailers and a wide range of product categories, (ii) we develop a novel semi-parametric approach that yields interpretable consumer-level estimates and im- proved predictive accuracy, (iii) we characterize harbingers of failure showing that they are wealthier, have more children and larger family size, and shop at warehouse clubs, and (iv) we investigate potential mechanisms that explain the harbingers of failure phenomenon finding that harbingers of failure are more variety-seeking. We find evidence for not only harbingers of failure but also harbingers of success (i.e., customers who tend to purchase new products that are likely to succeed) with the former making up 44% of consumers in our data and the latter making up the remaining 56%. Further, were all early sales of a new product to harbingers of failure as opposed to harbingers of success, the probability that the new product remains in the market two (four) years after introduction is five (seven) percentage points lower; thus, sales to harbingers have a powerful impact — especially when considered in tandem with the high rate of new product failure.

3 - Radical or Incremental? The Effect of Reference Dependence and Consumer Learning on Firm Innovation Strategy

Somnath Banerjee, North Dakota State University, Fargo, ND, United States, s.banerjee@ndsu.edu, Sarang Sunder, Tyson R. Browning

A firm's past innovation strategy determines its customer's expectations. Simultaneously, the firm's innovation strategy is also influenced by customer expectations. We study this interdependency between customer expectations and firm innovation strategy in a dynamic context. While some firms may choose to introduce radical (but infrequent) innovations to 'wow' the customer, others choose to introduce incremental (but more frequent) innovations in an effort to 'keep the customer engaged'. As such, the decision between radical versus incremental innovations depends on the firm's understanding of consumer expectations and learning. However, it is not obvious how consumer learning, reference dependence and loss aversion affect the firm's radical versus incremental innovation decision. That is, should the firm always launch at full quality or hold back some features for subsequent launches? We develop a two-period game-theoretic model of firm innovation with endogenous consumer learning to examine the relationship between consumer expectation evolution and a firm's innovation. We find that a firm's choice between incremental versus radical innovation depends on a tradeoff between the potential for consumer learning and the extent of loss aversion. When both loss aversion and potential for consumer learning are moderate, it is better for a monopolist to pursue incremental innovation. However, if loss aversion in the market is high and potential for consumer learning is low then it is better to hold back quality and release it later, while if potential for consumer learning is high, it is better to release a high quality product at once. We also find that prior belief about firm's quality and noise in learning moderates the relationship between firm innovation, loss aversion and potential for consumer learning.

4 - The Organic Influencers: Scale Development and Extraction Method

Masataka Yamada, Professor of Marketing, Nagoya University of Commerce and Business, 149-773 Takenoyama, Iwasaki-cho, Nisshin-shi Aichi-ken, 470-0131, Japan, myamada@phd.stern.nyu.edu, Shohei Hasegawa, Toshihiko Nagaoka

The trading environment has been changed dramatically by ICT during the past two decades. While the industry has raised consumers and developed own business skills and cultures through ICT, consumers have also built their shopping skills and habits. Among them, we call the consumer who influences others as the organic consumer influencer. Therefore, the industry has started to investigate influencers in addition to the innovators. This study is dealing with ordinary consumers, not super influencers. First, we propose a developing method of an order-made-like scale to find a required condition for the highest rank reviewers in a shopping mall assumed as organic influencers. Second, we investigate the extracting method of the highest rank. The reviewer ranking has a pyramid-like structure whose lowest rank has the largest number of people, and as you rank up, the number becomes smaller to the top rank. To obtain the highest rank reviewers, we developed a forecasting model by Ordinal Logistic Regression. Then, we encountered a unique problem where while the lowest rank has exceptionally accurate forecast, the rest shows inaccurate predictions. We reached a conclusion where Binomial Ordinal Logistic Regression on the top two ranks will provide the best forecast for the highest rank.

■ FD14

Room 607, Alter Hall

Marketing & Finance

Contributed Session

Chair: Melissa Boeuf, University of Montpellier, Place Eugÿne Bataillon – CC 19001, Montpellier, 34095, France, melissa.boeuf@umontpellier.fr

1 - The Role of Social Media in IPO Valuation

Malika Chaudhuri, University of Dayton, 300 College Park, Dayton, OH, 45469, United States, mchaudhuri1@udayton.edu, Hang Nguyen

Social media have been serving as important platforms for firms to communicate with consumers regarding new product offerings and with investors regarding corporate strategies. Even though a large body of literature examines the impact of corporate strategy announcements on firm financial performance, there is limited understanding of the role of social media as a communication channel between firms and their respective investors. In the current research, we focus on one of the most important announcements firms make when they go public, that is, initial public offerings (IPOs). Using a sample of 2600 IPO announcements made by publicly traded firms during the 2010-2015 period, we investigate how investor engagement on social media in conjunction with other traditional marketing efforts influence IPO valuations. The findings extend the current 'IPO and stock price valuation' literature by indicating that investor sentiment expressed on social media platforms is positively associated with the IPO valuation. Interestingly, our time-varying effect modeling (TVEM) approach allows us to accurately examine the movement of the stock prices overtime compared to the other moderating approaches. Lastly, our results suggest that influencers identified in the online investor community and brand relevance in category (BRIC) are critical variables that moderate the relationship. Our research sheds light on the significant role of investors' online engagement in the IPO process and provides useful implications for the IPO firms.

2 - A Study of the Impact of Brand Equity on Firm Value and the Mediating Role of Analysts

Melissa Boeuf, PhD Candidate - Teaching and Research Assistant, University of Montpellier, Place Eugene Bataillon – CC 19001, Montpellier, 34095, France, melissa.boeuf@umontpellier.fr, Philippe Aurier

This research explores the mechanisms linking brand equity and firm value. This intangible asset is of utmost importance and several studies have shown that brand value has a direct positive impact on firm value. However, little is known about the intermediate variables entering in the brand value-firm value relationship. Our research addresses this gap by suggesting financial analysts as a mediator between brand value and financial performance. In the marketing-finance literature, the ultimate metric of performance is firm value, measured through return and risk. Firm stock risk is a fundamental metric as greater risk implies vulnerable and uncertain future cash flows, which could damage firm stock wealth in the long-run. Total risk has two components: systematic risk and idiosyncratic (or specific) risk. This latter is associated with firm-specific elements such as marketing mix decisions or brand strategies, and accounts for about 80% of total firms' risk. Given its importance, studying its antecedents appears as relevant. Based on a longitudinal study over seventeen years using Interbrand's yearly financial measure of brand value and Fama-French-Carhart financial model to measure firm-idiosyncratic risk, we find that brand value reduces firm specific risk and this impact is fully mediated by analysts' recommendations. These results reveal that analysts may help investors discover and incorporate the value of brand equity and indicate that analysts' activities can represent a crucial path through which this key intangible asset affects firm value.

■ FD15

Room 603, Alter Hall

CB - Changing Attitudes

Contributed Session

Chair: Serdar Sayman, Koc University, Rumeli Feneri Yolu, Sariyer, Istanbul, 34450, Turkey, ssayman@ku.edu.tr

1 - Changing Consumer Landscapes in Developing Countries: Growing the Organic Market in Mexico

Julie Stanton, Associate Professor, Pennsylvania State University, 25 Yearsley Mill Rd, Media, PA, 19063, United States, jvs11@psu.edu

In Mexico, organic food sales are limited and largely involve specialty stores. However, production is growing, mostly destined for export, and consumers are well aware of the impact of organic production on the local farm economy. To gauge overall consumer interest, this research explores Mexican consumer attitudes toward organic food and the health and environmental attributes often assigned to it. Using focus groups and photographic documentation, the study shows the range of lifestyle concerns and contradictions in priorities common among Mexican consumers. Traditionally, extended families live together, with an older maternal figure preparing traditional recipes with raw ingredients. Little in the way of processed foods is purchased, especially not from modern grocery stores/supermarkets. However, dual-income families, and families with their own nuclear family homes, have grown in prevalence in Mexico, leading to greater interest in convenience foods. Supermarkets have exploded in the market. The present study examines how individuals relate to these trends, what meanings and significance they link to them, whether they seek foods based on specific priorities, where health, ecological or fairness attributes enter into the equation (if at all), and the like. Such attributes are often associated with organic, GMO-free, locally grown and other alternative food labels. The conclusions offer insight into growing the alternative food market in developing countries. Given the qualitative nature of the data used in this study, quantitative research questions are proposed to further advance the understanding of how the food industry can and should approach these changing marketplaces.

2 - Horizontal Referrals in B2b Markets

Mahima Hada, Assistant Professor, Baruch College, CUNY, Marketing Dept; B12-240, One Bernard Baruch Way, New York, NY, 10010, United States, mahima.hada@baruch.cuny.edu, Arnaud De Bruyn, Gary L. Lilien

In complex B2B markets, suppliers often know more about other suppliers than their customers do. Thus, suppliers can reduce customers' search costs by recommending other suppliers - by making horizontal referrals. However, for existing suppliers, making horizontal referrals is akin to referring competitors. Drawing from research on the dark and bright side of relationship marketing, the authors argue that referring suppliers are conflicted between maintaining customer relationships and minimizing competitor threats. First, the authors use an experimental economics approach to show how referring suppliers should behave when maximizing their utility in horizontal referrals. Second, they use a conjoint experiment and show that managers actually do not behave in ways that would maximize their economic gains - rather, they err on the side of maintaining customer relationships as long as they are not extensively threatened by the referred competitor.

3 - Survival of Firms: Role of Consumer Decision Replication

Shameek Sinha, Assistant Professor, IE Business School, IE University, Calle de Maria de Molina, 12, 5th Floor, Madrid, 28006, Spain, shameek.sinha@ie.edu, Sreyaa Guha

We study firm survival as a function of consumer decision replication. Both product and service firms suffer from the risks of bad transactions with consumers. This can lead to consumer abandonment or, in other words, failure at consumer nodes. Owing to social interactions, failure decisions may be replicated by other consumers. As more consumers replicate failure decisions, the balance of the population of consumers that abandon and of those that remain, changes. This affects the survival time of the firm. To counter decision replication, the firm sends out signals (price and advertisement), over and above maintaining service/product quality. Given these two factors - replication and signalling affecting firm survival, we address two questions (i) In presence of consumer decision replication and firm signalling, does the survival time of a firm contract? and (ii) In presence of consumer decision replication, do signals given out by one firm affect the survival time of other firms? We answer these questions by developing a survival function for firms. We model time in a way that each period presents an opportunity to encounter failure at a consumer node. To derive failure, first, we define a social interaction based individual utility structure. Next, we use this utility structure to develop a utility based decision replication algorithm. The decision replication algorithm is based on evolutionary game theoretic approach. Finally, firm signalling parameters are integrated with the decision replication to derive the survival function for the firm through an accelerated failure time model predicting the survival time contraction.

4 - A Reference Dependent Utility Model for Attraction and Compromise Effects

Serdar Sayman, Associate Professor of Marketing, Koc University, Rumeli Feneri Yolu, Sariyer, Istanbul, 34450, Turkey, ssayman@ku.edu.tr, Baler Bilgin

Attraction and compromise effects refer to increases in the choice share of a target option (T) compared to its competitor (C) when another option (D) is added to the choice set. In the case of attraction effect (AE), an asymmetrically dominated or "weak" option is added. In the compromise effect (CE), the added option makes T the middle or compromise product. The current paper submits that a reference-dependent utility model can accommodate both effects in the same framework. More specifically, utility of an option includes both regular and reference-dependent (gain-loss) terms. Any available option can serve as a reference with a certain probability. We examine how the attractiveness of T vis-à-vis C changes as the location of D on the attribute space is varied. Both for AE and CE, a fraction of buyers, who would have treated T or C as the reference in the core set (two options), treat D as the reference in the extended set (three options); and D's location is favorable for T for such a switching. AE and CE happen without any changes in the utility function; i.e. in the weights or subjective values. Directional predictions by our analysis regarding the location of D are by and large consistent with prior empirical findings. Furthermore, we are able to make new testable predictions (e.g. D can benefitC, even though it is dominated by T but not C).

■ FD16

Room 231, Alter Hall

WOM I

Contributed Session

Chair: Zhuang Liu, Western University, 281B Windermere Road, London, ON, N6G 2J7, Canada, zliu328@uwo.ca

1 - Language Style and Word of Mouth

Feng Xin, Keio University, 608, 3-9-9, Minami Ooi, Shinagawa-ku, Tokyo, 1400013, Japan, fengxin@keio.jp

Why are certain pieces of word-of-mouth (WOM) more effective than others? Researchers have tried various approaches to answer this question. This study takes a social linguistic approach to understanding consumer information processing and the determinants of WOM's effectiveness. Reviewing work of consumer behavior model, the author found that the lack of a model that explains consumer information sending thus proposes a consumer discourse process model. Using a dataset of Amazon.com reviews of iPad posted over a five-year period, the author examines how WOM's language style shapes WOM effectiveness. The results indicate the reviews with categorical language are more efficient than those with narrative language. However, the marginal benefit of categorical language on WOM's effectiveness decreases. Furthermore, reviews that reflect information sender's high social status or leadership has higher effectiveness. The author also examines the moderator role of reviewer's authenticity. These results hold even when controlling for how other fundamental attributes of reviews affect effectiveness (number of word, rating and emotional tone), as well as review's marketing variables like product function information, competitor's product information and consumer endorsement language (e.g., "I love it", "I recommend it"). Taken together, these findings indicate how language style affects WOM's effectiveness and what kind of customers should be advocated to send more information.

2 - A Study on the Impact of the Content of Online Reviews on Their Perceived Helpfulness: The Moderating Role of Product Type

Keyvan Kasaian, University of Texas at Dallas, Richardson, TX, United States, keyvan.kasaian@utdallas.edu, Ying Xie

Although it has been established in the marketing literature that online reviews and ratings are significant drivers of sales, much less is known about which reviews are more influential than others. In this study, we mine review content and empirically examine the relationship between different types of review content and the perceived informational quality of the review. Furthermore, we investigate whether the effect of review content can vary across different product types. Utilizing a large data set of more than two million Amazon reviews across six product categories, we first employ the Latent Dirichlet Allocation (LDA) model to extract topics discussed in those reviews. We then classify those topics into two types, based on whether they are about the horizontal or vertical attributes of the products. Finally, we analyze whether a discussion of any of those two attributes in a review is more or less effective in driving its perceived helpfulness, depending on the product type. We derive managerial implications for platform managers, online sellers, users, and advertisers based on our findings.

3 - How Seeded Marketing Campaign Characteristics Drive Firm-created Word of Mouth and Revenue

Ulrike Phieler, European University Viadrina, Große Scharrnstraße 59, Frankfurt (Oder), 15230, Germany, phieler@europa-uni.de, Florian Dost

Marketing managers are highly interested in seeded marketing campaigns (SMCs), however, when planning a SMC they are at a loss. Prior research on SMCs does not address the three key cost drivers of a SMC (campaign size, provided content, and campaign duration) and how they are related to resulting firm-created or amplified word of mouth (aWOM) and incremental revenue effects. Moreover, organic WOM literature suggests important context conditions, e.g. functional, social, and emotional characteristics of the product, thus changing the impact of the same SMC—as by size, content, and duration—depending on the promoted product. The present research uses a unique dataset of 167 SMCs to investigate (1) how SMC characteristics affect SMC impact on aWOM volume and revenue, (2) how aWOM volume mediates this relationship, and (3) how contextual factors, like price, positioning, or product design impact both aWOM volume and SMC-related revenues. As a result, this study offers the first empirical investigation into the complete pathway from managerial SMC decisions through aWOM to incremental revenues. Our results confirm diminishing returns, even in the smaller range of actual SMC sizes, and provide with a short-term SMC size revenue elasticity of .46. Interestingly, product characteristics mostly affect how aWOM translates into revenues, but not how SMC characteristics spawn WOM. Specifically, high-priced, but perceived as budget brands benefit from higher incremental revenue via aWOM. Surprisingly, products displaying individuals' distinctness decrease revenue, which runs contrary to organic WOM literature. Thus, we provide managers with insights for optimal SMC planning, inform how their specific product may impact expected SMC results, and offer insights for aWOM literature.

4 - A Structural Model of Movie Piracy with Word-of-mouth

Zhuang Liu, University of Western Ontario, 1151 Richmond Street, London, ON, N6A 3K7, Canada, zliu328@uwo.ca

Digital piracy have caught great public attention. Despite the cannibalization effect on legitimate sale, pirated consumption might benefit the sale through word-of-mouth. Using a novel dataset of downloads from Bit-Torrent network, this paper estimate a structural model of movie piracy with word-of-mouth effect to quantify the impact of file-sharing on movie box-office. The estimates show that digital piracy reduces box-office revenue of motion picture industry by 1.4 \% over a 20 week period in 10 countries. In addition, positive word-of-mouth spillovers from pirated consumption contribute to $ 9.4 million (0.14%) to movie box-office revenue

■ FD17

Room 31, Alter Hall

Meeting The Editors Session II

Panel Session

Chair: Mimi Morrin, Temple University, Philadlephia, PA, United States,

1 - Journal of the Academy of Marketing Science

Rajkumar Venkatesan, University of Virginia, University of Virginia, Charlottesville, VA, 22903, United States, venkatesanr@darden.virginia.edu

2 - Journal of Consumer Psychology

Christian Wheeler, Journal of Consumer Psychology, PA, United States

3 - Journal of Consumer Research

Jeff Inman, University of Pittsburgh, 372M Mervis Hall, Pittsburgh, PA, 15260, United States, jinman@katz.pitt.edu

4 - Journal of Interactive Marketing

Wendy W. Moe, Robert H Smith School of Business, University of Maryland, College Park, 3469 Van Munching Hall, College Park, MD, 20742, United States, wmoe@rhsmith.umd.edu

5 - International Journal of Research in Marketing

Roland T. Rust, University of Maryland, Robert H. Smith School of Business, University of Maryland, College Park, College Park, MD, 20742, United States, rrust@rhsmith.umd.edu

6 - Journal of Retailing

Rajagopalan Sethuraman, Southern Methodist University, Marketing Dept Cox School of Business, P.O. Box 750333, Dallas, TX, 75275-0333, United States, rsethura@mail.cox.smu.edu

Saturday, 8:30AM - 10:00AM

■ SA01

Room 32, Alter Hall

Online Advertising and Privacy Protection

General Session

Chair: Klaus Miller, Goethe University Frankfurt, Frankfurt am Main, 60323, Germany, klaus.miller@wiwi.uni-frankfurt.de

Co-Chair: Bernd Skiera, Goethe University Frankfurt, Frankfurt am Main, 60323, Germany, skiera@wiwi.uni-frankfurt.de

1 - Dynamic Selection Problems in Digital Advertising

Navdeep S Sahni, Stanford University, 655 Knight Way, Knight Management Center, Stanford, CA, 94305, United States, navdeep.sahni@gmail.com

Consumers may dynamically select themselves into seeing more, or fewer ads. A consumer who saw an ad while browsing news on the internet might visit the advertiser's website and might, as a result, see more ads in the future. Dynamic selection of this nature makes it difficult to estimate the effects of frequency of advertising, even when the researcher conducts a randomized A/B experiment. This paper discusses the relevance of this problem, and provides a solution to address it.

2 - The Impact of Privacy Policy on the Auction Market for Online Display Advertising

Garrett A. Johnson, Boston University, Boston, MA, United States, garrett.johnson@kellogg.northwestern.edu

The advent of online advertising has simultaneously created unprecedented opportunities for advertisers to target consumers and prompted privacy concerns among consumers and regulators. This paper estimates the financial impact of privacy policies on the online display ad industry by applying an empirical model to a proprietary auction dataset. Two challenges complicate the analysis. First, while the advertisers are assumed to publicly observe tracking profiles, the econometrician does not see this data. My model overcomes this challenge by disentangling the unobserved premium paid for certain users from the observed bids. In order to simulate a market in which advertisers can no longer track users, I set the unobserved bid premium's variance to zero. Second, the data provider uses a novel auction mechanism in which first-price bidders and second-price bidders operate concurrently. I develop new techniques to analyze these hybrid auctions. I consider three privacy policies that vary by the degree of user choice. My results suggest that online publisher revenues drop by 3.9% under an opt-out policy, 34.6% under an opt-in policy, and 38.5% under a tracking ban. Total advertiser surplus drops by 4.6%, 4'39%, and 45.5% respectively.

3 - Digital Identity, Privacy and the Inequality of Outcomes: The Case of the Aadhaar Initiative

Anuj Kapoor, University of Utah, David Eccles School of Business, 1655 Campus Center Drive, Salt Lake City, Utah, UT, 84102, United States, anujcapoor@gmail.com, Avi Goldfarb, Catherine E. Tucker

The question of digital identity poses many challenges for both policymakers and firms. On the one hand digital identity poses unique privacy risks to the individual. On the other hand, without a digital identity people may be excluded from digital services. Therefore, to prevent digital exclusion it is natural for policymakers to try and facilitate digital identities for the poor. To study the tensions inherent in this digitization process we study the digital transition to Aadhaar - which is a unique digital identifier the Indian government has sponsored for its citizens. We document a unique distortion in this process. We show that poor people are more likely to experience issues with establishing a digital identity due to transcription errors in their details. To identify the causal effects of these digital errors we exploit variation in the quality of workers assigned to each region to facilitate this digital transformation process. We evaluate whether these transcription errors matter we then turn to whether study whether these delays affect real financial outcomes, and find evidence that they do.

4 - Economic Damage of Cookie Lifetime Restrictions

Klaus Miller, Goethe-University, Theodor-W.-Adorno-Platz 4, Frankfurt am Main, 60323, Germany, klaus.miller@wiwi.uni-frankfurt.de, Bernd Skiera

Over the past few years, regulators have begun to consider restricting a cookie's lifetime or even banning cookies altogether as a way to protect consumer privacy. Most of this debate has taken place in the absence of any quantified cost-benefit analysis. To begin to fill this gap in the discourse, we estimate the potential economic damage of lifespan restrictions on cookies. Our analysis is based on an empirical study on cookies of 54,127 users who received about 130 million ad impressions over 2.5 years. Only 22% of all cookies increase their daily value over time but the value of that quantile represent 61% of the value of all cookies. This analysis suggests that restricting their lifetime to one year as the European Union proposes (two years as Google advocates) decreases cookie lifetime value by 14.8% (5.9%), which represents a decrease in the value of all cookies of about 7.4% (1.3%). Overall, we find that the average lifetime of a cookie is 215 days (median 68 days) and the average value of a cookie is €1.43 (median €02).

■ SA02

Room 33, Alter Hall

Dynamic Pricing and Revenue Management: Perishable and Seasonal Goods

General Session

Chair: Mingyu Joo, Ohio State University, Columbus, OH, 43210, United States, joo.85@osu.edu

Co-Chair: Robert E Sanders, The University of Chicago, Chicago, IL, United States, robs@uchicago.edu

1 - An Empirical Test of Price Theories in the Market for Seasonal Goods

Gonca Soysal, University of Arkansas, Sam M. Walton College of Business, University of Arkansas, Fayetteville, AR, 72701, United States, gpsoysal@uark.edu, Pradeep Chintagunta

Three theories have been proposed in the literature to describe the reason behind sharp price declines observed over a product's short lifecycle in seasonal (perishable) goods markets: Prices decline as a result of (1) decreasing opportunity costs over time; (2) firm's uncertainty about relative product popularity at the start of the season; (3) inter-temporal price discrimination. We first provide empirically testable implications of each theory. Then, using price and demand data from a large US specialty apparel retailer, we assess whether these theories have empirical support in the fashion apparel market. A unique feature of our data that we leverage in our empirical analysis is the availability of inventory information over time. Our results indicate that decreasing opportunity costs over time is the main driver behind the observed price declines. We do not find empirical support for the impact of the retailer's initial uncertainty about relative product popularity or intertemporal price discrimination on observed price declines in our data.

2 - The Effects of Menu Costs on Supply Chain Efficiency: Evidence from Adoption of the Electronic Shelf Label Technology

Ioannis Stamatopoulos, University of Texas at Austin, McCombs School of Business, 2110 Speedway B6000, Austin, TX, 78705, United States, yannis.stamos@mccombs.utexas.edu, Achal Bassamboo, Antonio Moreno

We use the adoption of electronic shelf labels (ESLs) by a major international grocery retailer in 2015 in the United Kingdom to identify the effects of reducing physical menu costs (operational costs of price adjustment) on supply chain efficiency. The ESL technology essentially eliminates the physical costs associated with price adjustment (e.g., costs of printing and distributing price tags). We find that the elimination of physical menu costs benefits all supply chain stakeholders (retailer, consumers, suppliers). In our setting, daily revenues increased, the average price per unit sold decreased, and daily sales volumes increased as a result of ESLs. We also find that ESL adoption increased price-adjustment volume, decreased the average size of a price adjustment, and decreased the batching of price changes across different products. Finally, we find that ESL adoption had a statistically significant effect on the volume of downward price changes, but not on the volume of upward price changes, which explains the direction of the change in operational outcomes.

3 - Pre-ordering And Manufacturer's Return Policies for Durable Goods: Theory and Empirical Evidence

Jong Yeob Kim, PhD Student, NYU Stern School of Business, Tisch Hall 921, 40 West Fourth Street, New York, NY, 10012, United States, jkim3@stern.nyu.edu, Masakazu Ishihara

This paper theoretically examines the roles of manufacturers' return policies in durable goods markets when forward-looking consumers, retailers, and manufacturer face uncertainty about product quality and consumers have an option to pre-order. Using a simple multi-period vertical differentiation model, we investigate the impact of manufacturers' return policies on equilibrium purchase decisions, retailer's pricing and inventory stocking decisions, and manufacturer's wholesale pricing decisions. Our goal is to understand the conditions under which it is optimal for a manufacturer to accept returns from retailers. We then test our theoretical predictions using data from the U.S. and Japanese video game markets. In the U.S. market, video game publishers accept returns from retailers, but in the Japanese market, publishers do not. The novel aspects of our data are that we observe pre-order sales and retailer's inventory stocking decisions. We show that our theoretical predictions are empirically supported in these markets.

4 - Reducing Retailer Food Waste through Revenue Management

Robert E. Sanders, University of Chicago, 5242 S Hyde Park Blvd, 1009, Chicago, IL, 60615, United States, robs@uchicago.edu

Each year, the perishable grocery industry produces substantial waste, resulting in considerable costs to firms and generating harmful greenhouse gas emissions. I study the incentives to produce such waste using a novel data set that matches a large supermarket chain's loyalty-card database, including the time stamp for customer trips, with the firm's product-level information on marginal cost, shelf life (perishability), and daily productionprocesses. In a descriptive analysis, I first show the firm's production of waste correlates positively with the degree of demand uncertainty and with its market power. This relationship is consistent with the classic newsvendor problem and suggests positive waste levels are an endogenously-determined outcome. I then conduct a structural analysis of the artisanal bread category to assess the supermarket chain's incentives to mitigate waste. Currently, grocery retailers have not yet adopted revenue management (intraday markdowns) due to insufficient scale. A hypothetical policy that reduces the costs of revenue management sufficiently to induce adoption would reduce total planned waste for the chain by 13%. Surprisingly, the incentive to reduce waste varies across the individual stores: in several stores, the firm endogenously increases planned waste, suggesting revenue management alone may be insufficient to curb grocery waste. I then simulate the effects of a ban recently enacted in California. The ban increases firms' waste disposalcosts by mandating composting. For the supermarket chain, this policy increases the returns to revenue management adoption from 7% to 11% and induces the firm to use intraday markdowns, resulting in a combined waste reduction of 31%.

■ SA03

Room 34, Alter Hall

Extending Classic Game Theory Models to Reflect Practical Realities

General Session

Chair: Robert Waiser, London Business School, London, NW1 4SA, United Kingdom, rwaiser@london.edu

1 - Quality Signaling and Sticky Prices

Ruitong Wang, University of Minnesota, Minneapolis, MN, United States, wang1952@umn.edu, Yi Zhu, Akshay Rao

Retailers can signal the unobservable quality of a manufacturer's product through the retail price. Consumers rationally infer quality based on the cost of the signal due to prices that impose a cost on the retailer, which will be recovered from future retail sales on other products. We demonstrate that, if consumers believe that a particular mid-range of prices might not perfectly signal unobservable quality, retailers will face an incentive to not set prices in that range. Thus, retail prices below and above that range may be sticky to the change of wholesale prices. The sticky signaling prices handicap retailer's price decision, but may facilitate channel coordination. We show how the sticky prices can increase channel members' profits and consumer welfare, and a high-quality manufacturer can benefit from quality uncertainty.

2 - Delegating Sales Force Incentive Design to Sales Managers: A Comparison of Approaches

Robert Waiser, London Business School, Regent's Park, London, NW1 4SA, United Kingdom, rwaiser@london.edu

Firms commonly face the challenge of designing sales force incentives in the absence of information about heterogeneous territories (or salesperson abilities, etc.), but few have adopted the well-accepted theoretical solution of offering salespeople menus of contracts. Instead, many firms rely on their sales managers to share information that they gain from spending time 'in the field'. However, most firms use primarily sales-based (rather than profit-based) incentives for those managers, causing a conflict of interest that challenges the credibility of the information they provide. In this paper, I analyze three approaches by which firms can delegate sales force incentive design to a sales manager and ensure truthful revelation of her information: 1) requiring her to exert costly effort to loosen a restrictive budget constraint; 2) allowing her to choose from a menu of contracts, each consisting of her own incentive plan and a budget constraint for sales force incentives; and 3) including in her incentive plan a percentage of her unallocated sales force incentive budget. I identify the conditions (if any) under which each of these approaches is both feasible and optimal, including comparison with non-delegation alternatives.

3 - The Emergence of Streaming Technology and its Impact on Established Music Providers

Mark Bender, PhD, University of South Florida, 4202 E Fowler Ave, Tampa, FL, 33620, United States, bender@usf.edu, Esther Gal-Or, Tansev Geylani

The emergence of streaming technology is changing the pattern of music consumption. In this paper, we investigate how an established music provider with a dominant digital music store responds to this technology. We assert that streaming platforms allow uninformed consumers to explore different genres of music and learn about their preferences. We show that if the music provider cannot sufficiently differentiate his streaming service from that offered by the competitor, he is better off focusing exclusively on the sale of music in his store. In contrast, if he can sufficiently differentiate his streaming service he should operate in the streaming market and charge a higher subscription fee for his services than his rival. By raising the subscription fee on his streaming platform, the provider can guide the competing platform to set high subscription fees as well, thus alleviating price pressures on music sales through his digital store. Our results also show that as consumer preference for streaming rises, the music provider might choose to abandon the sale of digital songs completely and focus exclusively on streaming. In this case, it may charge, on average, lower fees than the competing streamer if the rival streamer has greater loyalty among subscribers.

4 - Pricing Under Uncertainty: Data Throttling and Pay-As-You-Go

Bo Zhou, University of Maryland, College Park, 3461 Van Munching Hall, Smith School of Business, College Park, MD, 20742, United States, bzhou@rhsmith.umd.edu, Debu Purohit

In many markets, consumers are uncertain about their consumption needs over a period of time. For example, consumers are uncertain about how much data they will need for their cell phone or how many miles they will drive their car over the course of a year. In both these instances, uncertainty affects not only the choice of cell phone or lease contracts but also subsequent consumption levels. In this paper, we focus on the telecommunications market and analyze pricing contracts that are designed to deal with this uncertainty. In particular, we study two popular contracts: Data Throttling and Pay-As-You-Go (PG). Under a data throttling plan, the firm offers a high speed (e.g., 4G) connection up to a specific level of consumption and, if consumption exceeds this level, then the speed is lowered to a 3G level. In contrast, the PG plan serves as a benchmark in which the firm charges a rate based solely on the consumption level. There are two segments of high and low-usage consumers whose consumption needs are random draws from a uniform distribution. On average, high-usage consumers expect to need more data low-usage consumers. Furthermore, all consumers are uncertain about the value of each consumption opportunity, which is drawn from a random distribution. We then compare the profitability of data throttling plans and PG plans, and identified how the throttled speed is affected by market characteristics. Importantly, we find that the firm can do better if it offers a combination of throttling and PG plans.

