

Meheli Basu

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EXPERIENCE

Assistant Professor (Tenure Track) Fall 2020 -
Syracuse University

EDUCATION

Ph.D. Business Administration (Quantitative Marketing) 2020
University of Pittsburgh, USA

M.S. Electrical and Computer Engineering 2015
University of Iowa, USA

B.S. Electrical Engineering 2012
West Bengal University of Technology, India

RESEARCH INTERESTS

Areas: Digital marketing, sharing economy, consumer analytics, nutrition and healthcare, sustainability

Methodologies: Data science and machine learning, econometrics, structural equation modeling, multi-level modeling, natural language processing, numerical optimization, experiment design

PUBLICATIONS AND MANUSCRIPTS IN THE REVIEW PROCESS (* indicates equal authorship)

- Basu, Meheli** and Vanitha Swaminathan, “Consuming in a Crisis: Pandemic Consumption Across Consumer Segments and Implications for Brands”, with Vanitha Swaminathan, forthcoming at *Journal of Product and Brand Management*
- Dutta, Aniruddha, Tamal Batabyal, **Meheli Basu**, Scott T Acton (2020), “An Efficient Convolutional Neural Network for Coronary Heart Disease Prediction”, *Expert Systems with Applications, Volume 159*
- Dutta, Aniruddha, Saket Kumar, **Meheli Basu** (2020), “A Gated Recurrent Unit Approach to Bitcoin Price Prediction”, *Journal of Risk and Financial