■ SA04

Room 35, Alter Hall

UGC Platform Design

General Session

Chair: Jin-Hee Huh, University of Maryland-College Park, Greenbelt, MD, 20770, United States, jhhuh@rhsmith.umd.edu

1 - Extremity Bias in Online Reviews: A Field Experiment

Leif Brandes, Warwick Business School, University of Warwick, Coventry, CV4 7AL, United Kingdom, Leif.Brandes@wbs.ac.uk, David Godes, Dina Mayzlin

In a range of studies across many platforms, submitted online ratings have been shown to be characterized by a distribution with disproportionately-heavy tails. These have been referred to as "u-shaped distributions" or "j-shaped distributions." Our focus in this paper is on understanding the underlying process that yields such a distribution. We develop a simple analytical model to capture the most-common explanation: differences in utility associated with posting extreme vs moderate reviews. We compare the predictions of this model with those of an alternative theory based on customers forgetting about writing a review over time. The forgetting rate, by assumption, is higher for moderate reviews. The two models yield stark differences in the predicted dynamics of extremity bias. To test our predictions, we use data from a large-scale field experiment with an online travel platform. In this experiment, we varied the time at which the firm sent out a review solicitation email. Specifically, the time of review solicitation ranged between one and nine days after the end of one's vacation. This manipulation allows us to observe the extremity dynamics over an extended period both before and after the firm's solicitation email.

2 - The Effect of Curation Algorithms on Informativeness of Social Media in the Presence of "Trolls"

Amy Pei, University of Southern California, Marshal School of Business, 3670 Trousdale Parkway, Los Angeles, CA, 90089-0808, United States, Lei.Pei.2019@marshall.usc.edu, Dina Mayzlin

Users on social media platforms face a multitude of potential sources of information. Time and information-processing constraints imply that a user can only view a small fraction of available information. Many social media platforms use curation algorithms in order to increase the quality of information viewed by the user. Hence, users are not simply exposed to a random subset of posts, but rather the subset of posts chosen by the platform to maximize the information value of the user. Here we examine the effect of curation algorithms in the presence of trolls who infiltrate these platforms to send misinformation in order to manipulate consumers. We show that under certain conditions consumers may be worse off under the curation algorithm than under no curation. The intuition is that under the presence of trolls a curation algorithm that shows a subset of posts (even if they are picked optimally) may inadvertently render the information unusable to the consumer.

3 - The Impact of Reputation Systems on Peer-evaluations

Jin-Hee Huh, University of Maryland, 420 Ridge Road, # 314, Greenbelt, MD, 20770, United States, jhhuh@rhsmith.umd.edu, David Godes, Seshadri Tirunillai

Understanding how opinions are received and evaluated is important for an online community because the volume and quality of users' opinions are the key determinants of its success. In this paper, we investigate how a reputation system affects peer-evaluations in an online community. In contrast to previous research on reputation systems, which has predominantly shown that reputation systems can induce posting activity and quality contributions, we study how reputation markers ("badges," for example) may change peer-evaluations. We rely on a unique and detailed data set and employ a difference-in-differences approach, combined with propensity score matching, that suggests that, all else equal, posters receive disproportionately-higher evaluations of their posts after they earn a reputation marker, irrespective of post quality. This suggests a "rich-get-richer" process induced by a reputation system that may have the unintended effect of favoring some participants at the expense of equally-skilled others.

■ SA05

Room 232, Alter Hall

Mobile, Algorithm, and Artificial Intelligence (AI) Session VI: Modeling Customer Choices on Multichannels

General Session

Chair: Xueming Luo, Temple University, Philadelphia, PA, 19122, United States, luoxm@temple.edu

Co-Chair: Shane Baxendale, Cranfield University, Cranfield, United Kingdom, s.baxendale@cranfield.ac.uk

1 - Cross-Device Shopping: How Do Consumers Search on Fixed vs. Mobile Device?

Yiyi Li, University of Delaware, Newark, DE, United States, yiyil@udel.edu, Yi-Lin Tsai, Yiping Song

hopping with multiple devices - both "fixed" (laptops and desktops) and "mobile" (smartphones and tablets) - has become an increasingly important trend. Consumers may search for product information on one device and make purchase on another. This paper investigates how consumers search differently across devices and what makes consumers switch from one device to another. We use a clickstream data from an Internet-based fashion retailer to study consumer's cross-shopping behavior. We first examine consumers' search depth (e.g., time, number of pages, and number of products), search paths (e.g., starting with specific keyword, starting with recommendation in landing pages), likelihood for revisiting, and purchasing decisions across different channels. We then model the choice of channel as a function of consumers' demographics and behavioral characteristics (e.g., smartphone model, browser, browsing history, add-to-cart history, etc.) and context (i.e., time of the day, day of the week). The findings will help marketers understand the difference in searching across channels and improve the interface designs accordingly.

2 - Overcoming Digital Ads Apathy: Content Marketing in a Mobile and Distracted World

Minki Kim, KAIST Business School, SUPEX Hall 304, 85 Hoegi-ro, Dongdaemun-gu, Seoul, 130-722, Korea, Republic of, minki.kim@kaist.ac.kr, Seokyoon Yoon, Jaewon Yoo, Wonjoon Kim

As digital advertising has become more pervasive and even intrusive, consumers have become more adept at resisting and avoiding ads. In response to this shift, content marketing, devoid of any advertising intention, is becoming popular. However, because of the challenging aspects of content marketing related to generating and distributing relevant, engaging, and compelling content, the value of content marketing has not been explored yet. Overcoming these challenges, this study investigates the causal effect of content marketing on customer engagement and sales. We conduct a large-scale natural field experiment in collaboration with one of South Korea's largest book retailers and 60 book publishers. In our experiment, the treatment group received book-related content without advertising, while the control group was exposed to conventional advertisement about a book. We find that exposure to content marketing increased customer engagement, purchase intention, and immediate and long-term sales conversions. The treatment group customers checked in 3.55 percentage points more often, clicked through 1.9 times more often, purchased the book on the same day 2.75 times more often, and purchased the book in the subsequent month 2 times more often. A follow-up supplementary survey indicates that customers consumed the content high in information and entertainment.

3 - The Impact of Brand-Controlled, Retailer-Controlled, and Social Touchpoints on Consumer Purchase Choice

Shane Baxendale, Cranfield University, Cranfield, United Kingdom, s.baxendale@cranfield.ac.uk, Hugh Wilson, Emma McDonald

The relative impact of different touchpoints - brand-controlled, retailer-controlled and social - is managerially important for resource allocation, but research is limited. This study examines the impact of seven touchpoints on a consumer's brand choice when purchasing a television. The emerging real-time experience tracking method, in which consumers report touchpoints by mobile text message, records 1,524 in the week preceding a purchase by 520 consumers. This is integrated with self-reported purchasing data and weekly pricing data. A nested multinomial logit model captures a two-stage hierarchical decision process of choosing a screen size category and then a brand.

4 - Consumer Online Search and Purchase with Endogenous Channel Choice

Shuo Zhang, Americold Logistics LLC, 10 Glenlake Parkway NE, # 800, Atlanta, GA, 30328, United States, shuozhang@wustl.edu

With the development of mobile technology in recent years, the mobile shopping channel has emerged to represent a large portion of consumer online shopping as an alternative to the traditional PC channel. However, the conversion rate on mobile channel is significantly lower than that on the PC channel. This would be a concerning trend if the mobile channel cannibalizes PC traffic but is not able to convert visitors into purchasers. We seek to understand what drives the difference in conversation rate between mobile and PC channels. Several potential hypotheses are tested against empirical evidence, including difference in search cost or transaction cost. The hypothesis best supported by empirical evidence is that consumers endogenously choose which channel to browse. It is easier to start a search on mobile channel (e.g., ease of access) but more difficult for intensive search (e.g., small screen size) than on PC channel. The key insight is that the mobile channel draws in a systematically different pool of consumers whose initial interest to purchase are lower on average than consumers who choose to search from the PC channel. Hence, mobile channel has both a market expansion and cannibalization effect for online retailers. In order to quantify the overall profit implication, we formally model consumers channel choice in addition to their search and purchase decisions. With counterfactual analysis, we study the impact of channel specific pricing on retailer's profit by finding the optimal price for consumers with heterogeneous preference in the PC and mobile channels.

Saturday, 8:30AM - 10:30PM

■ SA07

Room 237, Alter Hall

Social Networks & Analysis

Contributed Session

Chair: Tae-Hyung Pyo, University of Idaho, 875 Perimeter Dr. MS 3161, Moscow, ID, 83844, United States, tpyo@uidaho.edu

1 - Status Leaders, Hubs and Their Social Influence

Huazhong Zhao, Assistant Professor, City University of Hong Kong, 83 Tat Chee Ave AC3 10-225, Kowloon, Hong Kong, h.zhao@cityu.edu.hk, Jinhong Xie

The prevalence of internet technology and social media has provided marketers new opportunities to identify influencers and to utilize their social influence to affect consumer decisions. However, the current marketing literature often uses the general term "opinion leaders" to describe very different types of influencers without identifying how and why their social influence may vary. In this paper, we first introduce "status leaders" as a new type of influencers in contrast to hub influencers. Then, we identify the social influence from both types of influencers to their surrounding consumers. Specifically, our empirical results show that (1) the spending of status leaders and hubs both positively influence the total spending of their surrounding consumers; (2) when stronger social ties are developed with their surrounding consumers, a status leader's social influence decreases while a hub's social influence increases; and (3) higher personal competitiveness increases a status leader's social influence while decreases a hub's social influence. This paper contributes to the literature of social network and social influence by distinguishing two types of influencers, i.e., status leaders and hubs, and by providing a competitiveness theory framework to explain the underlying mechanisms. This research also shed light on managerial implications on how to utilize the social influence of both types of influencers in different scenarios.

2 - Examining the Social Influence of a Brand's PGC on Consumers' UGC – A Social Network Analysis

Jesheng Huang, Assistant Professor, Chung Yuan Christian University, 200 Chung Pei Road,, Chung Li District, Taoyuan City, 32023, Taiwan, iamjesheng@gmail.com

It is evident from previous studies that consumers' user-generated content (hereafter as UGC) are more credible and trustworthy than brands' producer-generated content (hereafter as PGC), because consumers think that PGC only tell a positive story about the brand but rarely provide the whole brand story even neglecting the negative parts. However, the PGC also has strongly significance to the brand because it could affect the brand credibility and trust through their properly direct interactions with consumers on the social media platforms. Therefore, we query whether we can connect the positive effect of UGC to the PGC. The purpose of this study is to examine how effectiveness of a brand's PGC will have good impacts on leading the topics of consumers' UGC and facilitating them spread across social networks, and to identify what the factors of brand's PGC are important to enable consumers having strongly brand engagement to the brand. The research process are separated into two parts, which are data mining technique conducted by NodeXL and qualitative data analysis through social network analysis. We firstly identify the opinion leaders who play a vital role of raising UGC to the brand's PGC, then assess their social influence across the related social networks, finally, develop the metrics of diagnosing the degree of consumers' brand engagement and examine the effectiveness of PGC connecting UGC. Our outcome reveals there are six forms of social influence network, which are polarized, in-group, brand topic, bazaar, broadcast and support. We discuss the implications for each of six forms and provide some strategic suggestions as well.

3 - Semiparametric Estimation of the Network Distance Effect

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An emerging literature has started to research how social network properties affect consumer purchase. In marketing, it is important to look at the effect of network distance on consumer purchase. However, there are much fewer studies about network distance than those about other network properties (e.g., network centrality). Therefore, we study the social effect on consumer behavior by focusing on the effect of network distance. Contrary to previous studies, which assumed the linearity of network distance effect, we believe that network distance has the nonlinear effect because of homophily, the local conformity, and the social reinforcement in social network structure. In order to capture the complexity of network distance effect well, we implement the linear spline regression model, which is one of the classical semiparametric regression methods. By investigating real social network data including consumers' network properties and online-item-purchase information, we find that network distance has the nonlinear effect on consumer purchase behavior. To be more specific, network distance has a monotonic decreasing curve, which means there is a certain level of network distance that the effect starts to decrease sharply. This study has following contributions: First, we find that we need to relax the linearity assumption of network distance effect to fully understand the properties of social network structure. Second, this finding has several managerial implications especially for those who want to target specific consumers by direct marketing.

4 - Impact of Preference Similarity on Social Contagion in a Trial of an Experience Good

Tae-Hyung Pyo, University of Idaho, 875 Perimeter Dr. MS 3161, Moscow, ID, 83844, United States, tpyo@uidaho.edu, Jae Young Lee

Marketing literature are rich in extended studies on social contagion for a trial of a new product (Bass 1969; Coleman 1988; Godes and Chevalier 2006; Iyengar, Van den Bulte, and Valente 2011). This research intends to investigate how one's trial behavior of experience goods is affected by her social contacts, especially how the preference similarity between "influencer" and "influencee" moderate the impact of social contagion. Based on past studies (McPherson, Smith-Lovin, and Cook 2001; Granovetter 1973; Van den Bulte and Lilien 2001), we posit that social contagion from similar and dissimilar others operate via different mechanisms; social learning from similar others and awareness diffusion from dissimilar others. Given that two different processes (leaning vs. awareness) are triggered by different social ties, we advance this ideas by arguing that similar others exert more social influence in trial of experience goods that are not of one's taste, while dissimilar others are more influence in trial of experience goods that fit one's taste. To empirically test our arguments, we analyze music trial behavior of 1,000 users for 46 newly released songs on Last.fm, one of the leading online music social network website (Goldenberg, Oestreicher-Singer, and Reichman, 2012). The data in our analysis include complete network information of all the 1,000 focal users and music play history of focal users and all of their social contacts. To test the role of the similarity of preferences, we construct a novel metric to measure preference similarity between pairs of connected users utilizing popular digital practice called "social tag". Similarly, we propose a measure for a user's ex-ante expectation about the fit between her taste and a new song. In a series of analyses, we provide compelling empirical evidence that bear out our contention. Besides enriching the understanding about the nuanced role of preference similarity in social contagion, we propose seeding strategies using the proposed metrics to implement viral marketing for an experience good.

■ SA08

Room 238, Alter Hall

Consumer Decision-Making – Attention, Price & Product Returns

Contributed Session

Chair: Ricardo Ribeiro, Católica Porto Business School, Porto, Portugal, 4169-005, Portugal, rribeiro@porto.ucp.pt

1 - Signals Comparison and Matching with Quality Types When Price and Return Policy Signal Quality

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We develop a competitive model to make comparisons between the quality signals which are price and return policy, and match these signals with quality types. Our results illustrate that return policy makes market more efficient where High-quality and Low-quality products are more apt to be separated. The H-type product retailer prefers to employ price to imitate, while the L-type product retailer likes to masquerade through mimicking return policy (price) in the heterogeneous (homogenous) market. In the heterogeneous market, imitating with two signals, such as price and return policy, enlarges the region of one signal (price or return policy) under certain condition. For example, imitating with two signal indexes enlarges the valid signaling region of price when the imitation firm's quality is low and enlarges that of return policy when the imitation firm's quality is high under certain condition.

2 - Pricing Strategy Based on Degree of Uncertainty and Consumer Types

Kyowon Seo, Seoul National Univ., Seoul, Korea, Republic of, kw_seo@snu.ac.kr, Sarang Go, Byungdo Kim

People face various situations they have to decide whether to buy or not, before uncertainty is resolved. Under uncertain conditions, it is most crucial part for consumers that they should consider the expected valuation derived from purchasing tickets or services. Thus, it is important to contemplate buyer uncertainty about future valuation. Xie and Shugan presented the relationship between spot price and advance price in a situation that involves uncertainty. Their findings provide the explicit advance pricing strategies that can create profit improvements (Xie & Shugan, 2001). Their findings lay a foundation of this problem, because buyers are almost always not sure about their future valuations for most services (Xie & Shugan, 2001). In addition to these findings, the researchers found that profits under option pricing strategy outperform those from advance pricing strategy (Preethika Sainam, 2010). They introduce the concept of consumer options and analytically prove that consumer options can make more profits and also can protect consumers from the pitfall derived from unwanted outcomes (Preethika Sainam, 2010). In this paper, we want to consider this problem under more complex and real circumstances. We include one more pricing strategy, discounted advance pricing, which is often called early bird pricing. Consumers need to expect their future valuation for the consumption with respect to these price policies, based on expected utility theory. Furthermore, we divide consumers in two types, risk-neutral consumers and risk-averse consumers. We present a simple analytical model in what conditions each pricing strategies can outperforms others based on consumer types and capacity types.

3 - Endogenous Product Design and Quality with Rationally Inattentive Consumers

Ricardo Ribeiro, Assistant Professor, Católica Porto Business School, Porto, Portugal, rribeiro@porto.ucp.pt, Mariana Cunha, António Osório

In some markets, consumers do not know the attributes of all the products that are available in the market, or the prices at which they are offered. To overcome this uncertainty consumers may, at a cost, gather and process information about the attributes and prices of the different products. We present a theoretical framework that couples endogenous firms' decisions on the multi-attribute dimensions and pricing of products with endogenous consumers' decisions on what and how much information to gather and process, and which product to purchase. We find a number of interesting results. First, consumers may rationally select information strategies that do not fully eliminate their uncertainty and so, rationally select to be inattentive. Second, firms do have an incentive to respond to lower information costs by increasing differentiation, as established by the standard search literature, but solely if the proportion of "informed" consumers in the market is small and along the least-costly attribute dimension. This implies that equilibrium prices may, as the unit cost of gathering and processing information decreases, increase in some markets and decrease in others. Further, it implies also that when the cost of quality improvement in a market changes, there can be radical shifts in product attributes.

■ SA09

Room 239, Alter Hall

Product Choice & Assortment

Contributed Session

Chair: Roozbeh Iranikermani, Penn State University, 920 Oakwood Avenue, State College, PA, 16803, United States, Roozbeh@psu.edu

1 - Product Line Design with Superior Information on Consumers' Preferences: Implications of Data Aggregation

Zibin Xu, Shanghai Jiao Tong University, Shanghai, 210010, China, zibinxu@sjtu.edu.cn, Anthony Dukes

Consumers' initial perceptions for new products are often noisy indicators of their intrinsic valuations. If the noises in consumers' perceptions are correlated, then a firm can acquire superior information over consumers by collecting aggregate marketing research data (e.g. surveys or conjoint studies). But is superior information ever unprofitable? Are consumers better off when the firm obtains superior information? Do they receive better fitting products or simply have more surplus extracted? In a monopoly model of product line design with imperfectly informed consumers, we find that consumers' rational suspicions may prevent the firm from fully exploiting its superior information. In addition, allowing the firm to collect consumer data may be strictly Pareto improving.

2 - Heterogeneous Veblen Effects: Implications for Assortment Decisions

Rafael Becerril Arreola, USC Darla Moore School of Business, 1014 Greene Street, Moore School of Business, Columbia, SC, 29208, United States, becerrilrafael@gmail.com

Veblen effects occur when product prices serve as signals of consumer wealth and thus influence the utility that products offer to consumers. This study quantifies heterogeneous Veblen effects with a quasi-experimental approach that addresses identification threats relevant to social influence and supply factors while controlling for alternative social processes and the effects of prices on affordability and perceived quality. Using a four-dimensional panel data on car rentals, the study explains rental choices in terms of the different levels of relative wealth signaled by different vehicles at different locations. The individual-level estimates reveal that both wealth signaling and counter-signaling are common among travelers and that the average product-specific elasticity of choice probability with respect to signaled wealth is -0.65, about a third as large as the elasticity with respect to rental fees. A simulation study shows that profits can increase by at least 1% if the rental assortment is optimized to cater heterogeneous preferences for wealth signaling.

3 - Variety Seeking, a Generalized State Dependent Variable Based on Product Attribute Space

Roozbeh Iranikermani, PhD Candidate, Penn State University, 920 Oakwood Avenue, State College, PA, 16803, United States, Roozbeh@psu.edu, Edward Jaenicke

Consumers' tendency to substitute different types of the same product in their baskets or search for ideal bliss point via diversification is generally regarded as variety-seeking behavior, and researchers most often operationalize this concept by observing product-switching behavior from one purchase occasion to another. What all variety-seeking measurement models have in common is that they operationalize this behavior by observing shopping patterns at the brand level. Thus, variety seeking is the negation of brand loyalty. In this paper, we propose to generalize the operational concept of variety seeking by focusing on the differences of among the product attributes that underlie the brand differences. We construct a variety-seeking index that measures variety via relative Euclidian distances in attribute space. Because a brand identifier could therefore be just one of several product attributes, a more traditional definition of variety seeking based only on brands would be a special case of this new, more general, variety-seeking index. We use the Nielsen Homescan dataset for the U.S. beer retail market and calculate this inex during the years 2009-2012. Our results show that, adding this index to the brand choice model, enhances more explanatory power to the model and improves estimation and analysis of consumer preferences. Now, it is possible to capture brand-loyalty and variety-seeking at the same time in the same household independently. Further, the model can be extended to other situations that require similar state-dependent variables. This could facilitate polling by political parties, or simplifying risk assessment for insurance companies, banks, and lenders.

■ SA10

Room 605, Alter Hall

Demand, Choice and Behavior

Contributed Session

Chair: Rudolf-Harri Oberg, Duke University, Durham, NC, ro39@duke.edu

1 - Store, Category, and Brand Choice

Rudolf-Harri Oberg, Phd Candidate, Duke University, Durham, NC, United States, ro39@duke.edu, Andres I Musalem, Carl F Mela

In many retail settings, understanding consumer demand is the basis for the study of firm strategy and public policy. In this paper, we develop a direct utility framework to model consumer demand for brands, categories, and stores. While these decisions have been considered separately in the literature, we show that a unified treatment of store, category, and brand demand captures novel substitution patterns and provides a much richer picture in many applications. We estimate the model on household panel data and show that it can be used to study in-store marketing and health policy issues. For in-store marketing, we identify to what extent supermarkets in our sample engage in loss-leader pricing, i.e., we identify brands which have the highest incremental effect from other stores and low margins. For health policy, we study the effectiveness of various policy measures (health tax on sugar items, subsidy for healthy goods, food stamps) in terms of their impact on nutrition outcomes and consumer welfare.

2 - The Estimation of Discount Factors using Field Experiments

Meng Li, Rutgers University, 227 Penn Street, Camden, NJ, 08102, United States, meng.li@rutgers.edu, Arun Gopalakrishnan, Raghuram Iyengar

Determining how far ahead consumers plan their consumption is important for many marketing applications. Many contexts, however, present limitations in the estimation of discount factors due to insufficient variation in the observed data. As an example, consider a customer making data usage decisions over a monthly billing cycle. Given the nonlinear pricing of data, usage decisions that the customer makes early on in the month have implications for her subsequent usage during the month. Whether the customer is a light or heavy user of data, however, can change the extent to which their time discounting preferences can be recovered from observed decisions. In this paper, we use the context of cellphone data consumption and combine theory with a carefully designed field experiment to showcase the challenges in identifying the discount factor. The field experiment manipulates the amount of data available to customers and thereby leads to variation in the state space for subsets of customers whose discounting parameters would otherwise be poorly recovered. We show that both the utility function and discounting primitives can be empirically estimated for a broader range of consumers using the field experiment. The estimation helps improve managerial insights on the willingness of these consumers to pay for data.

■ SA11

Room 606, Alter Hall

Experimental Research: Choice & Information

Contributed Session

Chair: Siddhartha Sharma, Carnegie Mellon University, Pittsburgh, PA, rayhope91@gmail.com

1 - Prelaunch Demand Estimation

Xinyu Cao, MIT Sloan School of Management, Cambridge, MA, United States, xinyucao@mit.edu

Demand estimation is important for new-product strategies, but is challenging in the absence of actual sales data. We develop a cost-effective method to estimate the demand of new products based on incentive-aligned choice experiments. Our premise is that there exists a structural relationship between manifested demand and the probability of consumer choice being realized. We illustrate the mechanism using a theory model, in which consumers learn their product valuation through costly effort and their effort incentive depends on the realization probability. We run a large-scale field experiment on a mobile game platform, where we randomize the price and realization probability when selling a new product. The data support our theoretical prediction and the decision effort mechanism. We then estimate a structural model of consumer choice. The structural estimates allow us to infer actual demand with reasonable accuracy using inexpensive choice experiments with small to moderate realization probabilities.

2 - The Effects of Social Relations in Comparative Evaluation Regimes: An Experimental Study

Kevin Chung, University of Wisconsin-Madison, 4176 Grainger Hall, 975 University Ave, Madison, WI, 53706, United States, kevin.chung@wisc.edu, Keehyung Kim, Noah Lim

We model an expert review system where two producers competing for market share are evaluated by two raters. Employing an economics experiment, the paper examines how the rater's incentive to provide objective feedback can be distorted in the presence of social ties and different penalty structures for assigning unobjective ratings. The results reject the self-interested model. We find that raters assign more biased ratings to help the producer they know compete, especially when that producer chooses a lower quality level than his competitor. Moreover, when the monetary penalty for rating unobjectively is lowered, the distortion in ratings is exacerbated. Counterintuitively, when both the raters know the same producer, the likelihood of biased ratings drops significantly. To explain the empirical regularities, we develop a behavioral economics model and show that the rater's utility function should account not only for social preferences towards the producer, but also the rater's psychological aversion towards favoring a producer more than another rater. Our findings demonstrate that it is critical for policymakers to be cognizant of the non-pecuniary factors that can influence behavior in expert review systems.

3 - Charge or Not Charge? A Field Study of E-education Platform

Dajun Li, Phd Candidate, Tsinghua University, SEM School, 30 Shuangqing Road, Beijing, 100084, China, lidajun2005@126.com, Yacheng Sun, Fei Li, jiang minghua

We study a market for contacts for a one-of-a-kind service (e.g., online and offline education), where an education platform mediates between the students (consumers) and teachers(providers). The platform sets fees to balance own revenue with attracting students. The past literature suggests that agents should charge no fee or extremely low fee to the consumer side to attract them as more as possible. But they ignore the heterogeneity of the consumers, who are divided into high and low tiers by WTP(willing to pay). For the high end customers, they are willing to pay a premium membership fee to acquire extra services or information. On the other hand, low end customers are charged free to stay in the market with limited services and information. So that the agent may maximize its profits for taking more surplus from high end customers without hurting low end customers' benefits. We conduct a field experiment in a real e-education platform to introduce a hybrid pricing strategy: (1) charge a certain premium fee to high end customers and no fee to low end customers, and (2) charge a certain fee to both customers, and (3) charge no fee to both customers. We examine customer retention rate, repeated usage and CLV (customer life value) under different pricing policies.

4 - Effect of Sponsored Listings on Online Marketplaces: The Role of Information Asymmetry

Siddhartha Sharma, Carnegie Mellon University, 5000 Forbes Avenue, Pittsburgh, PA, 15213, United States, rayhope91@gmail.com

Promoting listings in search results has become a common way of advertising for sellers on big e-commerce marketplaces. Although sponsored product listings create an additional source of revenue for a marketplace, they might hurt the core business of the platform due to an increase in the rankings of potentially inferior listings. This effect may be more salient if the marketplace faces information asymmetry (IA) regarding the sellers' or products' quality. We develop an analytical model to show that marketplace advertising can lead to a separating equilibrium where low type third-party sellers advertise under no information asymmetry, whereas high type sellers advertise when there is a great deal of information asymmetry. Under this condition, advertising acts a screening mechanism for the platform. We then analyze data from a field experiment with over 2 million users on a marketplace across two popular product categories exhibiting different levels of information asymmetry—clothing (high IA) and electronics (low IA). In this experiment, 4 random groups of users are shown sponsored listings (ads) at different sets of positions. The exogenous variation in both the number and the positions of the ads helps us identify our main effect, and the underlying mechanisms. We first find that a 10% points increase in the proportion of ad slots leads to about 2% decrease in the probability of conversion from a search. However, this negative effect exists only for electronics, but not for clothing. Consistent with our theory, this finding is driven by the fact that, in the clothing category, the conversion rate of ads is (weakly) higher than the organic listings they displace, whereas ads in the electronics category convert with a much lower probability. However, the superior performance of the succeeding organic listings compensates most of the lost conversions at the ad slots in electronics-related searches. This happens due to the positive spillover effects of poor quality ads. We also find that ads impose a significant negative externality on the organic listings they demote in both the categories.

■ SA12

Room 745, Alter Hall

Mobile Marketing I

Contributed Session

Chair: Lan Liang, University of Colorado Denver, Business School 4110, 1475 Lawrence Street, Denver, CO, 80202, United States, lan.liang@ucdenver.edu

1 - Location, Selection and Influence in Mobile Environments

Marcel Goic, Assistant Professor of Marketing, University of Chile, Beauchef 851, Santiago, 8370439, Chile, mgoic@dii.uchile.cl, Liye Ma

Firms interact with their customers through both direct channels and indirect communications via social networks. The key to successful integrated marketing communications is the identification of the separate effects of these interactions. The recent rise of mobile marketing adds an additional layer of complexity, as the location and context in which customers receive promotions affect their responses. In this study, we use a unique dataset from a mobile platform that sends geo-targeted coupons to customers and allows them to recommend offerings to friends, to empirically investigate the effectiveness of location-based targeting and social networks in reaching and converting consumers, and to decompose the effect of friend's recommendations in its selection and influence components. Our results suggest that geo-targeting is effective, but mostly for shopping oriented locations. We also find significant effect of friend recommendations, which is explained almost entirely by the selection effect.. Moreover, this effect can be enhanced if recommenders are more selective and have stronger ties with the recipient. These findings provide direct guidance for developing effective mobile targeting strategies.

2 - How Does Local Market Facilities Drive Mobile Digital Consumption?

Xuebin Cui, Tsinghua University, Room 7503, Building 17 , Tsinghua University, Beijing, 100084, China, cuixb.14@sem.tsinghua.edu.cn, Ting Zhu, Yubo Chen

With the widespread use of the mobile internet in recent years, mobile digital consumption becomes an important part of user daily life consumption. Mobile digital consumption is changing the market landscape. It is very important to understand how offline local market facilities affect mobile digital consumption. In this paper, we study whether the mobile digital consumption can be driven by the local accessibilities of the infrastructure. Using a unique data of individual-level mobile APPs adoption and usage behavior across more than 300 cities in China, we find that consumers with lower access to retail outlets use more mobile e-commerce APP while that consumers with lower access to education facilities use less mobile education APP. Our findings suggest that in the emerging market the mobile internet has the potential to mitigate the inequality of accessing the physical infrastructure, such as the access to retail facilities. However, with technology itself, it is challenging to reduce other aspects of inequality of accessing the infrastructure, especially for those requiring additional human capital input.

3 - A Bivariate Timing Model of User Acquisition and Retention of a Mobile Wallet

Lan Liang, University of Colorado Denver, Business School 4110, 1475 Lawrence Street, Denver, CO, 80202, United States, lan.liang@ucdenver.edu, Ty Henderson, Garrett Sonnier

Mobile payment is one of the most interesting development in mobile commerce with a 32% CAGR growth rate in terms of market value, yet most mobile payment apps suffer from low repeat usage rate, as most mobile apps. Extant research in mobile marketing have focused largely on the effectiveness of mobile technologies or mobile platforms as targeting and promotional tools, as well as a few limited behavioral outcomes as the circumstances of app downloads and app opening patterns. However, there has been a lack of systematic investigation on user acquisition and retention with regards to a mobile app, leaving a wide gap in the literature on mobile marketing. Using a unique dataset that contains individual-level actual app usage data from an emerging mobile payment app, we address both the acquisition and retention processes simultaneously using a bivariate timing model with Gaussian copula, and empirically investigate the effects of marketing and operational factors on each of the two processes, as well as the relationship between acquisition and retention. Our results of the analysis suggest that while an aggressive “onboarding” promotion has a positive effect on user acquisition, it does not have any effect on subsequent retention. In addition, we find a negative duration dependence on both user acquisition and retention which is adversely compounded by a negative correlation between the two processes, and we discuss novel managerial insights on the roles of marketing and operational factors in managing mobile customers.

■ SA13

Room 746, Alter Hall

New Products and Innovation II

Contributed Session

Chair: Kristopher Keller, Assistant Professor, University of North Carolina at Chapel Hill, 300 Kenan Center Drive, Chapel Hill, NC, 27599, United States, kristopher_keller@kenan-flagler.unc.edu

1 - Backward Compatibility in Product Upgrades: An Empirical Analysis of the Home Video Game Industry

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Product upgrades and improved product versions form the cornerstone of new product strategy in several product categories, such as electronics, computer hardware and software, and other hi-tech products. A key decision facing firms introducing upgraded products is the inclusion of backward compatibility with the previous version(s) of complementary products. On the one hand, the backward compatibility feature helps retain users. On the other hand, it is expensive and delays user adoption of newer versions. Some firms offer this feature but others do not. For example, in the video game console market, Microsoft's Xbox One offers backward compatibility, while Sony's PS4 does not. While backward compatibility can boost revenues for the newer generation console (e.g., by incentivizing gamers with inventory of older generation games to upgrade), it can also potentially cannibalize sales of game titles meant for the newer generation console. This paper disentangles these effects and estimates the impact of backward compatibility on the sales of video games and consoles, using data relating to Microsoft's 2015 decision to allow backward compatibility for its newly launched version of Xbox One. The data for the study come from the largest U.S. retailer of video games and consoles with over 4,000 stores and an ecommerce site, including purchases by over 32 million shoppers during a six year period (2011-2016). We test and quantify the impact of backward compatibility feature on the sales of games and consoles of both the older and the newer versions of the console through a difference-in-differences approach using a synthetic control group. Our research offers managerial insights on the trade-offs associated with the provision of backward compatibility feature in product upgrades.

2 - Can Fixed Fee Cure Fraud in Credence Goods Market: Evidence from Singapore's Taxi Service

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In April 2016, Singapore's largest taxi company introduced a flat fare pricing option, along with the metered fare option, into its trip booking app. By utilizing the detailed trip-level data around this exogenous event, we empirically investigate the impact of this new option on the fraudulent behaviors of drivers in this credence goods market. We find that drivers in flat fare trips drive significantly shorter distance, in comparison with standard metered trips of the same origin and destination, suggesting that introducing flat fare option into credence goods markets might potentially alleviate the overtreatment issues. However, by utilizing a difference-in-difference framework, we further discover significant and negative spillovers from flat fare trips to non-flat fare trips. In particular, we find that the drivers affected by flat fare options drive significantly longer distance for non-flat fare trips after the policy change, probably because the affected drivers intend to compensate for the relative income loss caused by flat fare orders. We discuss the implications of our findings from the perspectives of riders, drivers and social planners in a market for credence goods.

3 - Modeling Diffusion of Ubiquitous Information Technology

Hirokazu Takada, Baruch College/City University of New York, One Bernard Baruch Way BOX B12-240, New York, NY, 10010, United States, hirokazu.takada@baruch.cuny.edu, Kaichi Saito, Nobuhiko Terui, Masataka Yamada

IT products with multiple functions, such as smartphones with fast Internet connection along with PCs, provide ubiquitous access to the Internet. The comprehensive framework was developed to model diffusion processes of accessing to the Internet, and we consider heterogeneity of adopters defined by adoption processes, a need for more generalized than the successive substitution model, an identification of adoption processes based on sequences of adopting different technologies, and network externalities. We propose a Norton-Bass model capable of allowing the switching from the new to the old technology developed based on the generalized Norton-Bass model. Empirical analysis using the data of Internet subscriptions via PCs and digital cell phones shows the significant interactive effects between PC and cell subscription processes, and the model provides an excellent fit to the data.

4 - To Be Different, Or to Be the Same? The Impact of New National Brand and Private Label Skus on Retailer Category Performance

Kristopher Keller, Assistant Professor, University of North Carolina at Chapel Hill, 300 Kenan Center Drive, Chapel Hill, NC, 27599, United States, kristopher_keller@kenan-flagler.unc.edu, Marnik G. Dekimpe, Inge Geyskens

This paper studies the importance of product uniqueness in new SKUs' ability to grow retailers' category sales. So far, research has focused on the success of product lines instead of SKUs, and has abstracted from SKU proliferation of the existing offerings (Lamey et al. 2014). This stands in stark contrast to the fact that "many more of the decisions made by consumers, manufacturers, and retailers occur at the level of the SKU" (Fader & Hardie 1996). Second, most prior research efforts have been directed towards consumers' perceptions of unique new products, but did not provide evidence for their ability to grow retailers' category sales, which is what retailers as opposed to national brands (NB) care about. Third, extant research has made abstraction of the success of new private label (PL) SKUs, which made sense in a setting of predominantly me-too PLs. Today, however, more than 35% of innovations are made by retailers rather than brands. Hence, the authors study both NB and PL SKUs. Using household-panel data and rich information on up to 28 product attributes per category (11 attributes on average), the authors construct a nuanced SKU-level measure of uniqueness and examine the performance implications of >5,000 new SKUs across >150 product categories at the leading Belgian CPG retailers over a 7-year period. The authors study 4 research questions: (1) How do more vs. less unique new SKUs affect a retailer's category sales? (2) How do the new SKU's parent-brand characteristics shape the effect of more vs. less unique SKU additions on the retailer's category sales? (3) How does the competitive structure of the product category shape the effect of more vs. less unique SKU additions on the retailer's category sales?, and (4) To what extent do the answers to the previous questions differ between NBs and PLs?

■ SA14

Room 607, Alter Hall

Marketing & Innovation

Contributed Session

Chair: Vijay Ganesh Hariharan, Erasmus University Rotterdam, Rotterdam, Netherlands, hariharan@ese.eur.nl

1 - Estimating the Cost of Privacy in the Adoption of Usage-based (auto) Insurance using Individual Sensor Data

Charles B Weinberg, University of British Columbia, Sauder Business School, Henry Angus Bldg, Rm 669, Vancouver, BC, V6T 1Z2, Canada, weinberg@sauder.ubc.ca, Miremad Soleymanian, Ting Zhu

Usage-Based Insurance (UBI) is a recent auto insurance innovation that enables insurance companies to collect individual-level driving data, provide feedback on driving performance, and offer individually targeted price discounts based on each consumer's driving behavior. In UBI programs, consumers make trade-offs between their concern for privacy and the premium savings gained by allowing for their driving behaviour to be monitored for up to 26 weeks (in the company we study). Once enrolled, customers can drop out at any time, but receive a lesser discount the earlier they do so. Using detailed information on insurance premiums, adoption and retention decisions of customers, and individual driving behavior (as measured by sensor data) for the UBI adopters, we build and estimate a dynamic structural model to examine the effect of privacy concerns on adoption and retention of UBI policy. Our dynamic structural model allows for the observed and unobserved heterogeneity across different group of customers. Preliminary results suggest that privacy affects the decision of consumers to adopt UBI, but that privacy costs are heterogeneous across demographic characteristics. Counterfactual analysis after estimating the parameters of our structural model helps us to examine the effect of different pricing policy on customer responses. We also use a natural experiment caused by a major, widely reported, data breach in the retailing industry to examine the effect of changing privacy perception on UBI usage by considering the UBI customers' responses before and after the data breach event. We find that the data breach is associated with a short-term decrease in weekly retention rates among customers who are currently being monitored.

2 - Manufacturers as Contestants in Sport Championships: An Assessment of Marketing and Innovation Outcomes

Vijay Ganesh Hariharan, Erasmus University Rotterdam, Room H15-13, Erasmus School of Economics, Rotterdam, 3062PA, Netherlands, hariharan@ese.eur.nl, Yvonne van Everdingen, Stefan Stremersch, Stefan Stremersch

Several manufacturers make substantial investments to set up teams to compete in sport championships. However, no systematic analysis of the returns from such investments exists. In this study, we conceptualize and empirically estimate the potential breeding and branding effects from manufacturers' involvement in championships. We gather historical data for 30 car brands of 16 manufacturers over the period 2000-2015 regarding their participation, spending and performance in Formula One (F1) championships, monthly patent citations, annual R&D budgets, monthly sales levels, and monthly advertising expenditures. As to the breeding effect, we find that only few manufacturers benefit in terms of innovation performance, while most don't. Manufacturers only achieve better innovation performance from their F1 involvement if they complement it with high R&D spending. As to the branding effect, although all brands achieve better sales performance from their F1 involvement, brands that spend relatively little on advertising benefit the most. These findings may guide manufacturers in budget allocation decisions on sport championships, R&D and advertising. In addition, the conceptual framework we offer may guide analysts to assess performance outcomes from manufacturers' investments in sports championships.

■ SA15

Room 603, Alter Hall

CB – Information Processing & Adoption

Contributed Session

Chair: Xuefeng Liu, Loyola University Maryland, 4501 N Charles Street, Baltimore, MD, 21210, United States, xliu@loyola.edu

1 - Impact of Friendships Among Customers on their Perceived Value from Consumption

Prashant Mishra, Professor, Indian Institute of Management Calcutta, D.H.Road, Joka, Kolkata, 700104, India, prashant@iimcal.ac.in, Diptiman Banerji, Ramendra Singh, Rebecca G. Adams, Rajiv Kumar

Value creation is a key task for marketers. Researchers suggest that value is created by customers in their usage experiences—a notion of value referred to as "value-in-use" or "customer perceived value" (CPV)—and each interaction at a touchpoint influences such value creation. Our study investigates the effect of consumer friendships on CPV in the context of joint consumption. We hypothesize that the presence of a friend increases the CPV from a joint consumption experience (assuming a positive interaction). We suggest that an increase in positive affect (PA) and thought confidence (TC) levels mediate this relationship. We also argue that the change in CPV leads to a corresponding change in re-patronage intention (RPI). We further posit that mental intangibility (MI) acts as a moderating variable for the path from PA to CPV and from TC to CPV. We test our hypotheses over three experimental studies. The first two are 2 X 2 experiments consisting of two conditions (friendship: alone and with friend) X two service situations (MI: low and high) and a positive interaction is primed. In both these studies, we get support for the mediating effect of PA and TC (with the latter being stronger), and the moderating effect of MI. Our third experiment (a simple two-way experiment, with no manipulation of MI) tests a potential boundary condition of the hypothesized friend's influence when there is a lowering of PA. We find that consistent with the lowering of PA, CPV significantly reduces in the presence of a friend as compared to the alone condition.Overall, we get empirical support that the presence of a friend affects CPV, and this change is mediated by PA and TC, with TC emerging as a stronger mediator. Our experiments also support the notion of MI as a moderator. Further, we show that the presence of a friend influences RPI as well. We also study the boundary conditions of the impact of friendship, and the results strengthen our conclusions. In all, over three experimental studies, we find considerable support for our hypotheses. Our findings are significant from both a theoretical and a managerial perspective.

2 - How Do Medias Influence the Switch of Attitudes & Purchase of Customers (e-wom Mainly)

Yufei Zhou, Keio University, Tokyo, Japan, yuhiyuhi0729@gmail.com

People used to be only able to ask those who are close enough for them to access for advice while gathering information about a purchase. However, in modern life, internet makes it possible and easy to search for comments and reviews about the merchandises they are interested in. The study aims at finding that whether people who access websites such as e-WOM sites, blogs, forums and websites like twitter, tend to change (or keep) their attitudes to goods and brands and switch purchasing more easily (or hardly) than those who do not. In addition, other medias like TV, magazine and homepage where companies put their ads also influence switch of attitudes and purchase. Regarding e-WOM as a new media factor and then figuring out a switching model connected to medias is my goal. In this study, I use a unique single-source dataset which contains 3 parts, main data (attitudes and purchase records), advertising data (TV, magazine and radio) and website data, answered by a sample of 3000 people, and is collected twice at different time by the largest consulting firm in Japan, Nomura Research Institute, Ltd.. With the conclusion obtained, companies can possibly consider a more efficient pattern of using medias to attract new customers from their rivals.

3 - Perception and Adoption of Alternative Payment Methods Across Socio-economic Classes – Evidence from Emerging Economy

Ashita Aggarwal, Professor of Marketing, SPJIMR, Bhavans Campus, Mumbai, 400058, India, ashita.aggarwal@spjimr.org, Ranjan Banerjee, Om Narasimhan, Xiaolin Li

Research has stated that the use of a credit card as a payment mechanism increases the propensity to spend as compared to cash in otherwise identical purchase situations (Feinberg 1986; Hirschman 1979; Prelec and Simester 2001; Soman 2001), referred to as the credit card premium. Though there is research conducted on the effects of credit card usage on consumers' purchasing behaviour and perception of product features in marketing literature, less work is done to understand the adoption of payment methods various consumer demographics on use of different payment methods. Recent research on emerging markets also highlighted the difference in adoption of modern retail across socio-economic classes in India. (Narayan, Rao and Sudhir, 2015). We extend the literature on differences in consumer adoption across socio economic classes by studying differences in the use and adoption of alternative payment systems in the emerging markets. Through a unique natural experiment, we are able to assess the impact of alternative payment methods on revenues of two retailing modes-home delivery and in store retailing for a restaurant in India. In an unprecedented government action, high value currency denominations were suddenly withdrawn, leading to cash scarcity and income impact, which differed across socio economic classes. A unique real data set allows us to study impact of scarcity on consumption habits and differences in approach to alternate payment methods across socio economic classes across delivery formats. We use a difference in difference approach to understand the difference across socio economic classes and delivery formats. We extend generalizability of the findings by conducting a related laboratory experiment to address generalizability concerns. Our study contributes to the literature exploring understanding of adoption formats across economic classes in emerging markets. The results of the study would help marketers understand the adoption of alternate payment methods across socio economic classes and hence help in pricing and payment method decisions.

4 - The Interactive Impact of Headline and Body Copy on Ad Effectiveness

Xuefeng Liu, Assistant Professor, Loyola University Maryland, 4501 N Charles Street, Baltimore, MD, 21210, United States, xliu@loyola.edu, Jason Zhang, Jibo He

In both online and offline settings, it is common for an ad to include a headline and body copy. The headline presents a positioning claim that highlights key selling points, whereas the body copy presents additional information. In examining the impact of the ad, prior research treats the effect of ad headline and body copy as additive. This research, however, shows the effect of headline and body copy as interactive, in that the different positioning strategies of a headline (e.g., focus on specific attributes vs. abstract benefits) would bias how consumers process the information in the body copy and thus their product attitudes. Following the hypothesis-testing theory (Deighton 1984), we propose that consumers view positioning claims in ad headlines as tentative hypotheses and use the information in the accompanying body copy to test these hypotheses. Consistent with this perspective, we predict that relative to abstract positioning headlines, attribute-specific headlines lead to more (less) favorable product attitudes when data from the body copy confirm (do not confirm) positioning claims. Several lab experiments support these predictions, including an eye-tracking study offering evidence on the proposed processes. Our research extends the hypothesis-testing theory by demonstrating that tentative hypotheses can be formed and tested within an ad (vs. tested with information outside the ad, as in the original theory). Additionally, we show that headlines influence consumers' processing of body copy, a mechanism largely ignored by previous research—offering practical guidelines for the development of effective headlines and body copy.

SA16

Room 231, Alter Hall

Trend Analysis

Contributed Session

Chair: Christian Hughes, University of Pittsburgh, 7040 McClure Ave, Swissvale, PA, 15218, United States, cah185@pitt.edu

1 - Predicting Customer Gender Based on Network Behavioral Trends

Kyler Hart, Western Kentucky University, 220 College Heights Blvd, Bowling Green, KY, 42101, United States, kyler.hart206@topper.wku.edu, Everett Taylor

Mobile phone network marketers are responsible for segmenting customers based on behavioral patterns associated with mobile phone usage. These segments offer a diverse range of customer profiles, and provide information regarding professional and residential use, contractual data, and various network activity trends. By developing a regression model, marketers can predict with a certain accuracy the gender (Male or Female) of a given customer based on the behavioral data they have collected. This research used logistic regression techniques within the analytical software RapidMiner to estimate a model for telecom segmentation data, retrieved from the book Effective CRM Using Predictive Analytics. The research findings indicated that the gender of telecom customers could be predicted with a certain degree of accuracy using logistic regression. With this method, marketing campaigns can more accurately assess the gender of potential clients and utilize this information in the implementation of advertising techniques.

2 - Advertising Agency Compensation Trends

Sharon Horsky, Hebrew University of Jerusalem, School of Business Administration, Jerusalem, Israel, sharon.horsky@huji.ac.il

A crucial element in the relationship between the firm and its advertising agency is the design of an effective compensation plan for the advertising agency which aligns the incentives given to the agency with the overall objectives of the advertiser. With the increasing complexity in the media landscape we show that advertisers are changing their ad agency connections. In this paper we show changes in the type of agents chosen, the number of agencies used, and the way they are compensated. We also investigate trends in digital agency compensation given the rapid growth in the use of digital advertising. We compare whether the methods and trends in digital agency compensation are different from those in the “traditional” media.

3 - Setting Sequential Group Norms: How the First Follower Determines the Trend

Christian Hughes, PhD Student, University of Pittsburgh, 255 Mervis Hall, Roberto Clemente Drive, Pittsburgh, PA, 15260, United States, c.hughes@pitt.edu, Jeff Inman

This paper examines the influential decision maker in determining group norms in a sequential choice setting. We propose that the decision-maker that is most influential in whether the group will seek variety or uniformity is the second decision maker, referred to as the first follower. While the leader has the power to make the first decision, it isn’t until that behavior is emulated that a social norm is enacted. The norm of the group will be formed around the behavior and the leader-first follower dyad. Unless the first follower moves in solidarity with the leader, a movement cannot gain traction. Similarly, a first follower can signal that it is acceptable for the remainder of the group to differ in opinion from the leader. This paper shows how group norms are determined in a sequential choice setting. When people in groups make decisions sequentially, they are conforming to group norms as they develop. Research has shown that people tend to seek variety when ordering in a group setting (Ariely and Levav 2000). We show that the group norm is determined by the behavior of the second person relative to the first - the first follower. In the first study, we show that people will either choose uniformity or variety depending on whether the first follower mimics or makes a different choice than the group leader. When the first follower chooses uniformly to the leader, the rest of the group will seek uniformity. When the first follower chooses variety from the leader, the rest of the group will seek variety. In the second study, we extend this phenomenon to online reviews using Yelp data and computational linguistics. We will demonstrate that the same pattern of a first follower determining the group norm applies to review valence.

Saturday, 10:30AM - 12:00PM

SB01

Room 32, Alter Hall

Online Platforms and e-Commerce

General Session

Chair: Puneet Manchanda, University of Michigan, Ann Arbor, MI, 48109-1234, United States, pmanchan@umich.edu

Co-Chair: Junhong Chu, National University of Singapore, Singapore, 119245, Singapore, bizcj@nus.edu.sg

Co-Chair: Xu Zhang, University of Michigan, Ann Arbor, MI, 48109, United States, xuzh@umich.edu

1 - B2B bargaining on a B2C Health Platform Market: Bringing Hospitals and Patients Together

Xu Zhang, University of Michigan, Ann Arbor, MI, United States, xuzh@umich.edu, Junhong Chu, Puneet Manchanda

We study the bargaining between a business-to-consumer platform and the business-side of the platform. This platform connects hospitals with patients who seek health checkups. As a business entity, the platform negotiates with hospitals on the depth of price discount, method of payment (online or offline), and method of clearing (per transaction or monthly). We investigate the relative bargaining power between the platform and hospitals, and how the bargaining power of the platform changes as more individual patients join the platform and more reputable hospitals are contracted. We find that the quality and ownership (public vs. private) of the hospitals are important determinants of bargaining power; the cross-network effect from the consumer-side to the business-side increases the bargaining power of the platform; and the participation of more reputable hospitals also helps increase the bargaining power of the platform with less reputable hospitals.

2 - How Does a Firm Learn in a Changing World? The Case of Prosper Marketplace

Xinlong Li, University of Toronto, 105 St George Street, Toronto, ON, M5S 3E6, Canada, Xinlong.Li13@Rotman.Utoronto.Ca, Andrew Ching

Most marketing and economic research assumes that the fundamentals of the population being studied do not change frequently over time. However, if this assumption fails, and a firm applies the model based on the old data, it may make suboptimal decisions. This problem is referred to as concept drift in machine learning. In the case of Prosper, a leading peer-to-peer (P2P) lending platform, concept drift is likely important because the fundamentals of borrowers and lenders tend to change with the economic environment over time. We study how Prosper makes use of the past data to learn about the riskiness of new loan applications, and the preferences of borrowers and lenders. To achieve this goal, we develop a structural model where Prosper categorizes loans based on their riskiness (and hence sets the interest rate) to maximize the expected revenue. Prosper takes into account how the interest rate would affect the demand and supply for loans on its platform, and the truthfulness of the risk categorization (which could affect Prosper’s reputation). We investigate a range of machine learning methods which could be employed by Prosper, and find evidence that Prosper adopts a method which discounts the data older than six months very heavily. Although this approach outperforms those using all the past data, it is not the optimal way to use the data. In our counterfactual experiments, we show that (i) pooling data from similar economic environment can increase revenue by about 8%; (ii) using an ensemble method can increase revenue by 10.26%.

3 - Hybrid E-commerce Platform: When an Online Retailer Offers Own Delivery Service

Banggang Wu, Tsinghua Universit, Room 224, Shunde Building, Tsinghua Universit, Beijing, 100084, China, wubg.12@sem.tsinghua.edu.cn, Yubo Chen, Prasad Naik

The imbalanced development of logistics and payment makes it difficult for an online retailer to reduce the uncertainty of online shopping in emerging markets. In response, some online retailers establish a hybrid e-commerce platform in the hope to reduce online shopping uncertainty, and thus to establish customers’ trust in the platform and increase their purchases. Based on two natural experiments arising from JD.com’s initiative of establishing its own delivery service, we examine how the setup of a hybrid e-commerce platform influenced customers’ shopping behaviors between 2009 and 2013. We find that the founding of a hybrid e-commerce platform led customers to increase purchases by 7 to 10 percent at city level. In addition, we find that the sales boosting effect is greater for (1) cities with less mature shipping service, (2) light-buyers, (3) categories with higher uncertainty, and (4) products with less discounts. The results are consistent with the interpretation that the establishment of a hybrid e-commerce platform improves shoppers’ trust in the online retailer. Thus, a hybrid platform does more than to speed up the delivery, but more importantly, it helps to build customer trust in the business.

4 - Up-lending and Down-lending: The Signaling Effects of Loan Requests

Ruikai Zhou, Chinese University of Hong Kong, 12 Chak Cheung Street, Cheng Yu Tung Building, NT Hong Kong, Hong Kong, zhouruikai@baf.cuhk.edu.hk, Mantian Hu, Yuxin Chen

Microloan lenders are often flexible in fulfilling the borrowers' loan request. Besides lending as requested, they can also lend more money to applicants than requested (up-lending) or less than requested (down-lending). Previous literature on loan default behavior does not consider such flexibility in loan contract design, assuming the sizes of the initiated loans to be exactly the same as requested. We obtain a dataset from an online microloan lending company. In the data, initial loan requests and final loan decisions can be separately observed. This facilitates us to separate signaling effect of requested loan size from liquidity constraint effect of final loan size on default risk. Given that loan request can be a signal of the applicants' hidden status of loan repayment ability, we develop a theoretical model to analyze how firm should optimize lending flexibility in contract design. We show in our model that up-lending helps extract profit from those safe borrowers signaled by their conservative loan requests, while down-lending controls the exposed risk required to maintain a separating equilibrium of the loan request signal.

■ SB02

Room 33, Alter Hall

Dynamic Pricing and Revenue Management: Advance-selling Market

General Session

Chair: Mingyu Joo, The Ohio State University, Columbus, OH, 43210, United States, joo.85@osu.edu

Co-Chair: Robert E Sanders, The University of Chicago, Chicago, IL, United States, robs@uchicago.edu

1 - Season Ticket Buyer Behavior and Secondary Market Options

Yanwen Wang, University of Colorado Boulder, Leeds School of Business, 995 Regent Drive, Boulder, CO, 80309, United States, yanwen.wang@sauder.ubc.ca, Michael Lewis, Chunhua Wu

Sports franchises derive significant portions of their revenues from season ticket holders who pre-purchase tickets with large price discounts but significant uncertainty of game quality. A recent trend that may have meaningful consequences for season ticket management is the development of legitimate secondary markets. This research investigates the value of secondary markets to season ticket holders. We find that, on one hand, secondary markets provide an option value to list tickets to resell in addition to attendance and forgoing. On the other hand, the secondary markets may attract listing, push down resale prices, and make the resale option unattractive. We assemble a unique panel data that combines season and single ticket purchase records with ticket usage records on attend, forgo, list, and resale. We build a structural model of ticket purchase and usage. Our policy experiments suggest that overall secondary markets increase season ticket purchase rates by 5.97%, equivalent to $2,633,394 revenue increase over 6 years. The impacts of secondary markets are most pronounced for lower quality seat tickets.

2 - Selling Mechanisms for Perishable Goods: An Empirical Analysis of an Online Resale Market for Event Tickets

Caio Waisman, Stanford University, 579 Serra Mall, Stanford, CA, 94305, United States, cwaisman@stanford.edu

Which selling mechanisms should sellers use to sell their goods? Even though this is one of the most fundamental decisions a seller can make, there is little empirical research on mechanism choice. This paper takes a step in this direction by analyzing the choice between auctions and posted prices in the context of a scarce perishable good: National Football League (NFL) tickets. Using data from eBay, this study estimates a structural model in which heterogeneous, forward-looking sellers optimally choose which selling mechanism they use. Counterfactual results suggest that sellers would experience an average 11.45% increase in expected revenues if auctions were removed and an almost 26% decrease if posted prices were. In turn, consumers would be un- ambiguously harmed if the platform specialized in either mechanism. These results can be useful not only in the context of perishable goods but also to improve general platform design.

3 - Dynamic Pricing and Timing of Upgrades

Xiao Zhang, UT Dallas, 800 W. Campbell Rd. SM 30, Richardson, TX, 75080, United States, xiao.zhang@utdallas.edu, Metin Cakanyildirim, Ozalp Ozer

Upgrading is a travel industry practice used to mitigate supply-demand mismatches among products of different quality levels. Such upgrades are usually implemented either at the booking time or at the check-in time. In this paper, we consider dynamically-offered upgrades between the booking and the check-in times by a firm that sells two types of products (premium and regular). The firm decides on the timing and quantity of upgrades. Customers who purchased the regular product may be offered upgrades via notifications (e.g., marketing emails) containing a link to an upgrade website. A regular product purchaser either accepts or rejects the upgrade offer after clicking the link and observing the upgrade fee (price) dynamically determined by the firm. The upgrade is time limited. When the upgrade process is not profitable, the firm can stop it by deactivating the upgrade links. Formulating the firm's revenue maximization problem as a dynamic program, we show that the optimal upgrade policy is of a pulsing type. The firm either maintains zero or the maximum number of active links. Both the optimal number of active links and the optimal upgrade fee are monotone with respect to the leftover capacities. Finally, through a systematic numerical study, we quantify the revenue improvement from industry standard check-in fixed-price upgrades to dynamic pricing and timing of upgrades. We also identify the market environment, in which the revenue improvement is significant across various models.

4 - Temporal Distance and Price Elasticity: Empirical Investigation of the Cruise Industry

Mingyu Joo, The Ohio State University, 2100 Neil Ave., Columbus, OH, 43210, United States, joo.85@osu.edu, Kenneth Wilbur, Dinesh Gauri

The conventional view of advance-sales industries is that aggregate demand becomes less price-elastic as the advance sales period proceeds. This view has substantial empirical support but is based on analyses of data from a single industry: air travel. We explore how the response of demand to price changes with temporal distance in a large, proprietary dataset of Florida cruise prices, bookings, product attributes and advertising. We offer the first evidence that, unlike the airline-based conventional wisdom, cruise demand becomes more sensitive to price during the advance sales period. The pattern is large enough to appear in data visualizations and replicates across models, parameterizations and partitions of the data.

■ SB03

Room 34, Alter Hall

Game Theory in Marketing: Competing Through Cutting-Edge Marketing Practices

General Session

Chair: James M. Lattin, Stanford University, Stanford, CA, 94305-7298, United States, jlattin@stanford.edu

1 - The Charm of Behavior-based Pricing: When Both Firms and Consumers Base Their Decisions on Purchase History

Wilfred Amaldoss, Duke University, Durham, NC, United States, wilfred.amaldoss@duke.edu, Chuan He

Technology is making it easier for firms to track consumers' purchase history and leverage the information in setting prices. The extant literature on behavior-based pricing (BBP), however, casts doubt on the value of consumers' purchase history. It shows that BBP hurts firms' profits under general conditions. Yet, in practice we see firms widely using BBP. Moreover, prior literature on BBP has neglected the empirical evidence that consumers care about not only the consumption utility derived from a product but also the gain-loss utility in comparison to the reference product. This paper explores the practice of BBP in a horizontally differentiated market where consumer taste is diverse and consumer utility is reference dependent. Our analysis shows that when consumer valuation is low, BBP can improve firms' profits even in the absence of reference dependence. When consumer utility is reference dependent, firms can benefit from BBP even if consumer valuation is high Moreover, this result is robust to how consumers form the reference price, whether they anchor on the current period price or the historical price of the reference product.

2 - Competitive Information Revelation

Ganesh Iyer, University of California-Berkeley, Berkeley, CA, United States, giyer@haas.berkeley.edu, Shubhranshu Singh

Firms may have information about own and rival's products that is not known to consumers. This information, if disclosed to the consumers, may change their product evaluations. We investigate competing firms' incentives to disclose such an information, which may be positive or negative. We refer to the firms' strategy of disclosing own positive information as positive communication and disclosing rival's negative information as negative communication. Consumers make inferences about the information that is not disclosed and update their product evaluations. We show the consumers' inference, about the information that is not disclosed, becomes more favorable if firms engage in more negative communication. This is because consumers believe firms are more likely to be uninformed when they expect firms to engage in more negative communication but firms remain silent. The implication is that if firms are more likely to be informed they become more likely to engage in negative communication. We also find that firms engage in negative communication only when the consumers' outside option is sufficiently small. Engaging in negative communication, if consumers' outside option is large, results in consumers mainly switching to outside option instead of to the firm that engages in negative communication.

3 - Coalition Loyalty Program Not Working? Maybe You're Doing It Wrong

Pedro Gardete, Stanford University, 655 Knight Way, Stanford, CA, 94305, United States, gardete@stanford.edu, James Lattin

While the institutional features of coalition loyalty programs are relatively well established, the profitability conditions are often subtle and not well-known. This paper considers a setting in which each of two competing firms may form a coalition loyalty program with one of two firms in a different market. Firms in the same program jointly set the reward to be awarded to consumers who buy from both coalition partners, but they set their own prices independently. We find that these programs are profitable for all firms, even when no value is created by the mere existence of rewards (i.e., when firms and consumers value $1 worth of rewards equally). The intuition is that joint loyalty programs allow each member to leverage its partner's market power and charge higher prices. We then explain that this result crucially depends on the sequence in which prices and rewards are decided, which we allow coalitions to decide endogenously. We find that firms are better off setting prices before rewards, but are worse off otherwise. Setting prices before rewards prevents coalition members from trying to steal market share by decreasing prices unilaterally; firms gain commitment power in prices because any effort to take advantage of rewards will be matched by lower reward levels. We further investigate cases with asymmetric competition and find that weaker firms are coveted partners in coalition loyalty programs, and we discuss the managerial implications of our findings.

■ SB04

Room 35, Alter Hall

Digital Transformation of the Marketing Paradigm

General Session

Chair: Andreas Lanz, University of Mannheim, C8, 20, Mannheim, 68159, Germany, lanz@bwl.uni-mannheim.de

1 - Putting Brands in Context

Verena Schoenmueller, Columbia University, 930 St Nicholas Avenue, Apartment 6, New York, NY, 10032, United States, vs2542@columbia.edu, Oded Netzer, Florian Stahl

One of the most useful bases for market segmentation is preferences-based segmentation. However, one of the difficulties in segmenting consumers based on their preferences has been the limited information regarding consumers' brand preferences especially across product categories. Social media platforms such as Facebook and Twitter provide readily available insights regarding the brand preferences of millions of consumers in the form of brand likes and followerships. Building on a large Twitter dataset incorporating information regarding brand followerships across more than 100M followers of more than 600 brands this paper aims to derive "consumer brand personas", i.e., consumer segments based on their brand affinity across product categories. To derive these latent dimensions of consumer preferences, we build on matrix factorization techniques that allow us to handle large amount of sparse data and let us uncover different latent brand personas based on the brands a Twitter user follows.

2 - The Role of Incentivized Reviews: a Dynamic Perspective

Cindy Zhao, University of Maryland, College Park, MD, 20742, United States, xindizhao@rhsmith.umd.edu, Michael Trusov

Incentivized campaigns have become an effective and efficient way to stimulate electronic word-of mouth (eWOM) in terms of both volume and valence. However, it also has the potential to negatively affect eWOM in the long run. In this paper, we investigate the impact of incentivized reviews on subsequent reviewing behavior. We empirically model the dynamic effect of incentivized reviews using Amazon.com review data collected across multiple product categories. Our results show that after the incentivized review enters the system, ratings of subsequent organic reviews first decrease but then recover over time. The temporary decline in ratings is significant after we capture the time and order trend as well as other factors known to influence product ratings. We employ natural language processing techniques to investigate how the composition of subsequent reviews changes due to the incentive disclosure.

3 - Board Interlock Networks and Marketing Department Power

Peter Ebbes, HEC Paris, Paris, France, ebbes@hec.fr, Frank Germann, Raj Grewal

It is now well established that marketing department power in firms is important for firm outcomes including firm performance. Surprisingly, however, marketing department power in many firms is low, and some research even suggests that it is decreasing. Seeking to address this apparent disconnect, the authors propose that the board of directors is a critical but neglected driver of marketing department power in firms. In particular, they examine how directors' marketing exposure through board service at other firms affects marketing department power in focal firms. Considering a large sample spanning the 2006 - 2013 period, they find that marketing department power in board-interlocked firms significantly and positively drives marketing department power in focal firms. Moreover, consistent with an information sharing interpretation, the magnitude of this effect varies based on the focal firm's board-interlock network position, where it strengthens as the focal firm's boardinterlock centrality increases, but weakens as the focal firm's board-interlock network constraint increases. These results appear to be robust to alternative explanations. Hence, the results suggest that board members and their social networks significantly influence marketing department power in firms. Therefore, if marketing wants to gain a seat at the strategy table, it must first get the board on board.

4 - Engaging Prospective Influencers – An Alternative Approach to Influencer Marketing in User-Generated Content Networks

Andreas Lanz, University of Mannheim, C8, 20, Mannheim, 68159, Germany, lanz@bwl.uni-mannheim.de, Jacob Goldenberg, Jacob Goldenberg, Daniel Shapira, Florian Stahl

Influencer marketing has become an important tool in various online marketing activities. However, not every firm can engage in effective influencer marketing, because of too high monetary compensations or existing contractual agreements of influencers. We suggest a different approach: a firm can reach out to prospective influencers (based on predictions) and make agreements for future endorsements (while they are still unknown). Considering that only few individuals ultimately become influencers, this requires solving an occurring economic trade-off to decide on how many as well as which individuals to select and engage. Our framework allows evaluating influencer marketing decisions on a risk-return spectrum using the efficient frontier, which we empirically test and illustrate on SoundCloud data using a wide range of prediction models.

■ SB05

Room 232, Alter Hall

Mobile, Algorithm, and Artificial Intelligence (AI) Session VII: Mobile Usage and Customer Welfare

General Session

Chair: Xueming Luo, Temple University, Philadelphia, PA, 19122, United States, luoxm@temple.edu

Co-Chair: Yuchi Zhang, Temple University, Philadelphia, PA, 19122, United States, yuchizhang@gmail.com

1 - Do Spoilers Spoil? An Empirical Study of Movie Reviews using Topic Modeling

Jun Hyun (Joseph) Ryoo, jryoo.phd@ivey.ca

Most movie review sites allow users to post spoilers, which reveal a certain level of movie plots. Conventional wisdom suggests that giving away the plot is likely to reduce the enjoyment of movie consumption of potential moviegoers and therefore hurts the box office revenue. However, spoilers might also signal the credibility of review contents and therefore enhance the informative or persuasive effects of online word-of-mouth (WOM). In this paper, we investigate the effect of spoilers on aggregate box office sales based on a dataset of movies released in the United States from 2013 to 2015. We employ a correlated topic modeling method to extract and quantify the plot element of all spoiler reviews on IMDb.com. We find that the amount of spoiler information has a net positive effect on box office revenue. This positive effect is more pronounced for lower rated movies, the users' consumption of which tend to rely more on movie reviews. We also find a positive interaction effect between the level of plot-related contents in spoilers and review volume. These patterns are consistent with the credibility-enhancement effect of spoilers. Furthermore, controlling for the pre-consumption spoilers, we find that the plot-related information in post-consumption spoilers also leads to more theatrical visits, suggesting that the consumption of movies and spoiler reviews partake in a complementary rather than a substitutive relationship.

2 - User Contribution and its Social-Welfare Value in a Mobile App for Real-Time Traffic Information Around Urban Areas

Chenhui Guo, Michigan State University, 632 Bogue Street, Room N260, East Lansing, MI, 48824, United States, guochen8@msu.edu

We investigate the effectiveness of mobile user contribution with a GPS navigation app, Waze. Waze app users contribute by generating real-time traffic content: primary contribution by posting alerts as well as additional contribution, feedback by commenting and confirmation by putting thumbs-up on the alerts. Our findings from a spatial data approach explain how user contribution mitigates traffic congestion around New York City: reductions of the number, duration, and length of traffic jams. Regarding the primary contribution, while the first alerts—if at least a single alert is initially posted around traffic jams—are effective in mitigating traffic jams, follow-up alerts added over time—a high degree of the number of total alerts—are not. This implies that not the amount of total alerts but a few initial alerts may improve driving conditions: while the few initial alerts generate new and useful information, the follow-up alerts do not add meaningful content due to information redundancy and overload. Additionally, increased comments (feedback) and thumbs-up (confirmation) both reduce the number of traffic jams whereas they have different effects on the duration and length of traffic jams. Confirmation reduces the duration and length of traffic jams whereas feedback does not. This shows that the effectiveness of user contribution is differentiated by the different aspects of traffic congestion: its numeric volume, temporal duration, and spatial length. We discuss the effectiveness of mobile user contribution, crowdsourced by Waze app users, and practical implications on its value for public welfare with the driving quality around urban areas.

3 - Your Movement in the City Tells Your Credit: Credit Default Prediction Based on the Geosimilarity

Jialu Liu, Chinese University of Hong Kong, 12 Chak Cheung Street, Cheng Yu Tung Building, Shatin NT, Hong Kong, liujialu@link.cuhk.edu.hk

Do the people with a high credit default risk visit different locations in the city from where the people with a low credit default risk visit? Based on the consumer-location and loan-repayment data from a leading FinTech company, we empirically found that the geosimilarity, which is defined as "the similarity of instances of consumers based on the distribution of the locations they have been observed to visit" (Provost et al., 2015) can be a critical classifier of the credit default prediction. Two consumers are defined as geosimilarity network (GSN) neighbors to each other if they share at least one visited location during a specific period. Our analysis shows that the GSN neighbors of a person who defaulted on a loan are around three times more likely to default compared to the average default rate and around six times more likely to default compared to GSN neighbors of a person without a default.

4 - The Vicious Cycle of Responding to Negative Comments on Social Media Brand Pages: A Nature Experiment with Facebook Policy Change

Yuchi Zhang, Santa Clara University, Santa Clara, CA, United States, yuchizhang@gmail.com

In the offline world, firms often benefit from responding to consumer complaints. However, the impact of responding to negative comments on social media in the online environment is unclear. Direct responses from the firm may address the negative experience and reduce similar complaints on social media brand pages. However, such responses are observable to fans of the brand on social media and thus may also fuel fans to imitate and voice their own complaints. The authors explore this impact by analyzing the exogenous variations of a Facebook policy that allowed firms and users to directly respond to negative comments posted on brand pages. Results suggest that after the Facebook's policy change, company responses to negative comments on social media brand pages actually increase the volume of negative posts and intensify the negative tone across the Airlines, Automotive, and Hotel industries. Such vicious cycle effects manifest through a "social" mechanism. That is, the effects of company responses on negative posts are stronger for firms with more fans following the brand and liking negative posts. The vicious cycle also exists due to an "economic" mechanism, where such adverse impact becomes more severe when firms offer financial compensations in the response content on Facebook brand pages. These findings caution managers against traditional complaint handling practices in the new era of social media branding.

■ SB06

Room 234, Alter Hall

Behavioral Industrial Organization

Contributed Session

Chair: Prakash Awasthy, Indian Institute of Management-Bangalore, N313 Hostels Block, Bangalore, na, India, prakash.awasthy@gmail.com

1 - Multivariate Analysis of Consumer Preference Structures Across Multiple Categories

Sri Devi Duvvuri, Assistant Professor, University of Washington, 219 Beardslee, University of Washington, Bothell, WA, 98011, United States, duvvuris@uw.edu

That consumers' purchase behavior varies across categories is being documented actively by the marketing science community. The variation in such behavior can be attributed to the heterogeneity in consumer preferences across categories as well as the nature of categories (e.g., perishable goods). In this research, we implement a multivariate tobit model specification that helps deduce how the nature of a category influences a consumer's preference structure not only for that category but across multiple categories. We use scanner panel data across multiple categories to calibrate the model. Over and above critically evaluating the results from this model, we derive marketing metrics using customer survey data from the same panel of customers to derive marketing metrics. We then deduce the (i) effectiveness of a retailer's pricing and promotional policies, and (ii) suggest directions for improving customer relationship management. Given the complex nature of the modeling approach, we use Hierarchical Bayesian methods (MCMC) to obtain model parameters.

2 - Organized Secondary Markets for Limited Edition Products

Prakash Awasthy, Assistant Professor, MYRA School of Business, Near Infosys, Opp. Power Grid, Yelwal, Mysore, 571130, India, prakash.awasthy@gmail.com, Aruna D. Tatavarthy

Firms are known to induce 'scarcity' and 'snob' appeal for their products by rationing capacity. Consumption externality further explains why some consumers value the 'uniqueness' associated with a 'limited-edition' (LE) product. The presence of secondary markets reduces the competitive advantage of firms when consumers have high-quality uncertainty. In this paper, we provide an alternative explanation when a firm might still have a competitive advantage in the presence of a secondary market. We identify two types of secondary markets: organized and unorganized and show that when consumers value product availability, its quality assurance and the uniqueness associated with an LE product, firms benefit by the presence of organized vs. unorganized secondary market. Our results help in evaluating the overall consumer welfare implications of regulating secondary markets and marketplace players in the luxury products, collectibles or antiques segment.

4 - Consumer Resistance

Daniel Halbheer, HEC Paris, Department of Marketing, 1 rue de la Libération, Jouy-en-Josas, 78351, France, halbheer@hec.fr, Marco Bertini, Stefan Buehler

This paper studies the effects of consumer resistance on optimal pricing and cost communication. Assuming that consumer resistance is generated by deviations from a psychological reference point, we show that it reduces the pricing power and profit of a firm. We also show that consumer resistance provides an incentive for a firm to engage in cost communication when consumers underestimate cost. While cheap communication does not affect consumer behavior, persuasive communication may increase sales and profit. Finally, we show that a firm can benefit from engaging in organizational transparency by revealing information about relevant features of the production process.

3 - Preventative Devices and Self-control

Raghunath S. Rao, University of Texas-Austin, B6700 1 University Station, Austin, TX, 78712, United States, raghunath.rao@mccombs.utexas.edu, Julie Irwin, Zhuping Liu

Excessive consumption of many vice goods (e.g., alcohol) has both possible immediate (e.g., a drunk-driving crash) and delayed (e.g., liver disease) negative consequences. The present research models the consumption choices of a consumer population with heterogeneous impatience and varying degrees of sophistication in conjunction with both immediate and delayed consequences of excessive vice good consumption. We show that even when a preventative device (e.g., a designated driver) that could completely eliminate the immediate dangers is available for (almost) free, some consumers forgo it in order to try to use the immediate danger as a soft tool to regulate excessive consumption (e.g., "If I know I don't have a designated driver, then I won't drink too much."). Surprisingly, this "flying without a net" is a successful strategy for some consumers, and we quantify when it is likely to be successful versus harmful. We also demonstrate that the policies that make the provision of preventative devices compulsory could increase consumer welfare under certain conditions but are not Pareto-improving. On the other hand, the policies that exaggerate the likelihood of immediate dangers are unambiguously welfare decreasing. In one extension of the paper, we endogenize the price of a preventative device for a monopolist seller and show that it is non-monotonic in the probability of short-term danger. Another extension of our model shows that if consumers follow a personal strategy of being pessimistic to overcome the self-regulation problems associated with overconfidence, doing so might result in a "boomerang effect" for some consumers who end up over-consuming because of the use of a preventative device.

■ SB07

Room 237, Alter Hall

Social Platforms & Consumers

Contributed Session

Chair: Mengxia Zhang, ACC 306, 3660 Trousdale Parkway, Los Angeles, CA, 90007, United States, zmxmdzmxmd@gmail.com

1 - Social TV and Ad Avoidance

Alexander Bleier, Boston College, 140 Commonwealth Avenue, Fulton Hall 448, Chestnut Hill, MA, 02467, United States, bleiera@bc.edu, Beth Fossen

With television advertising, a more than $70 billion industry, increasingly moving towards a programmatic ad-buying model, being able to measure and explain real-time changes in viewership during individual advertisements, or ad avoidance, is becoming increasingly important. In this research, we explore how social TV, i.e., the joint viewing of television programming alongside the production or consumption of social media conversations about the programming, can be used to gain a better understanding of these dynamics in viewership. Based on a multisource dataset of over 8,000 ad instances for more than 200 brands aired in over 80 programs, corresponding twitter mentions of the ads and surrounding programs as well as second-level ratings data, we estimate a hierarchical Bayesian model to capture the drivers of ratings changes over the course of an advertisement. The results show that social TV activity can indeed significantly explain these dynamics over and above conventionally studied ad and program characteristics. We find especially the interplay of three factors to be relevant: (1) volume of and (2) change in online WOM about the program before an ad airs and (3) position of the ad in its ad break. In particular, higher program-related WOM volumes are associated with less tune-out during ads, but only for ads that air later in their particular ad break. Moreover, ad avoidance is also reduced for ads in programs with higher program WOM volumes that air after a spike in program chatter. Altogether, our results provide television networks and advertisers with important insights to improve their respective social TV, ad positioning, and television advertising strategies.

2 - The Effect of Word of Mouth Volatility on Product Performance

Minjeong Kim, PhD Student, Korea University, Seoul, Korea, Republic of, mkim9@korea.ac.kr, Shijin Yoo

This study investigates the relationship between word of mouth (WOM) volatility, defined as the over-time fluctuation of WOM volume, and product performance. For example, low WOM volatility indicates that there exists a stable amount of WOM in the marketplace. On the other hand, WOM volume could significantly change over time due to many reasons, indicating high WOM volatility. Though marketing literature to date has examined three major metrics with respect to consumer WOM behavior: volume, valence, and variance, this study is the first attempt to propose the fourth important aspect of WOM, its volatility. We hypothesize that WOM volatility plays a negative moderating role on both the volume and valence effects of WOM on product performance. That is, more volatile WOM is expected to attenuate the positive relationship between WOM volume and product performance. In addition, more positive WOM will have less significant effects on better product performance if the WOM volume more fluctuates over time. An empirical test was conducted using online WOM and box office sales data for 124 movies in Korea. As a result, we verified that WOM volatility significantly moderates the relationship between WOM volume and product sales. However, there is no significant effect of WOM volatility on the relationship between WOM valence and product sales. Marketing researchers and managers should notice that WOM volatility may attenuate the volume effects of WOM on product performance.

3 - Effects of Peer Voting and Social Network on User Contribution of Online Knowledge Sharing Platforms

Mengxia Zhang, University of Southern California, Los Angeles, CA, 90007, United States, mengxia@marshall.usc.edu, Lan Luo

In the era of information explosion, getting useful information is like finding “a needle in a haystack”. Consequently, online knowledge sharing platforms are increasingly relying on peer voting systems to harness wisdom of the crowds. Meanwhile, some (but not all) platforms also integrate social networks to motivate content contribution. In this research, we investigate how peer voting and social network affect knowledge contribution and whether they are substitutes or complements. We plan to employ a field experiment where we exogenously increase the total number of upvotes or/and the total number of followers on an online knowledge sharing platform. Preliminary results based on observational data show that peer voting and social network have different effects on user contribution. For peer voting, an increase in number of upvotes increases knowledge contributions for users with low or high number of initial upvotes more than for those with medium number of initial upvotes (U-shape). While for social network, increasing the number of followers increases knowledge contributions for users with medium number of initial followers more than for those with low or high number of initial followers (inverse U-shape). We also find number of followers and number of upvotes are substitutes for motivating user knowledge contribution. This research is among the earliest efforts to study how peer voting affects user content contribution. We are also among the first to examine how the interaction between peer voting and social network affects content generation. Lastly, this is one of the first studies to examine knowledge sharing on online platforms.

■ SB09

Room 239, Alter Hall

Promotions & Effectiveness

Contributed Session

Chair: Nathan Fong, Temple University, Alter Hall 517, 1801 Liacouras Walk, Philadelphia, PA, 19122, United States, nmfong@temple.edu

1 - The Effects of a Promotion on Store Traffic, Conversion, and Customer Expenditures: Evaluation with a Prediction Approach

Ignacio Inostroza-Quezada, PhD (c) in Marketing, Rutgers Business School, Rutgers University, 1 Washington Park, Newark, NJ, 07102, United States, iei5@scarletmail.rutgers.edu, Leonardo David Epstein

Store managers conduct promotions to increase at least one of three measures of store performance: arrival traffic, conversion probabilities, and customer expenditures. These are the three total sales’ components of sales that Lam et al. (2001) identify. The talk presents a new approach to evaluate the effects of a promotion on each of these components: it develops a joint 3-variate time series model, where the variables are the arrival counts, the conversion counts and the average expenditure in one-hour time-bands. The model incorporates explicitly the dependence among the three components. The approach uses data outside the promotion period along with regression models with independent sets of covariates for location and scale parameters, to build counterfactual baseline predictions for each sales component for the promotion period. These baselines assume that the promotion has not occurred. To evaluate the promotion effects on each component, the approach compares the observations to the corresponding baseline predictions during the promotion. This approach has at least three strengths: first, it does not require building a model for the promotion effect. Second, it controls for covariate effects, such as time of the day, day of the week, etc. Third, it measures the effects of the promotion directly on the quantities of interest, arrival counts, conversion probabilities, and expenditures, and not on the scales of parameters which are often difficult to translate into effects on observables. An illustration with data from an actual store combines arrival data from processed video images and sales recorded at sales registers.

2 - Effect of New Product Sampling Using Single Source Data

Akira Shimizu, Professor, Keio University, 2-15-45 Mita, Minato-ku, Tokyo, Japan, ashimizu@fbc.keio.ac.jp

Many papers refer to the effect of product sampling is not only the sales growth of new products, but also the effect of WOM for the potential customers (Holmes &Lett 1977, Jain, Mahajan &Muller 1995). But no papers evaluate both effect of new product sales and WOM using real product sampling data, as there is no research field to observe both real WOM and real buying behavior. The goal of this paper is to find product sampling effect of real new products. In this paper I made single source data field of closed internet WOM community, questionnaires, and receipt data in Japan. I asked that WOM community members to take part in 3 new product sampling campaigns (2 new beer brands and 1soft drink brand). They also asked to post their impressions of these sampling brands on their WOM community. From this campaignes, I found that the trial buying rate of participants on this sampling campaigns is about 10 times higher than that of no participants. Also, some no campaign participants truly buy the new products that the campaign participants recommended at the WOM community. The results offer new insights on the single source data and product sampling.

3 - Have Promotions Become Less Effective Over Time – A Twelve-year Analysis

Anthony Koschmann, Eastern Michigan University, 7415 Willow Creek Dr, Ypsilanti, MI, 48197, United States, akoschma@emich.edu, Scott Neslin, Paul Wolfson

Promotions have long been used by brand managers to spur consumer purchases. Yet, continued use by both the brand and competing brands may diminish the effects of promotions on brand sales over an extended period of time. That is, the size of the short-term promotion “bump” generated by promotions may decrease. The decline could be caused by a combination of store, category, and brand factors. This research investigates the change in promotion effectiveness using weekly data over a twelve-year period of consumer packaged goods using a dynamic linear model (DLM) to allow for systematic changes over time. We model these changes to be a function of store, category, and brand factors. The results show that, on average, price reductions, feature advertising, and in-store displays have become less effective in driving sales.

4 - Conditional Promotions and Purchasing Breadth

Nathan Fong, Temple University, Alter Hall 517, 1801 Liacouras Walk, Philadelphia, PA, 19122, United States, nmfong@temple.edu, Sangsuk Yoon

We investigate the promotional tactics and targeting policies that affect customers’ purchasing breadth by analyzing email and direct mail campaigns for a multichannel retailer. Conditional promotions that require customers to exceed a spending threshold to obtain a reward can motivate customers to search. Consequently, we find them more likely to purchase items from a new category or product line as the threshold increases. Promotional offers for products similar to a customer’s previous purchases generate higher direct response, but lower the chances that a customer will expand the breadth of their purchasing. Thus, conditional promotions can potentially generate long-term benefits by introducing customers to new products, but standard targeting policies that increase direct response can offset the breadth-inducing effects.

■ SB10

Room 605, Alter Hall

Digital Communities

Contributed Session

Chair: Keith Marion Smith, Northeastern University, 360 Huntington Avenue, Boston, MA, 02115, United States, keithmarionsmith@yahoo.com

1 - Role of Marketing in the Evolution of Social Network Platforms

Tarique Newaz, Texas Tech University, 1901 14th St Apt 209, Lubbock, TX, 79401, United States, md-tarique.newaz@ttu.edu, Mayukh Dass

Social Network platforms are now playing a fundamental role in our society. Much discussed and scarcely researched social networking platforms such as Facebook, LinkedIn, WeChat are the base carriers of social network, social media, and social media marketing. These firms are unique as they are not traditional tech companies, nor do they fall strictly under media industry. They somewhat belong to a hybrid industry that is developed to be the epicenter of consumers' information and connection world. In this paper, we focus on the role of marketing in the evolution process of social network platforms. Using a uniquely compiled dataset comprised of more than 25,000 news articles over the last 12 years (2003 - 2014), we investigate the life-cycle of 30 top social networking sites across the globe, and identify the critical marketing factors that play a fundamental role in the evolution of these platforms. We also examine the interplay among diverse stakeholders of SNSs- subscribers, competitors, organizational factors, and government and legal agencies during the evolution process. The paper concludes with insights for practitioners and academics, and outlines detail research streams for future research.

2 - Do Online Reviews Improve Product Quality?

Yang Wang, Assistant Professor, UTEP, 4901 North Mesa St, Apt 3318, El Paso, TX, 79912, United States, ywang12@utep.edu, Alexander Chaudhry, Amit Pazgal

In the absence of accurate product-level quality signals, the network externalities of brand reputation act as a credible signaling mechanism for product quality. We test the theoretical corollary that online reviews, acting as accurate product quality signals, improve independent hotels' quality provision by leveling the playing field for quality competition. We analyze the evolution of online reviews in a big data setting that spans over 200,000 hotels in markets around the world. We provide additional evidence of product quality investments in a regression discontinuity setting whereby managers are incentivized to provide better quality when their hotels' aggregate display ratings approach rounding points on TripAdvisor.

3 - Maybe Donkey Kong Just Needed More Friends: The Dynamic Interactions between Video Game Consumption and Online Social Communication

Keith Marion Smith, Northeastern University, Boston, MA, United States, ke.smith@northeastern.edu, Yakov Bart, Scott A. Thompson, Koen Pauwels, John Hulland

Video game products have undergone explosive growth, now regularly exceeding movie revenues in global markets - however our understanding of what it takes to create a successful product in this category is lacking. Interesting features of that product category include the impact of post-purchase video game consumption on consumption-driven costs and revenues, and the integration of online social communication as a key component of video game playing ecosystems. More broadly, while various products today often include features that facilitate interaction within consumption, and encourage social engagement outside the consumption experience, the contemporaneous influences of post-purchase consumption and social interaction are not well understood. This paper investigates the short-term relationship between video game consumption and online community interaction over fifteen-minute periods. The authors examine these relationships using automated data collection techniques to capture 85 days of consumption and online community activity in fifteen-minute intervals for 34 different game products. Vector autoregressive modeling techniques are employed to understand the influences consumption and online activity have on each other, and the impact that both community metrics and online web trends may have on this relationship between consumption and social activity. The results reveal that community activity has a positive impact on consumption, but that impact can take up to three hours to peak, and generally persists for up to three days. Alternatively, consumption also has a positive impact on community activity, but typically peaks within the first hour, and similarly can persist for up to three days, extending to a week in some cases.

4 - The Impact of Social Media Buzz on Box Office Performance

Lachlan Deer, Dept of Economics, University of Zurich, Schoenberggasse 1, Zurich, 8057, Switzerland, lachlan.deer@gmail.com, Pradeep Chintagunta, Gregory S. Crawford

This study examines the how the dynamics of volume and valence of social media generated word of mouth impacts the box office performance of movies. Our analysis combines the universe of Twitter data for all wide release movies released in 2014-15, along with detailed information on movie characteristics and advertising spending. We use the VADER sentiment lexicon - designed specifically for sentiment expressed on social media, to classify each tweet as either positive, negative or neutral in tone. Our detailed data allow us to document temporal patterns in volume and valence of twitter generated word-of-mouth in the pre- and post-release phases and trace out their influence on box office performance over the duration of a film's theatrical release. Preliminary findings reveal that the pre-release volume of Twitter posts is positively associated with box office returns over the opening weekend of a movie's release; whilst post-release tweet volume and the ratio of positive-to-negative post-release tweets are positively associated with a movie's post-opening weekend box office earnings.

■ SB11

Room 606, Alter Hall

Game Theory and Channel Strategy

Contributed Session

Chair: Eunkyu Lee, Syracuse University, Whitman School of Management, Syracuse, NY, 13244-2450, United States, elee06@syr.edu

1 - Quiet vs. Loud Luxury: Consuming Less to Signal More

Zhenqi Jessie Liu, University of Pennsylvania, 3718 Locust Walk, Philadelphia, PA, United States, zhenqil@sas.upenn.edu, Pinar Yildirim, Zhong John Zhang

In this study, we model consumer's utility from luxury goods and their counterfeit replicas. Consumers purchase luxury brands or counterfeits for their functional and symbolic utility: each product carries a function while allowing the consumer to signal her qualities (such as status or wealth). But when the luxury products and counterfeits are indistinguishable, luxury items cannot perfectly signal these. So consumers have to resort to other tactics. Specifically, our findings suggest that status-conscious consumers will resort to low-key tactics such as consuming fewer branded products to signal their wealth, forming a quiet luxury consumption segment. On the contrary, if there are affordable high-quality counterfeit items in a market, consumers who lack wealth choose to purchase a higher number of goods, forming a loud consumption segment. When the functional utility of a product exceeds the symbolic consumption utility, purchasing fewer items to imitate the wealthy segment is costly for those who lack wealth. Therefore, wealthy and status-conscious consumers have an incentive to reduce their conspicuous consumption and dissociate themselves from those who lack wealth. Our study provides the micro-foundations of the growing trend of quiet luxury and extends the model to give insights about how income inequality in a market can drive the demand for luxury as well as counterfeits.

2 - Contracting and Channel Coordination on Durable Goods Secondary Market with Retailer Competition

Taewan Kim, Sungkyunkwan University, 25-2, Sungkyunkwan-ro, Jongno-gu, Seoul, 03063, Korea, Republic of, tak2@skku.edu, Ryan Choi

We examine a distribution channel of durable goods whose market system may have trilateral monopolists. In particular, we consider a market structure where a manufacturer (i.e., car manufacturer) sells products to consumers through two levels of retailers; one is a direct retailer (i.e. car dealership) which may handle both new and used goods and the other one is an indirect local retailer (i.e., CarMax) that deals with only used goods. Given this situation, the goal of this research is to study the optimal pricing decisions that each player make strategically. For example, how does the direct retailer setup a buyback price (i.e., trade-in value) for potential buyers of its new product? How does this price vary when the indirect retailer appears in the market? How do retailers control these used goods availability? We develop a simple game-theoretical model to address these issues. We start our study with a completely integrated market as a benchmark and then move to an integrated market with an independent local retailer. Then, we extend our analysis to a market with perfectly differentiated retailers. Depending on the values of parameters such as channel acceptance rates or transaction costs, we show the retailer-level competition intensity that derives the retailers' buyback prices and used goods availability. Along with these market characteristics, the manufacturer can make its strategic decisions on new product sales and wholesale price.

3 - The Implications of Market Characteristics for Strategic Interaction in Distribution Channels

Eunkyu Lee, Professor, Syracuse University, Whitman School of Management, Syracuse, NY, 13244-2450, United States, elee06@syr.edu, Shahryar Gehibi, Hwan Chung

Previous studies indicate the presence of a relationship between market characteristics and the type of strategic interaction in distribution channels, but fall short of fully characterizing it. Our in-depth mathematical analysis on this issue completely identifies the linkage between market demand properties and vertical strategic interaction, and demonstrate that a single demand characteristic, demand's decay rate, holds the key. If demand's decay rate increases in price, it leads to vertical strategic substitutability (VSS), whereas vertical strategic complementarity (VSC) is associated with demand's decay rate that is decreasing in price. We also find that the only class of demand functions leading to vertical strategic independence (VSI) is of exponential form. The decay rate of demand is equivalent to the hazard rate of the consumer valuation distribution, which can be evaluated empirically to infer the type of vertical strategic interaction. Interestingly, unimodal distributions lead to VSS, whereas monotonically-decreasing distribution density functions result in VSC or VSI, which suggests interesting implications of product characteristics for distribution channel management strategy. We seek to link these theoretical findings to empirical evidence to demonstrate the presence of different types of consumer valuation distributions and their relationship with different patterns of strategic interactions in distribution channels.

■ SB12

Room 745, Alter Hall

Mobile Marketing II

Contributed Session

Chair: Meghan Pierce, La Salle University, 1900 W Olney Ave, Philadelphia, PA, 19141, United States, Piercem@lasalle.edu

1 - The Economics of Jailbreak

Nanda Kumar, The University of Texas at Dallas, Richardson, TX, 75080, United States, nkumar@utdallas.edu, Juncai Jiang, Liying Mu

As a popular yet controversial topic, jailbreak involves mobile users bypassing the limitations and restrictions imposed by mobile platforms to gain access to apps that are unavailable through the official app stores. In this study, we build a game-theoretic model to explain why 1) mobile platforms such as iOS (by Apple Inc.) and Windows Phone (by Microsoft) develop a rigorous review program to forbid low-quality apps from selling through the mobile platform's sanctioned app store while Android (by Google Inc.) does not, 2) iOS obstructs the jailbreaking behavior while Windows Phone encourages its users to jailbreak the mobile platform, and 3) jailbreaking tablets is made legal in 2010 based on the Digital Millennium Copyright Act but jailbreaking iPhone is illegal until 2015. Interestingly, we find that low-quality apps may be better off with the review program.

2 - Research on the Effectiveness of Personalized Recommendation Driven by Multi-source Big Data in the Context of Mobile Internet

Kai Yao, Central University of Finance and Economics, Xue Yuan Nan Lu, Haidian District, Beijing, 100081, China, jasonyaopku@gmail.com, Yuxin Chen, Ping Tu, Meng Su

With the development of the big data and mobile internet, personalized recommendation system has become a ubiquitous tool for online firms to offer unique shopping experience to the consumers who are searching on their websites. However, the traditional recommender system's performance is constrained by the limited data sources that the firm can access. Meanwhile, the performance of recommender system using multi-source data, as well as the mechanisms of how the recommender system influence consumers' shopping behaviors are largely unknown. This research utilizes field experiment to establish the causal inference between the recommender system based multi-source big data and consumers' online shopping behaviors. This approach can solve endogeneity problem and achieve good external validity. Since the consumers who use mobile devices are more likely to see the recommended products, we proposed a two-stage model to jointly estimate the probability of seeing the recommended products and the probability of clicking those products to avoid the estimation bias. This research explores not only the short-term influence of the recommender system based on multi-source big data on the consumers' shopping behaviors at the focal website, but also the long-term influence of this new recommender system on their shopping behaviors at both the focal website and other external websites. The conclusions of this research project will provide empirical evidence for the big data driven personalized marketing theory and offer important guidance for the firms' personalized marketing practice, as well as the pricing strategy for trading data between firms.

3 - Cultural Influences on Millennial Mobile Marketing Acceptance in China

Meghan E. Pierce, Assistant Professor of Marketing, La Salle University, 1900 W Olney Ave, Philadelphia, PA, 19141, United States, piercem@lasalle.edu, Pingjun Jiang, Xianghui Zhu

Marketers' attention is increasingly focused on digital platforms (Rohm et al. 2012). With 94% of Chinese consumers between 18 to 34 owning a cell phone (Pew Research Center 2017), marketers are capitalizing on the medium that is the most common method of communication among consumers (Bauer et al. 2005) and are projected to spend $65 billion on mobile advertising in 2019 (eMarketer 2015). Given that cell phone use is ubiquitous among consumers and marketers, it is important for marketers to better understand how consumers view mobile marketing messages and what factors influence these perceptions. Recent work in this area has developed models of mobile marketing acceptance (Bauer et al. 2005), including cross-cultural examinations (e.g., Gao et al. 2013; Zhang et al. 2012), using the country level as the unit of analysis. These comparisons, based on Hofstede (1980), overlook the possibility of cultural variation within countries (Yoo et al. 2011). This paper employs survey methodology (n=953) to examine the impact of individual-level cultural values on consumer attachment, privacy concerns, and mobile marketing acceptance among Chinese millennials. Using a structural equation modeling approach, all five cultural values were significantly related to Chinese consumers' attitudes toward mobile marketing. Results indicate consumers who score higher on the cultural values of power distance, uncertainty avoidance, collectivism, and long-term orientation tend to have more positive attitudes toward mobile advertising. However, consumers rated high on the cultural dimension of masculinity hold more negative attitudes toward mobile advertising. Additionally, consumers who score higher on the masculinity dimension have less privacy concerns with mobile advertising.

4 - Information Provision and Streamlined Medical Service: Evidence from a Mobile Appointment App

Nan Yang, National University of Singapore, 15 Kent Ridge Drive, Mochtar Riady Building, 6-3, Singapore, Singapore, yangnan@nus.edu.sg, Changcheng Song, Junjian Yi, Ye Yuan

We examine a mobile outpatient appointment app—-a light-weight information technology innovation—-launched by Chinese hospitals. The objective is to assess the effect of information provision and a streamlined appointment process on hospital operations and the alignment of healthcare supply and demand. Using a longitudinal dataset on hospital operation and a difference-in-differences model, we document that the app increases completed hospital consultations by 9.5%, by boosting registrations by 4.8% and reducing appointment cancellations by 3.4%. The app improves queuing efficiency in overcrowded hospitals and draws demand for underutilized ones. It results in a better match between patient demand and hospital service by directing patients to the hospital and department more suitable to one's medical conditions and to less busy days. Subsequent app launches shorten average waiting time for booked appointments.

■ SB13

Room 746, Alter Hall

New Products and Innovation III

Contributed Session

Chair: Christian Pescher, FAU Erlangen-Nuremberg, Lange Gasse 20, Nuremberg, 90403, Germany, christian.pescher@fau.de

1 - Prelaunch Sales Forecast of Entertainment Products

Peng Zhang, University of Georgia, Athens, GA, United States, vincentz@uga.edu, Guiyang Xiong, Sundar G Bharadwaj

Managers usually consider new product sales forecasting utterly critical and believe a reliable early forecasting method limits resource loss, promotes the optimization of firms' logistics planning, improves manufacturing efficiency, and drives firm value. However, in most instances, it is no easy especially for new products due to a lack of prior sales data. Prior research on new product sales forecasting has relied on initial sales, or sales of look-alike products. Recently, forecasting had utilized user online conversations (electronic word-of-mouth or eWOM) around a pre-released product on social media and online platforms to reliably forecast product sales. However, such activity is rather limited to a few platforms, whose primary function is for social bonding (e.g., FaceBook) and/or creativity thriving (e.g., YouTube, or blogs). Platforms, such as review sites, may play a role in knowledge sharing and transfer, but that is mainly a one-way communication from reviewers to customers. We examine an alternative role of eWOM, namely in a platform for collaborative knowledge accumulation, transformation, and co-creation as an input for new product prelaunch sales forecasting. In particular, we selected Wikipedia's English website as the pilot platform, given its nationwide presence and broad user base. We collected editing activity data on en.wikipedia.org for more than 600 video games which were newly launched in 2015 and utilized a functional data analysis (FDA) method to empirically examine how users' collective knowledge-generation activities on Wikipedia for a video game before its official launch may be used to forecast that game's sales volume post launch.

2 - Empirical Generalization on Failures of New Product Diffusion in Packaged Goods Markets

Makoto Mizuno, Professor, Meiji University, School of Commerce, 1-1 Kanda-Surugadai, Tokyo, 101-8301, Japan, makmizuno@gmail.com, Masakazu Ishihara, Eitan Muller

Marketers launching new products are often faced with failures of the diffusion of innovations over potential adopters, in spite of having performed a thorough pre-launch screening process. Whereas classical diffusion models did not explicitly deal with the possibility of such failures, subsequent studies addressed (1) the failure of transition between adopter segments, e.g., "chasm" (Moore 1999) or "saddle" (Goldenberg, Libai and Muller 2002), and (2) the failure of initial targeting or the existence of "harbingers" (Anderson et al. 2015), and (3) accidental shocks initiating a self-reinforcement process (Salganik, Dodds and Watts 2006). The first two studies emphasized the critical roles of early adopters who are overlapping to some extent between distinct categories, suggesting the existence of specific customers who are not only early adopters but also are "predictors" in multiple markets, unintentionally indicating the success/failure of new product launches by their behaviors. We ask whether these propositions are empirically generalizable across categories. Using the scanner panel data documenting 10-year individual-level purchase histories for 30 categories of packaged goods in two regions in the US, we attempt to discover the stylized facts related to the failures of new product diffusion in a wide range of package goods categories and then test the hypotheses derived from the previous studies. Lastly, we discuss how to develop the comprehensive model of diffusion incorporating the possibility of failures based on our empirical findings.

3 - Disadoption Patterns in Fast Moving Consumer Goods

Koen Pauwels, Professor, 742 Commonwealth Avenue, Newton Center, MA, 02459, United States, koen.h.pauwels@gmail.com, Donald R. Lehmann, Gokhan Yildirim

Despite the long research stream on the adoption and diffusion of new products, little is known about disadoption; when and how consumers stop buying products. Existing disadoption research focuses on either cases where a newer product replaces the old one (technological substitution) or very specific instances of disadoption. The few papers that consider disadoption deal with services. However, fast moving consumer goods experience many cases of consumer disadoption and product discontinuance yearly, with a third of new products perishing in their first year. The ultimate goal of this research is to develop a general model of disadoption as well as a tool to predict the pattern of disadoption for fast moving consumer goods based on aggregate sales data. Based on a conceptual framework for understanding disadoption in general, we analyze as a first step SKU disadoption patterns in the coffee category. Importantly, disadoption differs from adoption in several aspects including, unlike for new product adoption, there is no risk involved because people know what they are giving up and it cues loss aversion, inertia, and possession utility. We empirically model adoption and disadoption at the aggregate level and distinguish several disadoption patterns, such as abrupt versus gradual disadoption, and link the disadoption parameters to the innovation and imitation parameters of initial adoption.

4 - Automated Idea Screening

Christian Pescher, FAU Erlangen-Nuremberg, Lange Gasse 20, Nuremberg, 90403, Germany, christian.pescher@fau.de, Gerard J. Tellis, Jason Bell

Pairs of words that appear often together can be seen as connected. This view allows idea descriptions to be converted into numbers representing the connection strengths of the word pairs. Previous work has used this principle to numerically compare ideas to a reference corpus comprised of Search Results. We call this the Search Result Corpus method. In that work, the metric for measuring distance between ideas and the Search Result corpus is the Kolmogorov-Smirnov statistic. We build on this work by testing the Search Result Corpus Method in a new, uniquely rich dataset from idea submission contests. We attepmt to replace expert judgment with The Search Result Corpus Method. We find that the previously studied metric, the Kolmogorov-Smirnov distance, is only weakly significant in random intercepts regression models, and tends to predict community ratings better than expert ratings. However, expert ratings determine contest winners and so are higher priority. We explore the use of a Random Forest as a prediction method. Random Forests are collections of decision trees estimated on resampled data. When using a Random Forest, we achieve a high degree of fit. The correlation between fitted rankings and actual rankings often exceeds 0.9. In addition, on the task of picking the top 10% of ideas in any contest, the Random Forest model agrees with the expert rankings on at least half of the ideas, and up to 84% in one case.

■ SB14

Room 607, Alter Hall

Marketing Strategy - Brand Equity

Contributed Session

Chair: Arnd Vomberg, University of Mannheim, L 5 1 (Castle), Mannheim, 68131, Germany, arnd.vomberg@bwl.uni-mannheim.de

1 - Pay What You Want Pricing for Digital Goods

So Eun Park, Assistant Professor, University of British Columbia, Sauder School of Business, UBC, HA 565 - 2053 Main Mall, Vancouver, BC, V6T 1Z2, Canada, soeun.park@sauder.ubc.ca, Byung Cho Kim

In Pay-What-You-Want (PWYW) pricing, consumers can pay any price they want for a given commodity, often including a price of zero dollars. Conventional economic theory predicts that consumers would pay as low a price as possible driven solely by their own material payoffs, but prior lab and field experiments have shown that they often pay more than nothing. Interestingly, PWYW adoption results seem to vary by product type in practice. It appears to be sustainable for digital products with many artists and sellers such as Radiohead and Louis C.K. distributing their digital contents under PWYW pricing to their satisfaction, while brick-and-mortar stores often ended up gradually reversing back to the classic posted pricing. In this paper, we examine the viability of PWYW pricing for digital goods based on a widely studied social preference theory that consumers may be concerned with not only their own material payoffs but also the company's. Utilizing a two-segment model for consumers (self-interested and social-preference consumers), we compare the firm's pricing strategies (posted vs. PWYW pricing) in a monopolistic digital goods market where marginal costs are nearly zero and piracy threats exist. We find that under no piracy threats, PWYW yields higher profit than the conventional posted pricing if the fraction of social-preference consumers and their behindness-aversion are both high enough. We further show that as piracy threats appear, PWYW pricing becomes more attractive to the firm than conventional posted pricing. These results suggest that PWYW pricing can be an effective digital rights management device while being lucrative.

2 - A Brand's Secondary Audience: Brand Equity and Strategic Human Resource Management

Arnd Vomberg, Assistant Professor, University of Mannheim, L 5 1 (Castle), Mannheim, 68131, Germany, arnd.vomberg@bwl.uni-mannheim.de, Christian Homburg

Are the best brands the best companies to work for? Or, stated differently: Does a firm's brand equity influence its investment in its employees? Findings from prior marketing research give rise to these questions. Prior research in marketing indicates that applicants are attracted to companies with strong brand equity because they assume the companies will invest in them on the basis of strategic human resource management (SHRM). However, whether companies actually meet this expectation is unknown. We test two competing lenses to explore the effects of brand equity—one of a firm's most important strategic resources—on companies' engagement in SHRM. Under the resource-based view (RBV) of the firm—the first lens—companies with strong brand equity should engage in SHRM more. The second lens is based on the participation-production perspective and predicts that companies with high brand equity engage in SHRM less. Utilizing diverse panel data sources (KLD, Sustainalytics, EquiTrend®, and Compustat), we find that brand equity has a negative influence on SHRM. We also find that this behavior leads to the highest levels of customer satisfaction and Tobin's q. Thereby, our study contributes to a more holistic brand equity theory. Particularly, we enrich the employee-based brand equity concept (Tavassoli et al. 2014) by demonstrating that employees are a focal secondary audience of marketing endeavors. From a managerial point of view, our results indicate that—as a side effect—increasing brand equity by one standard deviation reduces the necessary HR budget by 8% in the next year.

3 - Understanding the Impact of Product Innovation and New Product Failure on Brand Equity using Store-level Data

Wanyu Faith Li, PhD Candidate, McGill University, Montreal, QC, Canada, wanyu.li@mail.mcgill.ca, Yu Ma, Laurette Dubé

Brand equity is the name recognition and goodwill a brand enjoys. It takes patience and time to build positive equity. Researchers have long examined the impact of new products on brand equity using consumer surveys, financial market data, and scanner/sales data. It has been shown that successful new product introductions enhance brand equity by improving product features and building product-related associations. However, little has been said about the impact of new product failure, despite a majority of new products failed to generate long-term impact on firms' growth and were withdrawn from market. This study aims to investigate the effect of new product introductions and withdrawals on a brand's equity over time. While product innovations may strengthen brand equity, a failed product might dilute brand equity by disappointing customers. We propose a conceptual framework of the impact of product failure on brand equity and then empirically estimate the effects using store level sales data. After controlling for advertising, promoting and other marketing activities, we find significant effects on brand equity due to new product introductions and withdrawals. In addition, we find that the timing of product withdrawal and the timing of new product introduction after previous withdrawal moderate the influence of product failure on brand equity.

4 - How Incentives Shape Strategy: The Role of CMO and CEO Equity Compensation in Inducing Marketing Myopia

Natalie Mizik, University of Washington, UW Foster Business School, 412 Paccar Hall, Seattle, WA, 98195-3226, United States, mizik@mit.edu, Martin Artz

We examine the role personal compensation incentives of CMOs and CEOs play in inducing myopic marketing management. We find that CEO equity incentives are largely unrelated to the incidence and severity of myopic marketing management. CMO equity compensation, on the other hand, is highly predictive of the incidence and severity of myopic marketing management. Contrary to the arguments that the presence of a CMO in the organization can help maintain customer focus and support for marketing departments, we find that CMOs not only fail to prevent myopia, but further exacerbate the problem as the market-based (i.e., equity) portion of their personal compensation increases. Our analyses utilizing multiple methods designed for identification of causal effects (e.g., IPWRA; endogenous treatment effects; control function; difference-in-differences) allow for a causal interpretation of these findings. Further, consistent with the CMO's personal enrichment motivation, we also find that CMOs take advantage of artificially inflated stock valuation by exercising more stock options and selling more of their personal equity holdings in the years when myopic marketing management occurs. Our findings highlight the pitfalls and limitations of overreliance on equity in managerial compensation packages.

■ SB15

Room 603, Alter Hall

CB – Construal & Processing

Contributed Session

Chair: Luc R. Wathieu, Georgetown University, McDonough School of Business, Rafik B Hariri Building #102, Washington, DC, 20057, United States, lw324@georgetown.edu

1 - Explaining Consumer Affinity for Primary Color

Lawrence L. Garber, Associate Professor, Elon University, 2075 Campus Box, Elon, NC, 27244, United States, lgarber@elon.edu, Kacy Kim, Lubna Nafees, Eva M. Hyatt, Ünal Ö. Boya

Primary colors are pure colors from which all other colors are obtained. There only a few of them - red, yellow and blue - making their selection to identify and distinguish one's brand problematical. Inspection of those highway signs showing available restaurants off some particular exit underscores the problem. Several restaurants are invariably represented by primary red, a curious choice for competitor brands usually preferring to differentiate themselves. Why then do so many brands favor primary colors as their "signature," when in many categories it is shared by competitors also selecting primaries? Presumably, the reason is that consumers respond well to primary colors. They must favor them. But, why? There is a voluminous literature asserting the efficacy of color as a visual persuader, but little to explain its effect. In this research, we propose a conceptual framework explaining how novel primary color as brand identifier is cognitively processed, and a series of studies to test it. The processing of any stimulus object occurs at two levels, a direct sensory effect and a memory effect. This framework takes account of this duality using a staged model of visual information processing, mapping direct sensory and memory processes onto early and higher level stages of vision, respectively. We explain the direct sensory effect of primaries as novel brand stimulus in terms of supernormal stimuli, and their memory effect in terms of construal levels. Theoretical, and managerial implications are to be discussed.

2 - Consistency of Direction Can Influence Processing Fluency and Product Evaluation

Takeshi Moriguchi, Professor, Waseda University, 1-6-1 NIshiwaseda, Shinjuku-ku, Tokyo, 169-8050, Japan, moriguchi@waseda.jp, Mayuko Nishii, I-Shan Hsieh, Ryoka Asakura, Yuri Komon, Shota Narukawa, Ryoichiro Mitsuda

The concept of "processing fluency" has been widely discussed in various areas, including marketing and consumer behavior. Processing fluency is defined as the ease with which people process information, and it has been found that experiencing fluency while processing information has a positive effect on decision making. Processing fluency can be influenced by eye movement. For example, Shen and Rao (2016) focused on the relation between fluency of eye movements and product evaluation. Our study concentrated on human body movement—namely, walking and riding. There are many advertisements in stores, trains, buses and on the roads. Consumers often see these advertisements while walking or riding. In these cases, they move to certain directions, and sometimes products in advertisements convey direction (e.g., automobiles, shoes, pens, and so on). At the time of exposure, consistency between two directions (consumer's movement and product) may influence processing fluency and product evaluation. Based on the above considerations, we conducted two experiments. The empirical studies showed that for the condition of participants walking, the orientation of the product pointing in the same direction as the moving direction of the participants resulted in higher processing fluency, and led to higher product preference. Similarly, for the condition of participants moving towards a certain direction by passive means, such as taking a bus, product preference and processing fluency increase when the orientation of the product match the moving direction of the participants.

3 - The Value of Inactionable Information

Luc R. Wathieu, Georgetown University, McDonough School of Business, Rafik B Hariri Building #102, Washington, DC, 20057, United States, lw324@georgetown.edu, Jeeva Somasundaram

The value of inactionable information should be zero, but anecdotal evidence suggests it is not. We propose and test a simple behavioral theory that suggests that inactionable information can have positive value, particularly in relation to low probability/high stakes risks.

■ SB16

Room 231, Alter Hall

Targeting Consumers

Contributed Session

Chair: Subroto Roy, University of New Haven, 18 Colonial Court, Cheshire, CT, 06410, United States, Dr.SubrotoRoy@gmail.com

1 - On the Other Side of Customer Loyalty: Dynamic Campaign Optimization in the Presence of Competition

Jue Wang, Queen's University, 143 Union Street, Kingston, ON, K7L 3N6, Canada, jue.wang@queensu.ca, Ceren Kolsarici, Mikhail Nediak

In this paper, we study the dynamic endogenous relationship between the advertising strategy and the prospect's stage on the path to conversion, and optimize campaign targeting for each individual and over time. We use individual-level data on channel-specific advertising exposure and consumer response through online and offline channels for a range of ad campaigns from a large bank in the South American market. Importantly, we control for prospect consumers' relationship with competitors through data from a credit reporting agency which tracks individuals' financial activities such as consumer debt, account with other financial institutions etc. Competitive controls have not been considered in previous literature, and help us understand how campaign effectiveness is influenced by the prospect's incumbent relationship with other financial institutions (FIs).

Preliminary results suggest that the effectiveness varies significantly across channels, and channel combinations can be optimized to increase conversion. Prospect customers have episodic financial needs which can be satisfied by the FIs they previously dealt with. This incumbent relationship with other FIs suggests stickiness which is often studied in customer retention. Since individual customers have different level of stickiness with other FIs, the choice of pulsing versus continuous strategy and the timing of the campaign need to be personalized and dynamically re-evaluated to address customer's financial needs. Finally, based on results, we discuss insights on how to select the campaign strategy to maximize the probability of conversion under realistic business rules.

2 - Optimal Micro-targeting in the Presence of Competition

Peter Danaher, Professor of Marketing and Econometrics, Monash University, Department of Marketing, P.O. Box 197, Melbourne, 3145, Australia, peter.danaher@monash.edu

Customer-level databases that link advertising exposure to purchases have become widespread in today's business environment. This has enabled firms to target customers with advertising based on, for example, purchase history or brand engagement via clicking on emails or initiating a search query. While such targeting rules are reasonable and easy to implement, they fail to consider the responsiveness of each customer to these advertising efforts, among other factors. In particular, firms need to know how much to spend on advertising and how to allocate this total spend across each medium. In the aggregate case optimal control theory provides a powerful framework for firm profit maximization allowing for ad response, cost per medium, ad carryover and depreciation, all in the presence of multiple competing brands. However, in the context of advertising allocation, optimal control theory has never been applied at the individual level. Consequently, in this study we show how optimal control theory can be adapted to individual customers via a multinomial logit model with individual-specific response parameters. In turn, these parameters are used to determine both the optimal total ad spend for each customer and how much should be allocated to each medium. We show using simulations and an empirical example that using our optimal micro-targeting method improves predicted brand market share over existing targeting methods by between 12% and 30%.

3 - Can Old Customers be Gold? Engaging Past Donors on Facebook

Subroto Roy, Professor of Marketing, University of New Haven, Orange, CT, United States, Dr.SubrotoRoy@gmail.com, K. Sudhir

Old customers are valuable because they (a) are already familiar with the brand and have no acquisition cost (b) have bought a few times and demonstrated affection for the brand and its promise (c) have more potential than the estimated 3-5 years in traditional direct mail Customer Lifetime Value (CLV) calculations.

We run field experiments with direct mail and Facebook advertising to engage past donors for a charity. In our direct mail field experiment we ask past donors to simply “like us” on Facebook, “like us” and donate or just donate. We next use the “custom audiences” feature of Facebook advertising to test alternative messages to the same audiences as identified from the charity’s mailing list. We examine whether cross-channel advertising to past donors (customers) increase their (a) engagement with the charity on social media (b) also increase the number of donors and amount donated.

4 - Competitive Poaching in Search Advertising a Randomized Field Experiment

Sunil Wattal, Temple University, Fox School of Business, 1810 N 13th Street, Philadelphia, PA, 19122, United States, swattal@temple.edu, Siddharth Bhattacharya, Jing Gong

A key strategy that firms are increasingly following in search advertising is to generate traffic by bidding on not only their own keywords but also competitors’ keywords. This strategy, known as competitive poaching, is prevalent in multiple industries. However, little research has empirically examined the effectiveness of competitive poaching, and what factors increase its effectiveness. Moreover, which ad copy works best under this competitive setting remains an open question. The objective of this research is to examine the effect of ad copy variations with respect to competitor keywords on driving number of clicks. We further expect this relationship to be moderated by the quality of the competitor. We run a 5-week randomized field experiment in collaboration with a business school in Northeastern United States. Theoretically, our work contributes to the nascent field of effective ad copy design and competition in search advertising. Practical and managerial implications are discussed.

Saturday, 1:30PM - 3:00PM

■ SC01

Room 32, Alter Hall

Sharing Economy

General Session

Chair: Puneet Manchanda, University of Michigan, Ann Arbor, MI, R5490, United States, pmanchan@umich.edu

Co-Chair: Katharina Massner, Ludwig Maximilian University of Munich, Munich, n/a, Germany, massner@bwl.lmu.de

1 - The Existence and Persistence of the Pay-per-use Bias in Car Sharing Services

Katharina Massner, Ludwig Maximilian University of Munich, Munich, Germany, massner@bwl.lmu.de, Puneet Manchanda, Martin Spann

One of the key benefits of car sharing services (relative to ownership) is that they are more cost effective. Car sharing firms try to achieve this via the offering of a menu of pricing mechanisms. The two most common pricing mechanisms are flat-rate and pay-per-use. However, little is known about how consumers choose among these pricing mechanisms. In this study, we analyze consumers’ choices between a pay-per-use mechanism and a flat-rate mechanism using data from a car sharing provider operating in a large western European city. We show that over 40% of users make non-optimal pricing plan choices (i.e. they do not choose the mechanism that would minimize their billing rate). In contrast to most previous studies that either focus on the flat rate bias or find its prevalence to be much higher, we find the pay-per use bias to be much more prevalent in our setting. In addition, we show that the pay-per-use bias is persistent over time i.e., we do not find evidence for learning. We propose three possible explanations for the existence and persistence of the pay-per-use bias in car sharing services. First, we suggest that users underestimate their usage, perhaps driven by overconfidence. Second, we propose that users have a preference for certain features e.g., flexibility, associated with a pay-per-use tariff for which they are willing to pay a premium. Finally, we show that the context, such as weather, also increases the likelihood of a pay-per use bias.

2 - The Sharing Economy and Housing Affordability: Evidence from Airbnb

Davide Proserpio, Marshall School of Business, Los Angeles, CA, United States, proserpi@marshall.usc.edu, Kyle Barron, Edward Kung

We assess the impact of home-sharing on residential house prices and rental rates. Using a comprehensive dataset comprised of Airbnb listings from the entire United States, we regress zipcode level house prices and rental rates on the number of Airbnb listings, using fixed effects to control for permanent differences across zipcodes as well as arbitrary CBSA level time trends, and using an instrumental variable based on Google search interest for Airbnb to control for any remaining endogeneity. We find that a 10% increase in Airbnb listings leads to a 0.42% increase in rents and a 0.76% increase in house prices. Moreover, we find that the effect of Airbnb is smaller in zipcodes with a larger share of owner-occupiers, a result consistent with absentee landlords taking their homes away from the long-term rental market and listing them on Airbnb. We present a simple model that rationalizes these findings.

3 - Market Shifts in a Sharing Economy: Impact of Airbnb on Housing Rentals

Yijin Kim, Carnegie Mellon University, Pittsburgh, PA, United States, yijink@andrew.cmu.edu, Hui Li, Kannan Srinivasan

This paper examines the impact of Airbnb on the rental housing market. Airbnb provides landlords an alternative opportunity to rent to short-term tourists, potentially causing some of the property owners to switch away from long-term rental to local residents and impacting the rental housing supply and affordability. Despite of the recent government regulations to address this concern, it remains unclear whether and what type of properties are switching. Combining Airbnb listings data and the American Housing Survey data, we estimate a structural model of property owners’ decisions to study the impact of Airbnb on local rental market and its policy implications. The results show that Airbnb mildly cannibalizes the long-term rental supply but creates market expansion effect. The percentage of switchers varies significantly across cities (from 1% to 16%), depending on host and local market characteristics such as demographics, tourism, and mortgage affordability. The impact is largely concentrated on lower priced, affordable units rather than on higher priced, luxurious ones; a basic studio or one-bedroom apartment is more likely to be taken off from the long-term rental market than a house with two or more bedrooms with amenities. Counterfactual results suggest that policies such as imposing tax or limiting the maximum number of days that a property can be listed help reduce the cannibalization of Airbnb on rental housing supply, yet they also reduce the market expansion effect created by Airbnb. We show how the magnitudes of the two forces change with the level of regulations. Finally, rent regulation must be implemented with extra caution when Airbnb is available, as lower profits from long-term rental can cause landlords to switch to Airbnb.

■ SC03

Room 34, Alter Hall

Customer-Based Corporate Valuation

General Session

Chair: Daniel McCarthy, Emory University, 1241 Virginia Court NE, Atlanta, GA, 30306, United States, daniel.mccarthy@emory.edu

1 - Customer-based Corporate Valuation for Publicly Traded Non-Contractual Firms

Peter Fader, University of Pennsylvania, Philadelphia, PA, United States, faderp@wharton.upenn.edu, Daniel McCarthy

We study the problem of performing customer-based corporate valuation (CBCV) for publicly traded non-subscription-based firms using only their publicly disclosed customer data. While recent research has specified a CBCV model for subscription-based firms with high predictive validity, this methodology is not applicable for non-subscription firms. We specify a CBCV model for non-subscription firms, then illustrate it upon data from two publicly traded e-commerce retailers, Overstock.com and Wayfair. For both firms, we study the predictive validity of the model, obtain overall company valuation estimates, and compare the unit economics of newly acquired customers.

2 - What Marketing Metrics Should Investors Demand? Optimizing Input Data for Models of Trial and Repeat Purchase Behavior

Daniel McCarthy, Emory University, Atlanta, GA, United States, daniel.mccarthy@emory.edu, Peter Fader

We study the question of what customer data maximizes the statistical recovery of underlying processes for the trial and repeat purchase behavior of customers. This question has important policy implications as investors, regulators, and other firm stakeholders increasingly turn to customer-based corporate valuation (CBCV) methodologies as a way to reduce investor uncertainty about future firm cash flows. While the underlying data that is required to perform CBCV for subscription-based firms is both relatively common and well-established, far less is known about the corresponding data requirements for non-subscription firms. Our work concludes that a small collection of relatively common customer data disclosures is needed to efficiently statistically identify the underlying parameters of a collection of models summarizing the propensity of customers to be acquired and make repeat purchases with a firm, as well as how much spend is associated with each of those purchases. To maximize the statistical recovery of model parameters, we use “indirect inference,” a generalized method of moment’s procedure, to carry out model estimation.

3 - Customer-based Valuation for Contractual Firms Using Internal Company Data

Elliot Oblander, University of Pennsylvania, Philadelphia, PA, United States, Elliot.Oblander.wh17@wharton.upenn.edu, Daniel McCarthy

We present an application of customer-based corporate valuation (CBCV) for subscription-based firms whose internal transaction log and CRM data are available. This problem setting contrasts with that of the previous two projects in that it is applicable for subscription-based firms instead of non-subscription-based firms, and richer, more granular data are available to the modeler, allowing for far richer specifications for our customer retention and spending models. We use the model to study the unit economics of newly acquired users, as well as how the valuation of customers evolves across acquisition cohorts and customer acquisition channels.

■ SC05

Room 232, Alter Hall

Mobile, Algorithm, and Artificial Intelligence (AI) Session 8: Cross-channel Targeting

General Session

Chair: Xueming Luo, Temple University, Philadelphia, PA, 19122, United States, luoxm@temple.edu

Co-Chair: Yanyan Li, Columbia University, New York, NY, United States, yl3220@gsb.columbia.edu

1 - How Mobile Self-Scanning Use Influences Consumers’ Grocery Purchases

Kusum L Ailawadi, Tuck School of Business at Dartmouth College, 100 Tuck Hall, Hanover, NH, 03755, United States, kusum.l.ailawadi@dartmouth.edu, Anne ter Braak, Lien Lamey, Maya Vuegen

Mobile self-scanners allow consumers to scan items while they shop, easily keep track of prices and total spending, and go through an expedited check-out without having to unload their groceries at the check-out counter. Retailers have been cautious in pushing this technology as the impact on purchase behavior is not clear. We study the effect on several aspects of grocery purchase behavior including total spending, private label purchases, and promotion use, while controlling for the potential endogeneity in shoppers’ decision to use the mobile self-scanner. We use Dutch household scanner panel data covering all major retailers that offer the technology, along with information from a brief household survey. Two mechanisms for influencing purchases come into play when shoppers use a self-scanner: (i) increased price salience due to real-time spending feedback and (ii) divided attention caused by the additional task. The impact of these mechanisms may differ across shoppers and stores, and may wear out as shoppers gain experience with the technology. Among shoppers whose prior experience with the technology is limited, our results reveal a role for both mechanisms but more so for spending feedback. Such shoppers buy fewer items in total and expend a lower share of their promotional buying on “low-need” categories when they use the mobile self-scanner, suggesting that retailers should be concerned about potential negative sales effects. As experience with the technology increases, however, these effects change. The effects also vary with price sensitivity and familiarity with the chain.

2 - Charity Premium: the Spillover Effect of Cause Marketing

Yanyan Li, Columbia University, 320 West76th Sreet, Apt 5B, New York, NY, 10023, United States, yl3220@gsb.columbia.edu, Xueming Luo, Bo Xu

Current studies of cause marketing are primarily focused on the focal effect of cause marketing on the charitable brand, which refers to the effect of cause marketing on increasing customers’ purchase of the charity participating brand. However, for big sellers, such as the electronic commerce retailing companies, there are often many different brands and categories of products for sale. Cause marketing by certain brands may lead to spillover effects on other products. In this study, we focus on the spillover effects of cause marketing on customers’ purchase decision of other products and categories of the focal charity participating brand. We used data from a big e-commerce company in China, which conducted cause marketing campaigns for certain product brands in the last year, and found that cause marketing has positive effect on purchase quantity and spending of the focal brands. Interestingly, we found that cause marketing significantly increases product variety seeking, encourages new product adoption, and decreases consumer price sensitivity of the charitable brands. We further showed that the new product adoption is mainly due to the spillover effect from totally new product categories and new brands.

3 - Walking a Fine Line: Customer Retention in Mobile App Targeting

Xinying Hao, PhD Student, The University of Texas at Austin, 2501 Lake Austin Blvd Apt C207, Austin, TX, 78703, United States, xinying.hao@mccombs.utexas.edu, Zhuping Liu, Vijay Mahajan

We address a common pitfall largely neglected in mobile app marketing -“over-targeting”. Theoretically, we conceptualize three different types of over-targeting commonly seen in mobile app marketing: (1) over-precision (2) over-exposure, and (3) over-saturation. Empirically, we propose a Bayesian Hidden Markov Model to quantify how the targeted push notifications based on their past behavior (i.e. behavioral-based push) and push based on their current location (i.e. location-based push) can affect the mobile users churn, retention and re-engagement in the context of mobile CRM (Customer Relationship Management). With the help of mobile tracking technologies, we utilize a unique mobile dataset containing granular user-level data, where multidimensional churn behaviors (i.e. opt-out of push notification, turn off location-based service, or uninstall the app) can be observed. The nonlinear (“inverted U-shaped”) effect of push notifications helps mobile app publishers answer a practical question - “when do you reach the over-targeting for each mobile customer?” - in designing the optimal push scheduling system.

4 - Usage Externalities in Two Sided Competitive Mobile Loyalty Program Platforms: Influence of Seller Location and Reward Program Design

Rajkumar Venkatesan, University of Virginia, 100 Darden Boulevard, Charlottesville, VA, 22903, United States, venkatesanr@darden.virginia.edu, Joseph Pancras

We investigate the effect of two seller factors, spatial location, and reward program design, on buyer usage of a two sided platform of loyalty programs. Novel aspects of the platform include the integration of online buyer search with buyer’s transactions across several competing sellers’ brick and mortar stores. We leverage these aspects to investigate the effect of spatial co-location and design of offers by the sellers on buyer’s platform usage, which includes store search, store incidence, and reward redemption. We utilize data provided by a mobile application that allows sellers to offer points based loyalty programs, utilizing a sample of households and retailers in a small US city. Buyers collect points and redeem rewards at each seller’s store independently. We jointly model buyer store search, store choice, trip spending, and reward redemption behavior. Spatially co-located sellers on the platform observe higher incidence in their brick and mortar stores but lower search on the mobile platform. Search for reward and store information, and reward program design have a stronger effect on reward redemption than the dynamics of point accumulation. Further, redemption benefits from a store has the highest effect on store choice. Rewards with higher thresholds, a narrower range of monetary value among the different rewards, and a larger number of rewards increases reward redemption among a store’s loyal buyers. However, buyers tend to search less for rewards with higher thresholds, and search less for stores with a narrower range of points. Our research highlights several tradeoffs that sellers, and platform providers need to consider to improve usage externalities of buyers on two sided mobile loyalty program platforms.

■ SC06

Room 234, Alter Hall

Big Data - Brands

Contributed Session

Chair: Pengyuan Wang, 150 W Broad St Apt 541, 150 W Broad St, Apt 541, Athens, GA, 30601, United States, deezephel@gmail.com

1 - Personalizing Brand Communications in Social Media

Kihyun Hannah Kim, Rutgers University, Newark and New Brunswick, NJ, 07102, United States, kh.kim@business.rutgers.edu, Soo Hyun Cho, Denish Shah

The practices of connecting with customers individually and sending personalized messages to boost customer engagement have both featured prominently in the customer and brand management literature. However, many of these customizations still rely on information related to customers' demographics and past behaviors. While the identification of individual differences based on consumer personality indicators has received relatively less attention in the marketing field, social science and psychology studies have highlighted the importance of personality in the context of interpersonal communication. In this research, we study how brands can deliver personalized communications catering to their consumers' personalities in order to enhance customer engagement on social media. By tracking brand-initiated communication and user-level communication history on social media, we empirically quantify the impact of two types of message customization strategies: messages based on 1) the established brand personality and 2) user personality as manifested in customer engagement. We accomplish this through two studies: (i) Application of an econometric model to analyze how similarities in the message styles between brand and user personalities affect customers' responses in social media and (ii) Analyses of the "matching" effect of personality similarity in brand-consumer interactions by using machine-learning algorithms. Our proposed model will enable marketers to improve personalization of brand communications and hence increase customer engagement in social media.

2 - Vector Space Models of Brands

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Brand similarity measurement is a tool frequently used in marketing research to analyze customer perceptions and competitive positionings. For these measurements customers are asked to rate pairwise similarities of brands on a Likert scale, an approach which is subject to several limitations. Firstly, the set of brands needs to be defined a priori. Secondly, similarity surveys are only applicable to small markets with few brands. Thirdly, response patterns may emerge if the brands are unknown to the subject. Fourthly, a survey does not reveal the context which causes brands to be perceived similar. To address these limitations, we analyze customer reviews using skip-gram with negative sampling. This language model learns word vectors by predicting surrounding context words. Two variations, word2vec (Google) and its extension fastText (Facebook), are trained and tuned on 58 million Amazon reviews. The models are empirically benchmarked on linguistic similarity and analogical reasoning tasks against the state of the art. Brands with a similar linguistic context can then be identified by computing the Pearson correlation between their learned vector representations. T-distributed stochastic neighborhood embedding is used to project these vectors onto a two dimensional plane. Without any a priori knowledge the resulting competitive map clearly visualizes the underlying disjoint market structure over multiple categories (e.g. beauty, photography, watches, beverages, and sunglasses). We enhance our understanding by providing further analyses of the associative vicinity of a brand, highlighting related terms (e.g. products and attributes). Finally, we propose empirical designs to validate the results and discuss the implications for brand similarity measurement and competitive positioning.

3 - Social Competition of Fashion Brands on Instagram

Tawei (David) Wang, DePaul University, 1 East Jackson Blvd, DePaul Center 6028, Chicago, IL, 60604, United States, wang131@gmail.com, Yusan Lin

Since Instagram started its service about 7 years ago, it has been a popular social media outlet for all kinds of fashion brands. For instance, Nike, Victoria's Secret, H&M, and Louis Vuitton all have more than 20 million followers on Instagram in 2017. Another example, in the month before the London Fashion Week in 2016, there were more than 5,500 posts with #LFW2016 on Instagram compared to only about 1,100 Twitter mentions in the same period. These pieces of anecdotal evidence suggest that Instagram has become a crucial part of fashion brands' competing fields. In this study, we explore (1) the information posted by fashion brands and (2) the competitive actions (both action timing and types of actions) taken by fashion brands in the context of Instagram. We collected Instagram posts by 480 fashion companies across a two-year period, and find that the more consumers two fashion companies share, the more frequently they take actions to respond each other's signals. Our preliminary findings would sketch the competitive landscape on Instagram for fashion brands and provide managerial implications when forming social media strategies.

4 - Effects of Complex Multimedia Advertising Campaigns – An Automated Model for Big Data

Pengyuan Wang, University of Georgia, 150 W Broad St, Apt 541, Athens, GA, 30601, United States, deezephel@gmail.com, Guiyang Xiong, Wei Sun, Jian Yang

Marketers increasingly combine online and offline media outlets to launch multimedia campaigns. However, it is unclear whether multimedia synergy exists and how to maximize their performance. This study introduces a tree-structured model to examine the effects of complex multi-dimensional ad treatments. It is an end-to-end framework suitable for big data, which effectively corrects for selection bias, automatically identifies informative consumer features, and performs automated data-driven consumer heterogeneous treatment effect estimation. We test the model with simulations and apply it to a large dataset involving around seven million consumers and four thousand covariates, demonstrating its unique ability to help marketers extract useful information from the ocean of data and improve multimedia ad decisions. Empirical findings shed new light on the nonlinear effect of repeated ad exposures in the multimedia context, how such effect varies across consumer groups, and the contingent existence of multimedia synergy. The results also highlight that, without accounting for selection bias and measuring the heterogeneous effects of multi-dimensional treatments across consumers, managers are likely to have distorted understanding of multimedia ad performance, and the resulting decisions will lead to waste of resources and loss of revenue.

■ SC07

Room 237, Alter Hall

Strategic Marketing

Contributed Session

Chair: Longxiu Tian, University of Michigan, 1042 W Summerfield Glen Cir, Ann Arbor, MI, 48103, United States, longxiu@umich.edu

1 - Consumer Response to Chapter 11 Bankruptcies

Cem Ozturk, Assistant Professor of Marketing, Georgia Institute of Technology, 800 West Peachtree St. Nw., Office # 4427B, Atlanta, GA, 30308, United States, Cem.Ozturk@scheller.gatech.edu, Pradeep Chintagunta, Sriram Venkataraman

When financially distressed firms have overwhelming debts, a prominent option for survival is to file for Chapter 11 bankruptcy protection. We empirically study the effect of Chapter 11 bankruptcy filings on the unit sales of the competitors of bankrupt firms in the U.S. auto industry. The demand for competitors could increase as they may benefit from the distress of the bankrupt firm (competitive effect). On the other hand, competitors could experience lower sales if the bankruptcy negatively affects consumers' beliefs about the industry in general (contagion effect). To identify the effect of bankruptcy filings, we make use of a temporal discontinuity in treatment (i.e., bankruptcy filing), along with an extensive set of control variables. Such a design is facilitated by a unique data set at the dealer-model-day level which allows us to compare changes in unit sales in close temporal vicinity of the filings. Our results suggest a dominant contagion effect for the competitors of bankrupt manufacturers. We explore several possible mechanisms for the dominant contagion effect. Our study aims to inform policymakers and managers about consumer-related consequences of Chapter 11 bankruptcies.

2 - Reducing Uncertainty in Consumer Credit Score Forecasts via Bayesian Nonparametric Data Fusion

Longxiu Tian, Doctoral Candidate, University of Michigan, 701 Tappan Ave, Ann Arbor, MI, 48109, United States, longxiu@umich.edu, Linda Court Salisbury, Fred M Feinberg

Credit scores play a vital role in reducing the risk of lending, insuring, and renting to consumers. Accurate scoring aids financial and other institutions, who rely on a portfolio of interrelated credit scores to vet prospective customers and set attractive risk premiums. Like all forecasts, credit scores are vulnerable to data missingness, such as unbalanced, incomplete, or thin credit files. These can in turn lead to non-random gaps in the score history that reduce the reliability of the scores as metrics to target profitable borrowers and identify cross-selling opportunities for financial products and services. To address this problem, we develop a Bayesian nonparametric data fusion model to impute credible intervals for gaps in individual score histories within a portfolio of dynamically and contemporaneously interrelated scores. We apply this model to novel data from a leading credit bureau on scores for a segment of the U.S. population from 2011-2015, along with credit file decision attributes used to generate them. To address the high-dimensionality of both the model and feature spaces, we apply the "Gaussian Integral Trick" to decorrelate prior distributions, enabling scalable and efficient estimation using stochastic mean-field variational inference. We find that credit score portfolios with imputed missingness are more accurate in predicting consumer delinquencies and bankruptcies than existing scores.

■ SC08

Room 238, Alter Hall

Consumer Decision-Making – Signaling & Influences

Contributed Session

Chair: Yingge Qu, Mississippi State University, 2212 5th Street, #410, Meridian, MS, 39301, United States, yqu@meridian.msstate.edu

1 - Time to Next Member's Travel Booking: A Shared Frailty Approach to Account for Member's Specific Unobserved Factors

Mouna Sebri, Assistant professor, Sherbrooke university, 2500 Boulevard de l'Université - Immeuble K1, Sherbrooke, QC, J1K 2R1, Canada, mouna.sebri@usherbrooke.ca

Within a coalition loyalty program where an airline company is a major source of members' accumulation as well as an attractive choice in terms of rewards, tracking every travel opportunity from the member perspective is crucial for both the airline company and the loyalty program sustainability. Determining flight-booking pattern in the travel industry is crucial to divert flight opportunities from competition and support the airline share of wallet in the loyalty program. The key challenge of such non-contractual setting, is how to differentiate those travelers who have ended their relationship with the airline company without informing them and without necessary expiring from the loyalty program from those who are simply in the midst of a long hiatus between travels. We develop a model to predict future traveling patterns for a customer base that can be described by these structural characteristics. A shared frailty model that accounts for member's specific unobserved factors is proposed to accurately predict the time to next travel with the airline company at the member level. Travel bookings at various future time windows are predicted to better adapt campaigns objectives and allow sufficient lead-time for marketing actions.

2 - The Impact of Future Event Markers on Intertemporal Decision Among Different Decision Makers

Jessy Zhang, Tongji University, Shanghai, China, 1608997300@qq.com

Intertemporal decision is a normal decision-making process happened in consumers' daily lives. It's about a two-dimensional choice between conserving waiting time and harvesting bigger future profit. Although many scholars have studied the influential factors in intertemporal decision process from the perspective of decision-making framework, the impact of planned future event markers on intertemporal decision-making is seldom studied, which can be exactly observed from real life. This paper tries to explore the different effects of event markers on intertemporal decision across different time-perspective decision makers using experimental method: 1.For present-oriented decision makers, more events between a small-sooner and larger-later option will shorten their time perceptions and thus increase possibility choosing larger-later; 2.For future-oriented decision makers, more events between a small-sooner and larger-later option will lengthen their time perceptions and thus increase possibility choosing small-sooner. Findings in this study help to further understand intertemporal decision-making process and suggest consumers to make rational decisions by adaptive planning.

3 - Modeling Consumer's Contractual Decision in a Continuous Innovation B2b Market with a Forward-looking Dynamic Approach

Yingge Qu, Assistant Professor, Mississippi State University, 2212 5th Street, # 410, Meridian, MS, 39301, United States, yq40@msstate.edu, V. Kumar, Yi Zhao

The technology service of cloud computing in the B2B market possesses several features that challenge the service provider's strategic decision making. First, B2B buyers sign a contract when purchasing the service. Second, the firm's pricing strategies of the service ties to the length of the service contract that the consumer signs. Third, to maintain advantages in the market, the service provider needs to keep on improving the service-related technology. Last, the B2B buyer's decisions are more sophisticated and strategic when balancing the benefits and the risks of the service contract. To address service provider's concerns, we develop a structural modeling approach to address the following research questions: 1) how to quantitatively evaluate the B2B consumer's contractual decision process in the continuously developing technology service market? 2) when the service provider adjusts the technology adoption in the service, how will the B2B buyer's contractual decisions change? and 3) what is the optimal pricing strategy for the service provider to maximize the contract revenue? Our study has both modeling and managerial contributions. From modeling perspective, we contribute to the forward-looking dynamic models by integrating three key features of the market, e.g. the B2B buyer's dynamic contractual decisions, the technology evolution and the firm's pricing strategy, into one holistic modeling framework. More importantly, these key features are not directly used as control variables or covariates in the utility function but integrated into the dynamic programming process as state variables determining the contract-associated value. Our study also provides substantive insights. We address that, service providers need to realize that the technology evolution can be both beneficial and risky to the service provider. By counterfactual analysis, we identify an optimal pricing strategy to help the service provider optimizing the contract revenue.

■ SC09

Room 239, Alter Hall

Promotions & Reward Programs

Contributed Session

Chair: Anthony Koschmann, Eastern Michigan University, 7415 Willow Creek Dr, Ypsilanti, MI, 48197, United States, akoschma@emich.edu

1 - Premium Private Label Sourcing from a Dual Brander: Competition and Negotiation

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As private labels become proliferated, more retailers are introducing premium PLs that oftentimes replace marginal national brands. A premium PL can be sourced either from the NB manufacturer who wants to utilize excess capacity or from a dedicated PL manufacturer who can produce a high-quality imitation. It is natural to assume that the PL from the former source is identical to the corresponding NB except for the branding and packaging. In this paper, we examine a retailer's problem of tiered PL sourcing, in which a premium PL is supplied by the NB manufacturer (dual brander), and an economy PL is supplied by a dedicated PL supplier. We decompose the value of a product into three components: the NB's brand equity, the retailer's reputation, and the intrinsic quality of the NB. In this distribution channel, the NB's wholesale and retail prices are determined by the traditional bilateral Nash game. However, the premium PL's transfer price is determined through a profit-sharing negotiation between the channel members. From an equilibrium-negotiation solution, we derive profit implications of each of the value components as well as the negotiation power of the retailer. Interestingly, even if the retailer holds a strong negotiation power, we find it optimal for the retailer to leave some chips on the table for the NB manufacturer.

2 - Optimal Pricing of Points in Points Plus Cash Reward Programs

Ricardo Montoya, University of Chile, Republica 701, Santiago, 8370439, Chile, rmontoya@dii.uchile.cl

Customers in Reward Programs (RPs) typically accumulate points for their purchases that can be redeemed later for rewards. Recently, some RPs offer the option of combining a customer's points with cash to redeem them for products in a Points Plus Cash (PPC) frame. The cash in this scheme helps to buy the needed points to complete the full-point equivalent needed to redeem for the reward. The price of these points need to be determined by the company considering various factors such as the consumers' consumption heterogeneity and willingness to pay for the points, the value of the product, and the cost of that product. The goal of this research is to determine the optimal price in a PPC scheme taking these factors into account. The proposed framework considers differences in consumption rates and product valuations by customers that allow a profit-maximizing firm to determine the optimal dynamic price. Our main result characterizes the optimal price as a function of the time remaining to the end of the selling horizon. We show that the price increases in time and decreases regarding the number of points required to be redeemed for the product. Demand at the optimal dynamic price also increases over time. The optimal pricing uncovers three types of customers. A first segment prefers buying at the beginning of the selling horizon, a second group prefers buying at the end of the selling horizon, and a third group buys during the selling horizon. We use the developed framework to compare the proposed pricing strategy to other pricing options such as constant pricing and also to explore extensions to our basic model. The analysis shows that the main results are fairly robust to different assumptions.

3 - Consumer Response to Price and Promotions Before and After the Great Recession

Anthony Koschmann, Eastern Michigan University, 7415 Willow Creek Dr, Ypsilanti, MI, 48197, United States, akoschma@emich.edu

Previous research into the effects of recessions on consumer purchases have typically emphasized price sensitivity. Yet, price remains just one of the tools that firms use to encourage consumption during and after a recession. This study examines consumer response to types of promotions, such as price reductions alone or price reductions in conjunction with another promotional device (manufacturer coupons, weekly feature advertising, and in-store displays) following the Great Recession. The severity of the Great Recession, from both its depth and recovery, suggests consumers increased their purchase response levels and exhibited an increasing rate of response to firms' price and promotions well after the Great Recession had passed (in this case, six years into the recovery). Using annualized U.S. consumer panel purchases from 1998-2015 for 581 product categories, the results show that the Great Recession of 2008-2009 altered the promotional trajectories of some product categories, but not universally. Different promotional types exhibited differential effects: the level of price reduction and manufacturer coupon response increased, but feature advertising and in-store display response decreased among more product categories than increased. Furthermore, the rate of response decreased for nearly three-fourths of product categories for price reductions following the Great Recession; the interpretation is that consumer responsiveness to price reductions ramped up prior to the Great Recession, and rate of response plateaued (or even decreased) following the Great Recession.

■ SC10

Room 605, Alter Hall

Digital Entertainment

Contributed Session

Chair: Stan Renard, The University of Texas at San Antonio, One UTSA Circle, San Antonio, TX, 78249, United States, stan.renard@utsa.edu

1 - How Playlists Shape Artist Success on Spotify

Sean N. Bruggemann, Swiss Federal Institute of Technology, Zurich, Switzerland, nbrueggemann@ethz.ch, Anand V. Bodapati, Randolph E. Bucklin

How critical are playlists in determining artist success on music streaming platforms such as Spotify? On-demand streams for music have grown by 76.4% in 2016, reaching an all-time high of 252 billion streams (Nielsen, 2017). Streaming services such as Spotify or Apple Music count 112 million paying customers and contribute to about a third of music labels' total revenues. Listening to music via Spotify differs from conventional modes of music consumption in that users rely heavily on playlists - i.e. self -or third-party curated collections of tracks: 50% of paying subscribers to Spotify use playlists on every usage occasion and 90% of paying users have already listened to playlists at least once (Music Watch, 2016). Playlists stimulate demand and popularity for those artists who are featured on them and can be a critical marketing tool for popularizing artists' musical products and brands. We quantify the effect of playlists on artist popularity by analyzing a weekly data set of tracks that were added to or removed from Spotify playlists with more than 500,000 followers, in the period ranging from July 2017 through January 2018. Our data show the track's position within the playlist and artist popularity, which is a measure of the number of times the artist has been streamed relative to all other artists. Findings from a disaggregated model with artist-week as the unit of analysis hint at both contemporaneous and lagged effects of playlists on artist popularity. The effects hold after controlling for artist heterogeneity through artist-level fixed effects and changes to the artist's follower base. We additionally control for artist-specific changes to their popularity on an unrelated streaming platform (i.e. views on YouTube).

2 - A Double-edged Offer: Gamers' Opposite Responds to Game Updates

Jihyeon Hyeong, Yonsei University, Seoul, Korea, Republic of, erecniss@gmail.com, Kangjun Choi, Sujin Ko, Jaeyoung Lee, Tae-Hyung Pyo

This research aims to expand our understanding of game updates and offer strategic plans for the game industry. In the game industry, game updates have long been recognized as a classical way of motivating players with the introduction of new game contents and rules. Despite this, scant research has examined whether updates substantively satisfy the nuts and bolts required for marketing actions— to see whether updates can positively influence gameplay. This idea, then, leaves the question of whether game updates are desirable even to those players who are eager to consolidate their status in competition. It seems counterintuitive given that competitive games, i.e. multiplayer games, usually take advantages from competition among players, unlike noncompetitive games, i.e. single player games. However, for players motivated by competition, we expect that there might exist an unintended and even the exact reverse effect of updates; players in high status would be discouraged by a new competition rule, as it potentially threatens their dominance, and therefore may end up leaving the game. For the empirical analysis of our research question, we collect the individual play data from a game platform site and additional information on games from the official game websites. Through developing a hazards model, we compare the probability of the individual playing the game after updates between the two types of games and investigate the interaction effect of the players' status and the game types on this probability. Our results show that updates increase the probability of individuals playing multiplayer games less than single player games. Furthermore, these results are derived from the trade-off between the opposite behavior of players in high- and low status in multiplayer games: players in high status are less likely to play the game after the update, while players in low status are more likely to play the game after the update. We expect that our findings provide new insights into the deliberate strategy on how to attract and retain players using updates.

3 - Do Musicians Sell More Physical Albums or Digital Downloads After They Die? Uncertainty vs. Time Scarcity in Mortality Salience

Bingxuan Guo, PhD Student, University of Texas at San Antonio, 5803 USTA Blvd, Apt 3308, San Antonio, TX, 78249, United States, bingxuan.guo@utsa.edu, Richard T Gretz, Stan Renard

Terror Management Theory literature has focused almost exclusively on one dimension of mortality - 'uncertainty' surrounding death. However, we postulate that there are additional dimensions, including 'time scarcity'. We predict that when the 'uncertainty' dimension is salient, customers are more willing to make a material purchase compared with an experiential purchase, and vice versa when 'time scarcity' is salient. We argue that diverging effects are mediated by need for stronger material relationship and perception of 'scarce-self' correspondingly. We test our hypotheses using a unique data set on the music industry covering daily album sales from January 1, 2015 through December 31, 2017 for all artists in the billboard top 200 and all artists who passed away during that time frame. Using a difference-in-difference methodology, for each artist who died, we compare the daily physical (more material purchase) and digital (more experiential purchase) album sales a week before death and a week after death to any living artist's physical and digital album sales over the same period. We find empirical support for our hypotheses - artists who died suddenly (e.g. accident, suicide, etc.), highlighting the 'uncertainty' dimension of mortality, experienced a significant increase in physical album sales relative to digital album sales; artists whose death was less sudden, more expected with an increase in time, (e.g. died from terminal illness, old age, etc.), highlighting the 'time scarcity' dimension, experienced a significant increase in digital album sales relative to physical album sales. We discuss managerial implications beyond the music industry.

4 - Beyond the Grave: Variables Contributing to Increased Music Consumption After an Artist's Death

Stan Renard, Assistant Professor of Music Marketing, The University of Texas at San Antonio, One UTSA Circle, San Antonio, TX, 78249, United States, stan.renard@utsa.edu, Richard T. Gretz

The recent passing of notable recording artists such as Prince, David Bowie, Tom Petty, and Chuck Berry has generated a surge in music sales associated with those artists. However, the impact of the death of these artists on the sales of other musicians is not well understood. We use a difference-in-difference approach to assess the impact of an artist's death on 1) the sales of the artist's albums and songs, 2) the sales of living artists' albums and songs in the same genre as the artist who died, and 3) the sales of living artists' albums and songs in a different genre as the artist who died. We leverage a unique dataset where we observe daily song and album sales (both physical and digital) for all artists who were on the Billboard Top 200 and/or passed away from January 1, 2015 through December 31, 2017. For each artist who died, we compare that artist's song and album sales several days before death and several days after to all living artists on the market during that same period. We are able to identify what characteristics are associated with an increase or decrease in album and song sales due to a fellow artist's death. Our research has immediate applicability to the music industry, however our results also apply more broadly to product portfolio management. Our distinctive setting allows us to obtain insight into the performance of other members of a product portfolio when there is an exogenous (and catastrophic) shock to one member.

■ SC11

Room 606, Alter Hall

Healthcare-Services

Contributed Session

Chair: Lu Liu, Syracuse University, 721 University Avenue, Syracuse, NY, 13244-2450, United States, lliu123@syr.edu

1 - Insurer Competition and Premium Dispersion on Healthcare Marketplaces

Ming Lei, Purdue University, 403 W State Street, West Lafayette, IN, 47907, United States, lei40@purdue.edu, Qiang Liu, Ting Zhu

Affordable Care Act (ACA) introduced health insurance marketplaces that provide ACA qualified health insurance products of various attributes with high subsidies as well as heavy regulations. This paper studies the impact of insurer entry on insurance premiums in ACA marketplaces. We utilize the public data from federal run marketplaces and construct a panel of insurance premium and characteristics for all available plans in every county of 34 states. Our initial finding is consistent with previous literature in that insurer entry would lower premium for a specific type of plan. In addition, we find the premium dispersion between high quality and low quality plans increases with competition. We further explore possible mechanisms of this dispersion and discuss managerial and public policy implications of our findings.

2 - The Effect of General Health Check on Healthcare Utilization: Tackling the Self-selection Bias

Sung Wook Yoon, KAIST, Seoul, Korea, Republic of, suyoon0919@kaist.ac.kr, Duk Bin Jun, Sungho Park

The general health check is one of the most common preventive health care measures in many countries. This typically involves the visiting of general practitioners or healthcare institutions to detect disease and/or risk factors for disease by healthy adults who do not feel ill. Researchers have examined the effect of the general health check on various health outcomes and subsequent healthcare utilizations but the results are inconclusive. Moreover, many of the reported results need to be interpreted with caution because of the self-selection issue. In this study, we propose an empirical approach which jointly models the decision to obtain a general health check and healthcare utilization, tackling the self-selection problem by using the eligibility to obtain the health check for free as an instrumental variable. The eligibility has some exogenous variations by design and this helps us to partial out the effect of general health checks from the self-selection biases. We apply the proposed model to a large 12-year panel dataset provided by the Korean National Health Insurance Service. We find that participation in the general health check increases healthcare utilizations and ignored self-selection generates substantial upward bias in the estimates. We also find that the effect largely varies with several key demographic variables such as income and gender. We perform a series of counterfactual analyses to predict the effects of potential policy modifications on the healthcare utilizations and public costs.

3 - Does Medicare Value Based Purchasing Program Influence Hospital Performance

Lu Liu, Syracuse University, 721 University Avenue, Syracuse, NY, 13244-2450, United States, lliu123@syr.edu, Amiya K. Basu, Dinesh Gauri

Pay-for-performance, also called “value-based purchasing (VBP),” is a payment model that seeks to build an efficient, effective and patient-centered health care service by offering financial incentives to healthcare providers if they meet specific performance goals. Previous research has examined the effect of using VBP, mostly with a focus on clinical quality and safety, and these studies have been criticized for the lack of appropriate control groups or previous trend data. As a part of the Affordable Care Act of 2010 (ACA), Centers for Medicare & Medicaid Services (CMS) launched the first national level Medicare Hospital VBP program, with a focus on four performance dimensions: safety, clinical quality, cost efficiency and patient experience. In this research, we analyze the effect of this VBP program on the four dimensions of health care performance through a difference in difference framework comparing exposed and non-exposed hospitals. We use the state of Maryland as a natural control group, as the state, and not Medicare, determines hospital reimbursement rates, thereby exempting hospitals in the state from the Medicare VBP program. Our results show that the VBP program did not have a significant effect on overall patient experience but in terms of dimensions of health care service, it prompted hospitals to improve staff responsiveness and cleanliness of environment. Also, the VBP program showed no significant effect on clinical quality and safety measures. Finally, hospitals exposed to the VBP program showed improved cost efficiency and, in particular, a significant decrease in cost per discharge.

■ SC12

Room 745, Alter Hall

Mobile Promotions

Contributed Session

Chair: Ping Zhao, Wilfrid Laurier University, P2078 Peter’s Building, 75 University Ave W, Waterloo, ON, N2L 3C5, Canada, pzhao@wlu.ca

1 - Maximizing Customer Lifetime Value through Strategic Channel Management: How to Incentivize Customers to use Apps Versus Websites

Gokhan Gecer, Doctoral Candidate, University of Mannheim, Mannheim, Germany, ggecer@mail.uni-mannheim.de, Florian Kraus, Florian Stahl

The mobile channel is different from other channels since at least one of the engaged parties isn’t at a fixed location and these parties can communicate at any time (Balasubramanian et al. 2002). The unique nature of mobile devices leads customers to develop habitual interactions with firms (Wang et al. 2015) and as a result, the customer lifetime value (CLV) of mobile channel users tends to become larger than the CLV of other channel users. One of the main reasons is that users’ order rates increase when they adapt to mobile apps, resulting in a higher net monetary value in total spending (Naarang and Shankar 2016, Wang et al. 2015). Consequently, online retailers should encourage the customers to switch to mobile devices by offering a discount over mobile apps. The purpose of this article is to develop a modeling approach to answer the research questions below and test the proposed model in a field experiment conducted with a commercial website. 1. To what type of customer should a discount over the mobile app be offered?2. What is the optimal discount rate? Firstly, we conducted a lab experiment to test the assumptions used for constructing the analytical model. In the model, we apply to discounted expected transactions (DET) (Fader et al. 2004) to calculate the CLV of a customer. It is based on the customer purchasing probabilities over different sales channels. We compare the expected transactions in case a discount over the mobile app is offered versus the transactions if the discount is not offered. Our preliminary experimental and analytical results provide us with insights on 1) how the components of the model change the DETs, 2) where the thresholds for “discount offers” can be expected, and 3) what the optimal discount rate should be. Based on our results, we derive various implications for researchers and managers.

2 - Targeted Coupons on a Heterogeneous Customer Base

Arun Gopalakrishnan, Assistant Professor, Washington University in St Louis, Olin Business School, One Brookings Drive, St Louis, MO, 63130, United States, agopala@wustl.edu, Young-Hoon Park

Coupons targeting customers based on their value are common in practice as an efficient means of influencing consumer search and purchase behavior. Little research has examined why these coupons work and how the effects vary for a heterogeneous customer base. We evaluate the causal impact of targeted coupons on consumer search, redemption, and purchase behaviors using data from a large-scale field experiment in which low- and high-value customers are exposed to targeted coupons of different monetary values. We find that (1) coupons increase average revenues due to the increase in purchase incidence that does not involve coupon redemptions; (2) coupons with higher monetary value increase average revenues for the high-value segment; (3) coupons of different monetary values result in an increase in consumer search that is invariant across segments. Our findings imply that targeted coupons work primarily through an advertising effect, rather than a redemption effect. Further, the advertising effect is similar for heterogeneous customers in terms of the increase in consumer search. However, the coupon of higher monetary value results in higher conversions from search for the high-value segment.

3 - Mobile Coupon Acquisition and Redemption the Effects of Store Clusters as a Double Edged Sword

Ping Zhao, Assistant Professor, Marketing, Wilfrid Laurier University, LH4002, Lazaridis Hall, 75 University Ave W, Waterloo, ON, N2L 3C5, Canada, pzhao@wlu.ca, Chun Qiu

Retailing literature has shown that store clusters play a pivotal role in retailers’ store’s operations Nevertheless, many questions remain unanswered as to the extent to which store clusters affect a store’s promotional outcome. In the era of mobile technology, smartphones have become a major distribution channel for coupons; and store locations critically influence the effectiveness of mobile marketing. From the information collected on 11,222 mobile coupons issued by 1,799 restaurants in Hangzhou City, China, the researchers of this study investigate how store clusters in the format of shopping centers affect coupon acquisition and coupon redemption. As a result, the study identifies store clusters as a “double-edged” sword, in the sense that they affect coupon acquisition and redemption in an opposite manner. Specifically, store clusters positively affect customer coupon acquisition but negatively influence coupon redemption. The results are robust in different model specifications. The researchers also investigate the impact of coupon features on coupon acquisition and redemption, and they propose several managerial implications on mobile coupon promotions.

■ SC13

Room 746, Alter Hall

New Products and Innovation IV

Contributed Session

Chair: Ho Kim, University of Missouri-St. Louis, College of Business Administration, 1 University, St Louis, MO, 63121, United States, kimho@umsl.edu

1 - Giving Green to Get Green? Yes and No

Cheng He, Georgia Institutes of Technology, 800 W Peachtree Street, Atlanta, GA, 30380, United States, che31@gatech.edu, O. Cem Ozturk, Naiqing Gu

The creation of a sustainable community through the adoption of green technologies has become an important topic for the society in the presence of global warming. Federal and local governments have tried to promote green technologies through various incentive programs (e.g., HOV access privilege or tax credit). Research in the past decade has provided divergent views on the effectiveness of such programs. In this paper, we empirically study the impact of government incentives on the adoption of green vehicles in the U.S. automobile industry. To identify this effect, we take advantage of incentive changes in certain states and we employ a difference-in-differences approach. Our findings suggest a significant positive impact of incentives on the sales of green vehicles. We also find heterogeneous consumer responses to different incentive programs. Furthermore, we identify the impact of incentive programs on non-hybrid vehicles to investigate whether the change in sales for hybrid vehicles is due to market expansion or substitution from non-hybrid vehicles. Our findings shed light on the effective use of government resources to encourage green technology adoption.

2 - Computer-aided Exploration Of Product Designs in High-dimensional Visual Spaces

Yegor Tkachenko, Columbia Business School, 3022 Broadway, 5R Uris Hall, New York, NY, 10027, United States, ytkachenko21@gsb.columbia.edu, Asim Ansari, Olivier Toubia

Recent computer science research has demonstrated that deep generative models can be used to extract lower-dimensional representations from rich image data and to regenerate high-quality images from such lower-dimensional representations. We argue that these deep learning techniques can be effectively used for computer-aided exploration of visual product designs, where alternative design methods, such as conjoint or brute-force search, may not be applicable or may perform suboptimally. In this work, we first confirm properties of the lower-dimensional (latent) space that are desirable if we are to use it to generate novel product designs. Specifically, we show (a) how distance between images in this latent space mimics human similarity judgments about the actual images, and (b) that important characteristics of interest, such as product prices, can be predicted from latent image data alone. Building on these findings, we propose and demonstrate machine learning techniques for exploration and ideation in the design space, such as image interpolation to generate product designs that are similar to competitor’s products, or constrained Bayesian optimization to find novel designs that score high on quantitative characteristics of interest. We use images and attributes of products sold on Amazon.com as well as human feedback from Amazon Turk workers as a basis for our experiments. The results of our work suggest that deep generative models offer a promising avenue for partial

automation of the visual product design process.

3 - User-friendliness as an Element of Product Design

Sumitro Banerjee, Associate Professor of Marketing, Grenoble Ecole de Management, 12 rue Pierre Sémard, Grenoble, 38000, France, sumitro.banerjee@grenoble-em.com, David Soberman

We analyze firm strategy to offer products with user-friendly design in markets where consumers expend effort to consume products. Such a strategy requires a firm to incur additional costs to acquire knowledge about aspects of consumer effort to utilize or consume their products, and acquire the ability to provide "user-friendliness" or "usability" as an element of their product design. We find that both price and user-friendliness of products increase as product quality increases when the firm cost of providing usability is high and decreases otherwise. Since provision of user-friendliness is costly while product quality is free, the higher the product quality, the greater the relative impact on profits of the costly investment in user-friendly design by the firm. In contrast, when provision of user-friendliness is also relatively cheap, the higher the product quality, the lower the relative impact of user-friendliness in firm profits. Moreover, the higher the ability of consumers, i.e., the lower the consumer cost of effort, the greater the firm profits and provision of user-friendliness in design. In a market consisting of both high- and low ability consumers, a firm offers two products: one with high user-friendliness at a high price, and the other with low user-friendliness at a low price to discriminate between the two types of consumers. Further, when consumers do not observe their own type before purchase, the firm offers only one product with an intermediate level of user-friendliness at an intermediate price but an optional after-sales service at an incremental price that is consumed only by low ability consumers upon discovery of their own type.

4 - Discovering Different Processes for New Product Diffusion: Evidence from Online User Network Activities

Ho Kim, University of Missouri-St. Louis, College of Business Administration, 1 University Blvd, St Louis, MO, 63121, United States, kimho@umsl.edu, Juncai Jiang, Norris Ignatiius Bruce

While new product diffusion has been extensively studied, prior literature is silent on the hierarchy or stages involved in the process of product diffusion. This study thus investigates the hierarchy of new product diffusion in a network platform. We proposed a framework in which product adoption involves three stages—learn, feel, and do— and that these can be measured with online consumer activity metrics. Using a dataset with 361 users and 1,256 projects from Scratch, an online website where users create and share multi-media projects, we find that, although learn do feel is the most likely hierarchy overall, different adoption hierarchies (including no hierarchy) prevail for different users' projects. For instance, learn feel do is the most likely adoption hierarchy for some users' projects, while for other users, feel do learn may be most probable. In addition, we find that the author's network characteristics and project characteristics contribute to the product diffusion. Specifically, the author's degree centrality and has a strong positive effect on the diffusion of her projects. Interestingly, there exists a curvilinear relationship between project complexity and diffusion speed.

■ SC14

Room 607, Alter Hall

Marketing Strategy – Governance & Firm Performance

Contributed Session

Chair: Debjit Gupta, Virginia Tech, 3600 Richmond Lane, Apt H, Blacksburg, VA, 24060, United States, debjit14@vt.edu

1 - Franchise System Growth and Franchisor Terminations

Moeen Naseer Butt, Assistant Professor of Marketing, Lahore University Of Management Sciences (LUMS), Opposite Sector U, DHA Lahore Cantt., SDSB Building, Office 309, Lahore, 54792, Pakistan, moeen.butt@lums.edu.pk, Kersi Antia

Franchising has always relied on a strident growth narrative. Yet, despite widely divergent claims, evidence regarding the consequences of franchise system growth remains elusive. Whereas high system growth creates buzz and greater revenues for franchisees, unfettered expansion may severely strain franchisors' ability to maintain system standards and reduce franchisee motivation to remain in compliance with their contractual obligations, likely resulting in higher terminations by franchisors. The present study assesses the relational consequences of franchise system growth in terms of franchisor terminations. Our longitudinal analysis of nearly 10,000 observations on 75 franchise systems across all 50 US states relates growth in terms of change in number of outlets to franchisors' terminations of their franchisees. We synthesize insights regarding the self-enforcing range of contracts with research on governance (ownership and royalty rate) and clustering-based perspectives to assess the moderating role played by ownership-based governance, royalty rate, and clustering in the growth-franchisor terminations relationship. The system-wide financial consequences of terminations are also assessed.

2 - The Impact of Data Disclosure on Consumer Complaints Resolution and Firm Performance

Debjit Gupta, PhD. Student, Virginia Tech, 3600 Richmond Lane, Apt H, Blacksburg, VA, 24060, United States, debjit14@vt.edu, Abhi Bhattacharya

To promote transparency in the financial marketplace, the federal government introduced the Dodd Frank act which made mandatory the disclosure of certain financial and customer data. On one hand, open access to such data could have enabled consumers to access previously undisclosed information, and aid them in making smarter decisions. Further, it could have resulted in firms being more accountable for their actions and encourage them to adopt fairer practices However, there is a lack of understanding whether and how such data disclosure impacted firm behavior and their subsequent performance, measured through stock market, financial and customer based indicators. In this study, using a detailed dataset on a large number of complaints filed with a federal agency, we empirically assess the impact of disclosure on complaint resolution on firm performance. By analyzing the firm's as well as the stock market's response to this disclosure of consumer complaints, we provide insights on how data disclosure impact the number of subsequent complaints and their resolution as well as the stock market's long and short term reaction to the same. Lastly, we discuss implications for public policies related to data disclosure based on our results.

■ SC15

Room 603, Alter Hall

CB - Perception & Behavior

Contributed Session

Chair: Stephen Hood, Virginia Tech, 2852 Kelly Sq., Vienna, VA, 22181, United States, hoodste@vt.edu

1 - How do Warm Background Colors Influence Consumers' Response Toward Anthropomorphized Products?

Mayuko Nishii, Waseda university, Tokyo, Japan, mayuko.nishii@akane.waseda.jp, Takeshi Moriguchi

Zwebner et al. (2013) mention that consumers tend to perceive inanimate products as anthropomorphized, so when they perceive physical warmth, they feel emotional warmth toward products, which increases their intention to purchase them. However, marketers cannot control the temperature that online shoppers perceive. This research examines how the visual perception of warm background colors on online shopping sites interacts with the haptic perception of products and the effect on product preference. Nevertheless, warm colors might not have physical warmth; thus, we assume that the effect of warm background colors is greater in products that are anthropomorphized. We performed two studies to examine the above hypothesis. In these studies, we conducted a 2 (orange vs. white) × 2 (anthropomorphized products vs. un-anthropomorphized products) between-subjects test. Inanimate products with warm and soft images are easily anthropomorphized. Therefore, we tested the hypothesis by comparing products usually perceived as warm and soft with products usually perceived as cold and hard in study1. To reinforce the findings of study1, we conducted study2 using hand watches, which are considered cold and hard. However, Labroo et al. (2008) showed that a watch indicating 10:10 was recognized as a smiling human. Thus, we compared 10:10 with 12:00. The results supported our hypothesis. They showed that warm background colors for products might affect consumers' haptic perception and increase their evaluation of anthropomorphized products by enhancing their familiarity with them. To emphasize products' haptic attractiveness to consumers on online shopping sites, marketers might have to pay attention to the influence of background colors.

2 - Before Color and Shape, Light is the Force that Drives Size Perceptions

Itrat Batool, PhD Student, Australian National University, CBE Building, 26C Kingsley Street, Acton ACT, Canberra, 2601, Australia, itrat.batool@anu.edu.au

One stream of marketing literature states that it's the dimensions of the shape that influences size. Recent evidence suggests that the saturated color has more potential to increase the perception of the size of the product regardless of the shape. However, shape has normally been granted as a high level visual feature in past research. Despite the remarkable research in color and shape, there is an important gap that needs to be filled about the way color and shape plays the role in size perceptions.Current study argues that in the competition between color and shape, there is yet another phenomenon that alters both of these features in the visual scene. The fundamentals of light and its reflection on the saturated-object may alter both the surface and sides of an object. For example, one cannot negate the possibility of light influencing a saturated object to an extent that the object appears to have different levels of saturation in parts. However, this cannot be fully confirmed until or unless the dimensions of the shape are taken into consideration. This is because light would shine brightly on the surface or the sides of the saturated object that it faces. However, different dimensions of the shape such as depth, width and height reflect light and produces shadows differently.To test these propositions, the current study intends to conduct three experiments. The first experiment will test the effect of light (four spotlights vs. two spotlights) on a shape. For example, how height, width and depth of a highly saturated object respond to different lights. The second experiment will test the effect of light on attention using color-saturation as a moderator. Different levels of color-saturation will be used to test the effect of light on shape. The attention will be recorded through an eyetracker. The third experiment will examine which of the objects participants felt was larger. Outcomes from the study are expected to be valuable to color/shape research. The expectations are to show that beyond color and shape determining the size; there is yet another feature that is the driving force and that is light.

3 - Auction Characteristics as Drivers of Willingness to Pay

Stephen Hood, PhD Student, Virginia Tech, 2852 Kelly sq., Vienna, VA, 22181, United States, hoodste@vt.edu, Dipankar Chakravarti

Auctions are "participative pricing" mechanisms in which buyers and sellers reach a final exchange price using a structured process. In ascending auctions, competing buyers bid up a good's price in steps. Bidders exit from the auction until just one bidder remains and wins the good at the final bid level. Economic theory argues that the exchange price for a good reflects the amount that the buyer (seller) is willing to pay (accept) for it. The revenue equivalence theorem asserts that this WTP (WTA) value should be attained regardless of the auction mechanism (Klemperer 1999). Yet, studies show that behavioral factors (e.g., bidder mindsets) influence the final bid price and post-auction assessments (Cheema et al. 2012, Herschlag and Zwick 2003). This paper argues that greater "transactional intensity" (bidding pace) during an ascending auction can increase experienced thrill. Thus, the desire to win a faster paced auction should raise a bidder's WTP. Moreover, the composition of the bidder population (i.e., proportion of professional resellers versus amateurs) can influence challenge and raise WTP. Thus, the desire to win an auction populated by a higher proportion of professional resellers should induce a higher WTP. However, experienced satisfaction from winning a fast paced auction may not endure. The higher WTP will dissipate quickly, eliciting post-auction regret. In contrast, satisfaction from winning an auction populated by a higher proportion of resellers should endure and elicit little regret. We test these predictions experimentally, recruiting participants from a web-panel and engaging them in custom designed ascending auction simulation.

Saturday, 3:30PM - 5:00PM

■ SD03

Room 34, Alter Hall

Analytical Advancements in Marketing

General Session

Chair: Aniko Oery, Yale School of Management, New Haven, CT, 06520, United States, aniko.oery@yale.edu

1 - Flash Pass

Yuichiro Kamada, UC Berkeley, Berkeley, CA, United States, y.cam.24@gmail.com, Zihao Zhou

We consider a contract-design problem of theme parks. Specifically, customers can pay extra fees to purchase a ``flash pass," under which they would line up for a less amount of time to enjoy attractions. The exact amount of time for lining up depends on the overall distribution of customers at each pass type. We characterize the optimal menu of contracts, and analyze how the information customers possess regarding the overall customer distribution affects the optimal number of pass types.

2 - Dynamic Duopoly Pricing with Observational Learning

Amin Sayedi, Assistant Professor of Marketing, University of Washington, Seattle, Seattle, WA, United States, aminsa@uw.edu

We look at the problem of dynamic pricing in a duopoly with observational learning. Prior literature shows that when the number of customers in a monopoly is sufficiently large and the monopolist is sufficiently patient, a cascade always happens; furthermore, the probability that the cascade is wrong, i.e., customers get negative ex post utility, is always positive. In contrast, we show that in a duopoly with dynamic pricing, there are equilibria in which no cascade happens. More importantly, we show that no sub-game perfect equilibrium of the game has a wrong cascade. Our results could explain why, in practice, cascades, and specifically wrong cascades, are not as common as theory has predicted.

3 - Aiming for the Goal: Contribution Dynamics of Crowdfunding

Aniko Oery, Yale School of Management, 165 Whitney Avenue, New Haven, CT, 06520, United States, aniko.oery@yale.edu, Joyee Deb, Kevin Williams

We study the contribution dynamics in reward-based crowdfunding campaigns arising from backers with different incentives. Donors just want the project to succeed while buyers just want the product offered. With novel data collected from the platform Kickstarter, we show how donations play a critical role in the ultimate success of some projects. Motivated by the institutional details of crowdfunding platforms, we develop a theoretical model of crowdfunding to study the interactions between buyers and donors. We show that the equilibrium characterization and predictions are consistent with our empirical findings. We use the model to decompose the importance of buyers and donors on the probability of success. Finally, we extend the model to allow for learning about product quality.

4 - Searching for Service

T. Tony Ke, MIT, 100 Main St, E62-535, Cambridge, MA, 02142, United States, kete@mit.edu, Maarten Janssen

Since Telser (1960), there is a well-established argument that firms in a competitive market will not provide service as it is optimal to free-ride on their competitors. The freerider argument is used to argue in favor of resale price maintenance. Our paper shows that the free-rider argument critically depends on the absence of search frictions. If consumers do have a positive search cost, the market may well provide service if the cost of doing so is not too large compared to consumer benefit. However, higher search friction does not always make the equilibria with service provision more likely to emerge. Generally, when equilibria with service provision exist, service provision is socially optimal, but the reverse does not hold true. Firms that provide service and those that do not can co-exist in the market, and consumers direct their search to service-providing firms first to obtain service, and then to non-service providing firms later to enjoy a lower price. The optimal level of product commonality balances demand cannibalization and informational complementarity.

■ SD05

Room 232, Alter Hall

Mobile, Algorithm, and Artificial Intelligence (AI) Session V: Technology Effect on User Decision

General Session

Chair: Xueming Luo, Temple University, Philadelphia, PA, 19122, United States, luoxm@temple.edu

Co-Chair: Lin Boldt, Clark University, Worcester, MA, 01610, United States, lboldt@clarku.edu

1 - The Effect of Free Promotion on Online Digital Retailers

Lin Boldt, Clark University, 950 Main Street, Worcester, MA, 01610, United States, lboldt@clarku.edu

Free sample promotion is an effective method to attract new customers, introduce new products, and generate incremental sales. Although used widely in the industry, the literature on free sample promotion is sparse. Most of the prior research on free sample promotion has been focused on the effects of free sample promotion on physical goods or retailers that sell physical goods. Literature has found that free sample promotion has both positive effect (short-term and long-term effect) and negative effect (cannibalization effect). Free sample promotion of one product could lift the sales of related products in the same category in the short run. The present study explores the effect of free promotion on online retailers that sell digital experience goods, e.g., Amazon Video and iTunes Store. Digital experience goods are different from physical goods in two ways: digital experience goods typically offer free samples (e.g., movie trailers) prior to purchase and digital experience goods do not need to be replenished. These differences may lead to the conclusion that offering free promotion on top of the free samples would not be profitable for online digital retailers. We conducted a field experiment on an online book reading platform. We find that although free promotion did not have an effect on purchase at the time of promotion, it was associated with a sales increase within four weeks after the promotion. In addition, free promotion led to an increase in the discovery of related new products at the time of promotion. Our findings suggest that free promotion does not have a cannibalization effect, but has an expansion effect for online digital retailers.

2 - Online Search and Purchase Likelihood: Direct and Switching Effects of PC vs Smartphone

Meheli Basu, University of Pittsburgh, 5820 Elwood Street, Apt 33, Pittsburgh, PA, 15232, United States, meb209@pitt.edu

Most online retail websites can be accessed by consumers through multiple devices, namely, personal computer (PC) or mobile devices such as smartphone and tablet. Hence, how device type modifies consumers' online decision making is important in understanding the implications of consumers transitioning between multiple screens. Our research seeks to address this important question. Our goal is to integrate search behavior of consumers on mobile and PC into quantification of drivers of consumers' purchase behavior across devices and specifically focus on the following dimension of consumer archetypes: browsing vs buying (focused on device selection). Device-specific effects on online path to purchase are studied by analyzing "big" data from the StubHub ticket exchange website over the course of three years. We track user movements between different search and purchase pages and calculate how the probabilities of transition between web pages vary for online users logged in from their personal computer vs their smartphone. We also seek to empirically establish the device (PC vs Smartphone) of choice for search vs purchase for users on online retail channels. Another interesting research question in our exploration of differential effects of device selection is whether switching between different device types (i.e., use of multiple devices) during search and overall path of product specific exploration leads to higher or lower purchase likelihood and how the device switching effect interacts with the current device choice in determining probability of purchase in that session. Implications for research and practice are discussed.

3 - Posting Fast and Slow: How Device Choice Influences the Information Content of Online Reviews?

Nikolaos Korfiatis, University of East Anglia, Norwich Business School, Thomas Paine Study Center 0.15, Norwich, United Kingdom, n.korfiatis@uea.ac.uk

The adoption of mobile devices as the primary way for consumers to review their experience on the go stimulates a significant change on the aspects that consumers choose to report on their review. While research has established the influence of the rating environment on the information content and the valence of online reviews, the actual influence of device choice (whether mobile or desktop) is relatively unexplored. Using recent advances in topic modeling and in particular structural topic models we evaluate the influence of device use and temporal construals on the information content of online reviews. Structural topic models differ significantly from established machine learning approaches, such as Latent Dirichlet Allocation, on the perspective that the allow the incorporation of covariates as a way to evaluate the prevalence of the topic distribution. Using a large corpus of more than 2 million reviews from an online booking provider and controlling for review valence, reviewer characteristics as well as the time between consumption and review publication, we evaluate the influence device use (mobile or not) on the distribution of topic prevalence. We show that device choice has a significant influence on the themes that consumers use to describe their experience with more concrete topics been present in the reviews coming from mobile and more abstract topics on reviews coming from other devices. Our results have implications for theory and practice as they help explain discrepancies in review content beyond the extensiveness of review length.

4 - Ripple Effects: Using Firm-Generated Content for Movie Promotion

Isaac Dinner, UNC-Chapel Hill, McColl 4517, Chapel Hill, NC, 27599-3499, United States, isaac_dinner@kenan-flagler.unc.edu

In the movie industry marketers are increasingly using social media to generate interest in new films. However, effective management of this media channel requires knowledge on whether and how firm-generated content (FGC) influences box office revenues. In this research, we empirically investigate two potential mechanisms through which FGC may drive sales. The first is a direct mechanism where users who see FGC directly drive revenue. The second indirect mechanism, which we call the "ripple effect" of FGC, suggests that FGC may increase movie-related user-generated content (UGC) that can drive movie consumption of those who do not see the FGC. To study these mechanisms, we assemble a daily panel of 159 movies released by major studios over 18 months. We operationalize UGC as tweets including movie-specific hashtags and FGC as tweets created by studio, actors, director and movie accounts. To test these mechanisms we estimate linear panel models that account for endogeneity of firm actions, unobserved heterogeneity, competition and advertising. We find that FGC has a small, but positive and significant, effect on movie sales. Furthermore, this impact of tweets on sales is fully mediated by UGC, supporting the indirect path. We also find that the ripple effect of FGC is most pronounced for those created by movie accounts rather than actors and studios. This work is of use to managers as it suggests that movie executives should not focus solely on followers, but on creating FGC that sparks conversations among users.

■ SD06

Room 234, Alter Hall

Big Data - Consumer Decisions

Contributed Session

Chair: James Reeder, Purdue University - Krannert School of Management, 403 West State Street, West Lafayette, IN, 47904, United States, jreederi@purdue.edu

1 - A Exploratory Research on the Relationships Between the Pattern of Clickstream and Buying Decision

Chi-cheng Wu, Professor, National Sun Yat-sen University, 70 Lien-Hai Road, Kaohsiung, 80424, Taiwan, chicheng@mail.nsysu.edu.tw, Yung-Jan Chou, TZE-YI Yang, Fu Pei-wen

Previous studies hypothesized that the buying decision of consumers were based on a two-stage choice process in which consumers first select available products as consideration set or choice set, and then choose a single product from the subset. Earlier researchers have been put efforts to capture the choice process empirically. As Stage 1 choice was hard to be observed in the offline settings, previous studies mainly crafted the ways to capture the unobservable first stage; few of them focused on evaluating the effect of Stage 1 choice on Stage 2 decision. However, the recent availability of online click stream can help overcome the challenge of unobserved Stage 1 choice. Moe (2006) used a clickstream data set to craft the interdependences between choices within a stage as well as the use of varying decision rules in each stage, which demonstrated the power of online clickstream data. Consequently, clickstream data have been used to explore lots of marketing issues (e.g., Olbrich & Holsing, 2011; Rutz & Bucklin, 2012). Besides, Hauser (2014) points that, when making a choice from many selections in a limited time consideration set is a reasonable response in decision process. This implies the importance of consideration set in determine the final decision. The data set used in this research was the customers' clickstream and buying records of an anonymous European Retailer, collected from "RecSys Chllenge 2015". By analyzing the clickstream data, we show that the longer the consumers view an item, the greater the chance they will buy the item. Besides, both repeat clicks and first click items have a higher buying odd; however, the effect of the two factors are not independent. Finally, this research demonstrated the effect of consideration set (Stage 1 choice) on final decision (Stage 2 choice). The results contribute to the literature of clickstream data and buying decision, as well as the two-stage choice model. E-commerce firms can design the ways of item presentation based on this research to increase the buying chance of consumers.

2 - Leveraging Human Mobility in Social Interactions to Predict Customer Attrition and Social Influence

Francisco Orlando Cisternas Vera, The Chinese University of Hong Kong, 12 Chak Cheung Street, Cheng Yu Tung Building, 11/F, Hong Kong, Hong Kong, fcisternas@cuhk.edu.hk, Chu (Ivy) Dang, Jianmin Jia

Rapid technology developments have enabled firms—for example, Facebook, Uber, Fitbit and many apps in smart phones like WeChat/WhatsApp—to learn about their customers' behaviour in multiple dimensions such as consumption patterns, social interactions and their physical location. However, the development of methodologies to get customers insights from multiple big data sources has not followed the same speed. In this research, we propose a new methodology leveraging machine-learning and business analytics to integrate multiple big data sets enabling the discovery of new customer's insights, which is only possible by looking at the combined data. We utilize a proprietary phone traffic data set with over two billion observations from which we reconstruct both the customer social interactions and mobility patterns. We augment the customer social network by incorporating human mobility as a new layer of customer behaviour. We found that mobility patterns moderate the impact of social influence in the network. Moreover, we predict customer attrition and consumption patterns, which translates into customer lifetime value. Preliminary results show a significant improvement in prediction power when compared to traditional models in the industry.

3 - The Impact of Promotional Email Design Elements on Customer Conversion. Insights from a Large Scale Field Study

James Reeder, Assistant Professor of Management-Marketing, Purdue University-Krannert School of Management, 403 West State Street, West Lafayette, IN, 47904, United States, jreederi@purdue.edu, Wreetabrata Kar, Saayan Mitra, Viswanathan Swaminathan

It is widely accepted that promotional emails are one of the most effective marketing tools; yet, there is a lack of empirical research concerning the effect of email content and promotional amount on a customer's choice. The gold-standard in quantifying the effect of an email promotion is A/B testing in a randomized sample. However, due to cost concerns, a firm will often eschew the use of A/B testing. Instead, a firm will target customers based on the observable characteristics of the individual's engagement with the firm, such as purchase history, to maximize profitability. These characteristics then inform a firm's expectation of how a consumer will behave through the conversion funnel: from opening the email through to the final purchase decision. Therefore, the measurement of an average treatment effect between two promotions will, necessarily, be biased by the endogenous firm choice. To overcome this bias, we implement a novel matching algorithm built upon a machine learning framework. This method allows us to recover the unbiased average treatment effects of each promotion despite the firm's initial targeting decision. We utilize a proprietary data set containing millions of individuals and 50 different email promotions. By cataloging the content of each email's subject line and body, we estimate the lift of each element of the email (promotion and content) at every stage of the conversion funnel. As a result, this study has attractive properties for both the marketing manager and researcher in better understanding the effect of email content and promotion amount on customer conversion.

■ SD07

Room 237, Alter Hall

Structural Models and Estimation

Contributed Session

Chair: Dinara Akchurina, INSEAD, Boulevard de Constance, Fontainebleau, 77305, France, dinara.akchurina@insead.edu

1 - The Impact of Strategic Vertical Alliances in the Medicare Advantage Market

Dahae Jeong, Doctoral Student, Arizona State University, Tempe, AZ, United States, djeong85@gmail.com, Sang Pil Han, Sungho Park

More than two third of the seniors with age 65 and over carries two or more chronic diseases. Health becomes a more important issue as people age, and seniors not only consider the coverage but also value additional health-related services when deciding their insurance plan. To better serve the needs of the older customers, the providers of Medicare Advantage, the private insurance plans for seniors, offer various value-added services by forming strategic alliances. This paper aims to examine the economic impact of strategic vertical alliances in the U.S. Medicare Advantage market. Specifically, we focus on how different types of vertical partnerships between insurance companies and retail pharmacies - such as marketing alliances, technology partnership, co-product development and vertical integration - affect their market performances and patients' health outcomes. We further analyze the impact of vertical alliances on the perceived quality of the plans. We apply econometric models to analyze county-level aggregated data and mitigate potential endogeneity problem. This paper is the first paper to look at the impact of vertical alliances in the Medicare Advantage market and thus contributes to both marketing and aging literature. Our results also provide meaningful insights to the healthcare marketing practitioners targeting older customers.

2 - Work Then Play: A Model of Children Usage and Parent Purchase Decisions at an Online Education Platform with Gamified Content

Dinara Akchurina, INSEAD, Boulevard de Constance, Fontainebleau, 77305, France, dinara.akchurina@insead.edu, Paulo Albuquerque

In several categories, such as health or education, consumers often need encouragement to use products or make certain consumption decisions. To motivate usage, it is then common for firms to offer added product features and/or rewards that are only accessible conditional on consumption decisions. This leads to the managerial question of how to balance core product activities and rewards, so that the firm encourages both product usage and purchase. In this paper, we study this problem in the context of an online educational platform for children that offers access to virtual games as a reward for time spent studying. To explain usage decisions by children, we adapt the multiple discrete-continuous time allocation model to allow for conditional activities, i.e., when positive time allocation on one activity-gaming-depends on previous completion of another activity-studying. Children's utility and decisions then influence the parent's decision to subscribe to the product. We estimate our model with data from an online math education software firm that include daily usage decisions by children and subscription sign-ups by their parents. Our preliminary results suggest significant heterogeneity in usage incentives, calling for a customized platform design in terms of time allocation between the educational and game components.

3 - Product Introduction under Incompatibility in Complementary Goods Markets

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In many complementary goods markets, including tied goods, hardware and software, platform and applications, products are often incompatible across brands or technologies. Whether product incompatibility is primarily pro-competitive or anti-competitive is a source of active debate and an open empirical question. Given the growing prevalence of complementary goods markets, addressing the effect of product incompatibility on market competition is also crucial for antitrust and intellectual property policy and regulation. It is at the heart of recent antitrust cases, e.g., European Union v.s. Google (2016).This paper studies the impact of product incompatibility on industry competition and consumers' welfare in complementary good markets. Three questions are answered: What are the consumers' technology adoption and upgrading patterns under product incompatibility in complementary goods market? How does product incompatibility affect the optimal pricing strategies and the innovation (new product introduction)? What is the welfare effect of product incompatibility? In particular, how will compatible design change firm's profit and affect consumers' welfare in a new equilibrium? In the empirical application of US Men's shaving market, I develop a structural model of consumer demand and oligopoly product introduction game. A product is defined as a shaving system consisting of a primary good (razor) and a complementary good (blade). The model is estimated using a household level consumer panel data from 2004 to 2015. Given the estimates, I solve for the counterfactual market equilibrium in which products are compatible across brands. I find that product compatibility hinders the innovation, intensify the price competition and harms the consumer welfare.

4 - An Empirical Comparison of Methods for Aggregate Demand Analysis

Sandeep Satyavolu, Data Scientist, Procter and Gamble, 1 P&G Plaza, Cincinnati, OH, 45202, United States, satyavolu.s@pg.com, Vithala R Rao

Over the last two decades, researchers have used aggregate market share data to estimate demand models to extract individual level preferences towards product attributes (price included). Key aspects of these methods entail dealing with the estimation of a large number of parameters and the endogeneity problem due to the inclusion of the price variable. Beginning with the now classic BLP method (Berry, Levinsohn and Pakes 1995a), alternative methods have been proposed for estimating these models, the more prominent ones being a Bayesian approach (Jiang, Manchanda and Rossi 2009) and the MPEC (Dubé, Fox and Su 2012). While each method yields parameter estimates that may seem appropriate, there is no way to tell how "valid" the estimates are because they are not applied to a common dataset. Such a knowledge is necessary for using the estimates for managerial purposes such as forecasting and determination of WTP values for attributes. This paper fills that gap by employing three methods (BLP, Bayesian approach and MPEC) to two data sets - a synthetic data and transactional data for digital cameras. This paper will compare these different approaches, comment on various caveats with implementing each estimation method, compare model fit and accuracy, and interpret the final parameter estimates. We expect that this work will offer much needed guidance in the "right" approach to estimation of a demand model with aggregated data.

■ SD09

Room 239, Alter Hall

Reviews & Social Environments

Contributed Session

Chair: Anita Luo, Georgia State University, Department of Marketing, 35 Broad Street NW, Atlanta, GA, 30303, United States, aluo@gsu.edu

1 - Residential Mobility Privacy and Risk Seeking Behavior

Ruijuan Wang, Doctoral Student, Wuhan University, 299 Bayi Road, Wuhan, 430072, China, wangruijuan@whu.edu.cn, Jian Ni, Fue Zeng

This paper examines the effect of residential mobility on risk-taking behaviors in different societal situations. Using both field and experimental data, we show that the effect of residential mobility on insurance purchase is moderated by privacy concern, depending on the social exchange (social sharing) intentions among decision makers. Consumers who live in a high-mobility community, are mainly motivated by self-enhancement (e.g., self-expression achievement, aloneness), and this self-oriented incentive fosters risk-seeking behaviors. While this effect disappears if residents are sensitive to privacy concern being unwilling to share sensitive personal information. Conversely, consumers who live in a stability community, are mainly driven by emotional-connection (e.g., social acceptance and dependence), and this stableness-oriented mindset leads to risk-aversion. The provincial-level insurance data across China suggest that residential mobility foster financial risk-seeking behavior. We then analyze a rich individual-level insurance purchase dataset and test the potential mechanism of privacy concerns. Finally, in the control experiments, we manipulate residential mobility and privacy concern, and demonstrate that the "mobility" type participants' risk-taking behavior depends on their states of privacy concern and are is sensitive in risk-seeking related tasks (i.e., investment decisions), whereas the "stability" type participants are more sensitive in risk-aversion related task (i.e., insurance decisions).

2 - Examining the Cost of Over-solicitation in Direct Marketing

Anita Luo, Georgia State University, Department of Marketing, 35 Broad Street NW, Atlanta, GA, 30303, United States, aluo@gsu.edu

Consumer privacy related to direct marketing is an important topic that has received attention from the public and business alike. Goodwin (1991) defines consumer privacy based on control of information and control over unwanted intrusion into the consumer's environment, which includes unsolicited direct mail and telemarketing. Shiman (1996) suggested that the sheer volume of email solicitations could cause consumer concerns as it could be over-used for its low cost. Therefore, this research explores the issue of over-solicitation in direct marketing and whether companies might actually incur financial loss as a results of perceived privacy intrusion. Although there is extensive literature that has examined consumer privacy, no empirical studies have been conducted to examine the cost of over-solicitation in direct marketing. To address this issue, this study models the amount of direct mail sent, the number of emails sent, the number of emails opened given emails sent, and the purchase amount jointly through vine copula. The model is applied to a U.S. retailer selling multiple categories of home furnishing goods, which frequently sends out direct marketing communications to its customers. By examining how a high frequency of email and direct mail sent impacts customers' purchase behavior, we are able to examine the cost of over-solicitation in direct marketing. This study provides empirical guidance to help companies examine their direct marketing programs so they don't waste valuable marketing resources and actually alienate their customers from over-solicitation.

3 - How Dispersive Opinions Affect Evaluation: Edowment Effect Guides Attribution Choice

Guangming Xie, Doctoral Candidate, Southwest Jiaotong University, No. 111, North 1st section, Second Ring Road, Chengdu, 610031, China, xieguangming@my.swjtu.edu.cn, Pei Hu, Yushi Jiang

We show that the attribution choice of word-of-mouth (WOM) dispersion is systematically influenced by the magnitude of endowment effect for the product or service: high endowment-effect results in greater weighting of reviewer-related attribution (i.e., tastes, personalities, and individual styles) and reduced weighting of product-related attribution (i.e., look, quality, and texture). Three studies extend existing attribution-based approach to underscore the role of a contextual variable (i.e., endowment effect). Individuals will be more likely to choose a high-dispersion option over a low-dispersion one for a product or service for which they exhibited a strong endowment effect. As an important implication of our work, we also highlight a critical point that the mediating role of attribution choice in the relationship between WOM dispersion and purchase intention is moderated by the endowment effect. These findings reveal an important boundary condition of traditional models of consumer attributional inference and respond to the longstanding call for further exploration of the role that social distributions play in consumer decision-making process.

■ SD10

Room 605, Alter Hall

Digital Strategy

Contributed Session

Chair: Tolga M Akcura, Ozyegin University, Kusbakisi Caddesi No 2, Altunizade Üskÿdar, Istanbul, 34662, Turkey, Akcura@yahoo.com

1 - Identity Fragmentation Bias

Tesary Lin, University of Chicago Booth School, Hyde Park, 5807 Woodlawn Avenue, Chicago, IL, 60637, United States, tesarylin@uchicago.edu, Sanjog Misra

It is increasingly common for companies to collect customer data via different channels and sources. However, such data often contains different identifiers for the same individual. Failure to consistently identify the same customer leads to a fragmented measure of exposures and behaviors, causing biased estimates and erroneous inferences. Contrary to conventional wisdom, we show that the estimation bias does not always take the form of attenuation; instead, the estimator can have an arbitrary magnitude compared to the true value, making interpretation of estimates difficult. Bias persists even when the goal of analysis is obtaining a simple average effect. Using an analytical framework, we show that the estimation bias consists of two parts: a level shift caused by within-person activity bias, and a magnitude change caused by missing links, which can be further decomposed into measurement error and omitted variable bias. Attenuation bias occurs only under certain symmetry condition, which we formally characterize. We propose two different solutions to the estimation problem caused by identity fragmentation, which are tailored to different stages of the data collection process. First, careful experiment design and analysis permits estimator de-biasing, provided that the focus is on intent-to-treat. Second, stratified aggregation is generally useful when data is already generated, and is suitable for a wider range of analysis. We discuss potential complications for inference when data is linked by a third party company. Our findings have important implications for experiment design, cross-channel analysis, and data linking practices.

2 - The Strategic Role of Featured Product Recommendations on Online Retailers Competition

Skander Esseghaier, Associate Professor, ESADE Business School, Avda. Torre Blanca 59, Sant Cugat, Barcelona, 08172, Spain, skander.esseghaier@esade.edu, Sofien Bahani

Online retailers such as amazon.com and barnesandnoble.com make extensive use of product recommendations in categories such as books or movies, where they essentially carry the same assortment of products. Consumers in these markets differ in their store preference ("loyal" vs. "switchers") as well as in the strength of their product preference ("sure" vs. "unsure"). It is therefore puzzling that online retailers still rely on a traditional one-size-fits-all approach to product recommendations, recommending the same "featured" product (e.g., "editor spotlight pick" or "best seller of the month") to all their customers in the category. We examine the strategic implications of recommending a single featured product in the presence of such consumer heterogeneity. We show that such a recommendation approach enables differentiated retailers to mitigate the intensity of price competition. Specifically, these recommendations steer store loyal consumers toward the featured product, increasing the size of store loyal purchasers (relative to switchers) in the featured product market. This, in turn, reduces a store's incentive to compete aggressively for switchers in that market. In equilibrium, both stores feature the same product, compete less aggressively in the featured product market, and generate higher profits. In an online context, however, stores have substantial information about their loyal customers and are able to develop a preference-based approach to recommendations. Different consumers would be recommended different products that best match a store's information about their customers' individual preference. Interestingly, we find that in a competitive context, such an approach may not benefit the stores. We show that even if it were costless for stores to develop such preference-based recommendation systems, they would be better off with a one-size-fits-all approach, recommending the same featured product to all their loyal customers. This result challenges the widely held belief that the more information a firm has on its customers, the better off it would be.

3 - A Model of Brand Health

M. Tolga Akcura, Ozyegin University, Istanbul, 34662, Turkey, tolga.akcura@ozyegin.edu.tr

Peer influence, fast developing trends, social media (Instagram pictures/ stories, facebook likes, tweeted moments, shared videos) are some of the emerging yet proven technologies that influence consumer behavior. Brand managers admit that the traditional approaches and brand health metrics are not suitable for the fast-paced, technology-driven market places. Conducting annual brand audits are increasingly seen as obsolete. Timely prescriptive actions carry utmost importance. Defining new brand metrics that can guide branding and marketing decisions is a priority for most marketers, but, still, there are limited options. This research proposes a new approach to capture and model a brand's health. A novel set of metrics are obtained from social media over multiple years. Brand health is filtered from sales using Kalman Filtering that allows for structural breaks and differences between periods of strength and weakness using Gibbs sampling. The findings shed light on linking a brand's long-term health, fast-paced fluctuations in sales while providing meaningful managerial insights for day-to-day brand management decisions using big data.

■ SD11

Room 606, Alter Hall

International Marketing

Contributed Session

Chair: Connie Chang, Musashino University, 3-3-3 Ariake, Koto-ku, Tokyo, 135-8181, Japan, connie@musashino-u.ac.jp

1 - Cross-national Factors that Affect Customer Satisfaction

Seung Min Lee, Korea University Business School, Seoul, Korea, Republic of, flyfar@korea.ac.kr, Jong Min Kim, Jeongsoo Han

In order to understand the similarities and differences in customer's perceived satisfaction across countries, this research investigates cross-national determinants that influence customer satisfaction. Based on the cross-national determinants found, the authors further examine the differential impacts of these determinants on customer satisfaction. The authors conduct three empirical studies using an online review dataset from the international booking agency. The first study shows that life satisfaction and individualism are found to have significant impacts on customer satisfaction. In the second study, the results show that customers in countries with a lower level of life satisfaction express significantly greater inconsistency in customer satisfaction, given the same consumption experience. The third study provides evidence that customers in countries with a higher level of individualism show greater inconsistency in customer satisfaction, as well as a greater affection level of customer satisfaction, given the same consumption experience. These findings of our studies bring forward important managerial implications for international marketing practitioners to segment their global market.

2 - The Role of Moderately Congruent Brand Name and Country of Sourcing in Product Evaluation

Saurabh Bhattacharya, Lecturer, Newcastle University Business School, 5 Barrack Road, Newcastle, NE4 9EL, United Kingdom, saurabh.bhattacharya@ncl.ac.uk, Arpita Agnihotri

Firms often leverage foreign branding practices. Recent studies, however, suggest that when consumers perceive incongruence between the phonetics of a brand name and its country of manufacturing (COM), the brand is negatively evaluated especially for emerging market firms. These findings give rise to two further issues to be explored. First, studies to date did not test the impact of brand name and COM congruence (or incongruence) when phonetics of a country are not very well known among international consumers. For instance, German and French phonetics are well known in international communities, which is not the case with Chinese or Indian phonetics. Second, with regards to COO cue, literature is primarily focused on how multiple COO cues influence brand dimension individually and do not consider the interaction among them. Given that country of sourcing (COS), COM, and brand name are the most commonly used COO cues by firms, it is vital to explore the interplay between these COO cues in influencing product evaluation. Based on three experimental studies conducted across two European markets, our findings indicate that in the context of brands from emerging markets (like India), for product categories where they have positive product category micro image, a moderate congruency between brand name and COM is positively evaluated in comparison to incongruence. Furthermore, COS moderates the impact of a brand name and COM congruency on product evaluation such that the impact of an incongruence on product evaluation is lessened when COS is an emerging market. Managerial implications are discussed.

3 - The Effects of International Marketing Joint Venture Formations in Emerging Markets on Consumer Brand Attitudes

Mark Ratchford, Visiting Assistant Professor, Tulane University, New Orleans, LA, United States, mratchford@tulane.edu, Kiran Pedada, Mayukh Dass

As part of their global growth strategy, multinational corporations headquartered in developed markets (DMs) are increasingly expanding into emerging markets (EMs) such as India and China by forming international marketing joint ventures (IMJVs) with firms headquartered in EMs. Existing studies of IMJVs have primarily focused on firm-level actions such as formations and dissolutions and their antecedents and consequences. However, relatively little is known about the effects of these alliances on consumer attitudes and behaviors. In this paper, we examine the effects of DM-EM IMJV formations on consumer brand attitudes in an emerging market. Across three studies conducted in India, our findings suggest that the overall brand perception of the IMJV is largely driven by the brand perception of the developed market partner firm. Moreover, we find that consumers form more favorable perceptions towards an IMJV when there is a fit between the primary product categories of the developed and emerging market brands. Furthermore, product category fit matters more (less) when the IMJV is focusing on developing high (low) priced products. These findings will help both DM and EM firms make better IMJV partner selection and offering decisions.

4 - A Scale for Measuring the Country-of-origin Effect on Perceived Value in Services Industries

Connie Chang, Associate Professor, Musashino University, 3-3-3 Ariake, Koto-ku, Tokyo, 135-8181, Japan, connie@musashino-u.ac.jp, Yu-Hsu Hsu

This study aims to propose a scale for measuring the moderator effect of Country-of-Origin (COO) on customer-perceived value (CPV) in service industries by using samples of consumers in Japan, Taiwan, China, the USA and the United Kingdom. The merit in doing so is that our study is comprehensive because of the different hybrid service scenarios which contain different degree of service characteristics respectively. Furthermore, previous COO studies have focused on only one or two settings within a single country, the role of COO will be evaluated in a broader context in this study. The first study focuses on the effect of country image on customer-perceived value and a financial product is selected to examine the relationship. In order to test the relationship between a country's attributes and customer-perceived value, early childhood education programme is chosen. The final study is to test the effect of COO on more intangible dominant product such as consultancy and advisory services. A mixed-method research approach will be employed in in all three studies. The results will yield theoretical contributions to International Marketing, Services Marketing and Modelling literature. It will also contribute empirically to services companies which intend to improve their customer satisfaction and experience.

■ SD12

Room 745, Alter Hall

Online Deception

Contributed Session

Chair: Yegyu Han, Virginia Polytechnic Institute and State University, Blacksburg, VA, United States, yegyuhan@vt.edu

1 - Linguistic Aspects of Authentic and Fictitious Product Reviews - Combining Experimental and Text-analysis Approaches

Ann Kronrod, Assistant Professor of Marketing, University of Massachusetts-Lowell, Lowell, MA, United States, ann_kronrod@uml.edu, Jeffrey K. Lee, Ivan Gordeliy

Fraudulent user-generated content is harmful for both consumers and marketers and increases uncertainty about consumption experiences and offerings. To improve consumer experience online and increase consumer trust, marketers need a robust method to identify potentially fictitious product reviews. Here, the authors address this need via a novel method leveraging linguistic theory, experiment-driven data sampling, and automated text analysis on the language used in reviews. Relying on literature about the linguistics of experienced and imagined events, the authors suggest that fictitious reviews include: (1) less past tense, (2) less unique words, and (3) more abstract language. Testing these predictions via automatic text analysis of authentic and fictitious reviews, the authors find that writers of fictitious reviews used significantly less unique words and concrete nouns, but not significantly less past tense. They also find experimentally that awareness of these linguistic aspects does not improve how people write fictitious reviews. Similarly, awareness of these aspects did not improve the success rates of detecting fictitious reviews: participants became more suspicious, labeling more reviews as fictitious, but overall their detection rates did not improve. These findings offer insights to consumers and to managers of digital platforms that depend on consumer trust and on an abundance of authentic user-generated content. The results also suggest that some features are not easy to fake when composing fictitious reviews, and demonstrate the advantages of using automatic tools to detect potentially fraudulent online content. This work provides the basis to develop practical methods for detecting deception in consumer reviews.

2 - Role of Social Media in the Gaming Industry

Elham Yazdani, University of Utah, David Eccles School of Business, Salt Lake City, UT, 84112, United States, Elham.Yazdani@business.utah.edu, Shyam Gopinath

Role of Social Media in the Gaming Industry Past research has looked at the impact of WOM measures on different experiential products. Gaming has always been a popular part of the entertainment industry. In this research, we investigate the impacts of different types of online social media on game sales. We also study the role of price and seller's reputation after controlling for factors such as shipping country and method of payment. Moreover, our unique dataset enables us to understand how the impact of WOM measures on product sales is affected by the genre of game and its popularity. Although past research has looked at the general impact of WOM on sales, this research investigates a more comprehensive set of social media measures which enhances our understanding of this domain. Keyword: Online social media, user-generated content, word of mouth, internet marketing, gaming industry Authors: Elham Yazdani, Shyam Gopinath Presenter: Elham Yazdani

3 - Voice and Reflectivity as Drivers of Consumer Relationships with Smart Agents

Yegyu Han, Virginia Tech, Blacksburg, VA, United States, yegyuhan@vt.edu, Dipankar Chakravarti

Smart agents like IBM's Watson and Amazon's Echo are rapidly integrating into consumer households. Skill software and agents are moving consumers closer to an IoT world in which they develop relationships with smart agents and rely on them for performing chores, getting advice, and managing aspects of their daily lives (Hoffman and Novak 2017). Voice and speech characteristics critically influence consumers' perceptions of (and relationships with) smart agents (Schroeder and Epley 2016).We report two studies (set in a financial advising scenario) examining how features of vocal expressions and reflectivity (training) of smart agents lead to differential relationship outcomes. Study 1 compares trustworthiness, liking, and persuasion outcomes for a smart agent advisor versus a human advisor. Reflectivity is manipulated by the presence/absence of training (on personal risk orientation). We argue that consumers view smart agents (versus human advisors) as less contaminated by self-interest. Hence, given self-relevance towards a trained smart agent leads consumers to evaluate it as more trustworthy and likable. Thus, with high reflectivity (training present), persuasion (advice taking) is higher for the smart agent versus the trained human advisor. The effect reverses when reflectivity is low.Study 2 compares smart agents that differ on vocal expressions (rational/emotional). Since rational expressions are seen as more informative and factual, a recommendation delivered in the former mode is more persuasive. However, the effect reverses with reflectivity training because emotional expressions increase intimacy and anthropomorphism. Consumers are more likely to follow the advice because they infer that it meets their needs better.

■ SD13

Room 746, Alter Hall

New Products and Innovation 5

Contributed Session

Chair: Haosheng Fan, Hong Kong University of Science and Technology, HKUST, Clear Water Bay, Kowloon, Hong Kong, hfanae@connect.ust.hk

1 - The Creative Performance of Serial Ideators in Idea Contests

Tojin Eapen, PhD Candidate in Marketing, UNC Kenan-Flagler, Chapel Hill, NC, 27514, United States, Tojin_Eapen@kenan-flagler.unc.edu, Rajdeep Grewal

Idea-generation is a vital input to several key marketing activities such as new product development and advertising. It is increasingly common to find firms employing idea contests and other open innovation models to source ideas. Of recent interest has been the role of creativity in this process. A key assumption in previous studies is that individual creativity does not change over time as a result of participation in such contests. In the context of idea contests, it is also relevant to ask whether the nature of contests shape individual creativity over time. Of particular interest is the performance of serial ideators - individuals who contribute multiple ideas in such settings. The authors analyze how creativity of ideas generated by serial ideators is shaped by diverse participation on an open innovation platform. The authors use a large individual-level data set with 12,200 ideas that features 7,841 ideators across 47 contests to assess serial creative performance. The study employs a Bayesian growth curve model to measure changes in individual-level creativity over time. The authors model idea creativity as a multi-dimensional construct and utilize natural language processing and semantic analysis to evaluate componential dimensions of idea creativity over time. Results suggest that participating in diverse contests can improve creative performance of serial ideators. We also explore the implication of these results in the design of idea contests and open innovation platforms.

2 - Information and Incentive in Freelance Contests

Haosheng Fan, Hong Kong University of Science and Technology, HKUST, Clear Water Bay, Kowloon, Hong Kong, hfanae@connect.ust.hk, Song Lin

Innovation is among the top priorities of many firms and organizations, and is critical for their success. Innovations are often procured through external sources. Seeking external innovation or creativity is becoming more prevalent now because the costs of crowdsourcing are being significantly reduced by the Internet. One fundamental question in economics is how to design contracts or market mechanisms to motivate innovation. Innovations involve high risks and thus require innovators to make substantial effort to explore in risky directions that may yield little payoff. Contests have emerged as an important market design for firms to procure external innovations on online freelance platforms. In a typical contest, a firm seeking innovative output allows freelancers to submit one or multiple solutions over a period of time. Winner will be rewarded with a prize announced in advance. In this research, we focus on how firms should design contests to motivate freelancers to be more innovative. Particularly, we propose to investigate the important role information structure can play in motivating innovation in contests. On one hand, firms can provide interim feedback to freelancers, who can decide whether to improve on existing solutions or explore a different direction. On the other hand, whether freelancers can observe the outputs of competitors can influence their decision to participate and the effort they expend. Free riding may become an issue when outputs are publicly observable. Our research first contributes to literature on motivating innovation studying the tension between exploitation and exploration. Our research examines the tension in a more general setting where freelancers can exploit competing submissions as well, if competing submissions are observable. This research also contributes to literature on optimal contest design by investigating the effect of observing competing submission and interim feedback provision.

■ SD14

Room 607, Alter Hall

Marketing Strategy - Market Responses

Contributed Session

Chair: Akihiro Inoue, Keio University, 6-22, Suzuhara, Itami-City, 664-0882, Japan, ainoue@kbs.keio.ac.jp

1 - Negative Publicity and its Dynamic Impact on Company Sales and Stock Price: Perspectives of Customers and Investors

Jung Ah Han, Drexel University, Philadelphia, PA, 19104, United States, jh3299@drexel.edu, Bang Jeon, Rolph Anderson

This study reveals that the dynamic impact of negative publicity to customers may not be as harmful as to investors of the firm. When firms are faced with negative publicity, management tries to suppress it to help prevent any detrimental impact on the firm's sales and stock market price. However, in the marketing literature, whether the impact of negative information is beneficial or harmful to the firm is inconclusive, depending on the brand name value and the nature of negative publicity, among others. Applying time series econometric analysis to firm-level, survey and financial data for global car makers, we find that the impacts of negative information are dynamically changing over time, and negative publicity affects very differently customers vs. investors of the firm. From a customer's perspective, negative publicity has no significant effect on sales partly because negative publicity may be both harmful and beneficial to the firm through the awareness effect, i.e., consumers become more aware of the product in the marketplace. In contrast, while investors' initial response to negative publicity about a company may depress its stock market price, our results reveal that in fifty weeks or less, the company's stock price tends to return to its previous value thereby indicating that the negative impact of negative publicity on stock price tends not to be long-lasting. The main findings of our study suggest that when firms are faced with negative publicity, firms should focus their attention more on their investor relations over consumer relations for a considerable time period until the long-term impact of the negative publicity subsides.

2 - Stock Market Response to Disclosure and Surprises in Marketing Metrics

Ankit Anand, Georgia State University, 3348 Peachtree Rd, NE, Suite 204, Atlanta, GA, 30326, United States, aanand2@gsu.edu, V. Kumar

Firms face the challenge whether to disclose their industry-specific marketing outcomes during quarterly earnings announcements or not. Voluntary disclosure of marketing metrics may reduce information asymmetry and conflict of interest among managers and shareholders while at the same such disclosures are associated with higher proprietary costs and higher market expectations. Drawing on the efficient market hypothesis and market-based assets, we argue that firms disclosing marketing metrics, in addition to financial metrics, entertain higher stock market returns compared to firms that do not disclose such metrics. Once managers start disclosing marketing metrics, then analysts also start forecasting their estimates leading to a market expectation about these metrics similar to the case of financial metrics. Finance literature has found that beating market expectations of financial metrics (e.g., earnings per share) acts as good news to the stock market and the market rewards such firms leading to a higher abnormal return. Similarly, we argue that beating market expectations of marketing metrics also lead to a higher abnormal return; however, the impact is different in short vs. long-run. Drawing on investor underreaction theory and market-based assets, we argue that the immediate returns of marketing metric surprise are lower than eps surprise whereas the long-term returns of marketing metric surprise are higher than eps surprise. We also investigate the effect of marketing metric surprise on stock market returns for different types of metrics - product vs. customer, firm, analyst, and industry related boundary conditions. We test our claims using robust econometric techniques on S&P 1500 firms consisting of firms disclosing industry-specific marketing metrics and non-disclosing firms.

3 - An Approach to Product-development Strategy Taking into Account the Short-term Profit and the Mid-term Corporate Strategy using Sensitivity Engineering

Akihiro Inoue, Professor, Keio University, Keio Business School, 4-1-1 Hiyoshi, Kohoku-ku, Yokohama-City, 223-8526, Japan, ainoue@kbs.keio.ac.jp, Hidenori NANJO

In product development strategy, it is important to maximize the profit but sometimes marketing managers run across the trade-off between the short-term profit and the mid- or long-term corporate strategy. In this study, we propose an approach that allows marketing managers to design product-development strategy that maximizes the short-term profit while integrating the mid- or long-term corporate strategy using the hierarchical modeling. We applied the approach to the two Japanese luxury-cosmetic companies. Both companies mention the aesthetic strategy and technology strategy in their mid-term corporate strategies in different ways. We explicitly incorporated the several aspects of the aesthetic strategy using the kansei (sensitivity) engineering, as well as the technology strategy.

We collected the data from the 450 Japanese female samples with some screening conditions that satisfy the requirements to be the potential customers for the luxury cosmetics. We develop a hierarchical conjoint model where the basic attributes are used for the base model and the aspects derived from the kansei (sensitivity) engineering are specified for the hyper model and apply the model to the data, using the MCMC. We derived some implications where the short-term profit and the mid-term aesthetic and technology strategies are consistent but also found some implications where they are not consistent. We show the details in presentation and also propose some modification in aesthetic and technology strategies from the view point of the kansei (sensitivity) engineering.

■ SD15

Room 603, Alter Hall

CB – Affecting Consumer Preferences

Contributed Session

Chair: Sarang Go, Seoul National University, Sinlim, Seoul, 135010, Korea, Republic of, klover83@gmail.com

1 - Exploring Consumer Evaluations of Really New Products

Akihiro Nishimoto, Kwansei Gakuin University, 1-155, Ichiban-Cho, Uegahara, Nishinomiya, 662-8501, Japan, anishimoto@kwansei.ac.jp

There are many really new products which have completely differences for the existing products in various industries. Especially we can often see that digital technologies enhance the consumers' evaluations for such products recently. This study examines the success factors which they tend to reflect more favorably on them. In this study, favorable consumers' evaluation of the really new products is considered whether they can make sense of an extremely incongruent elements. That is, it is the extent to which their schema consistent with that products based on features and categories. In this research field, it has been considered that moderately incongruent with their associated category schemas are expected stimulate processing that leads to a more favorable evaluation relative to products that are either congruent or extremely incongruent (e.g. Meyers-Levy and Tybout 1989). Nowadays, it has been examined that what kind of an element or conjunctive enablers induce moderate incongruity (e.g. Noseworthy et al. 2017). This study conducts three experiments to investigate what kind of an element or conjunctive enablers induce moderate incongruity. Its findings would be able to help marketers successfully introduce incongruent new products.

2 - Modeling Decision Procrastination as an Indicator of Choice Uncertainty

Gilles Laurent, Professor, INSEEC, 13 Avenue De Poitou, Sceaux, 92330, France, glaurent@inseec.com, Raphaëlle Lambert-Pandraud, David Dubois

Consider a choice situation in which you will have to announce your choice at a pre-specified future deadline. Do you prefer to wait till the last minute to make your decision, or will you decide earlier? For example, in a restaurant, after reading the menu, do you decide immediately what you will eat, or do you keep your decision open till the waiter comes to take your order? Hesitating till the last minute is an indicator of uncertainty. Equally, an early decision is a manifestation of certainty. We propose a model in which the decision-maker has to choose between two options (say, two entrées) with random values associated with each value. As time passes before you have to announce your choice, new information becomes available and changes the parameters of the two value distributions. In some cases, this additional information will lead to an early decision (before the deadline); in other cases, the decision will be made only at the deadline. To test the model, we build on past work on attitude certainty to develop hypotheses regarding two determinants of decision timing, consumer age and repeat behavior (e.g., choosing a well-known entrée). We have access to very large samples of voters at a future election, collected over the last months before a presidential election, in which respondents indicate whether they have already made a decision and whether their decision is final. We use the model to check the impact of the two determinants. Managerial implications result from the identification of consumers more subject to procrastination, and therefore more susceptible to the impact of additional information.

3 - Expected Utility of Sports Spectators; Close or Lopsided Match

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People want to watch a sports game which cannot anticipate the result until the end of the game. Sometimes, however, excessive tension of contest lowers the interest of audience. Vast amount of existing researches have focused on finding explanation about what makes a difference of the preference level of suspense among sports fans and where is the optimal level of suspense. We apply Expected Utility Theory and Prospect theory to illustrate the expected utility of sports spectators. According to our findings, if someone someone who is satisfied more when the cheering team wins, he or she may prefer lopsided match than close match. And fans who support winning team, which means team which wins often, prefer lopsided match to close match because they forecast their team will win more than fans who support losing team, which means team which loses often. We manipulate the level of satisfaction when the cheering team wins (S) and subjective forecasted probability of win before the game (Q) of respondents and measure the utility of them toward difference game aspect (P) to verify our hypothesis. This study was carried out to investigate how the satisfaction of sports spectators will change according to the change of the game aspect. In particular, research model was set up using the Expected Utility Theory and Prospect Theoryof economics. The use of economics models to explain sports consumer behavior is different from that of previous studies, and consumers' prior expectations can affect the current game viewing based on Prospect Theory is another contribution of this research.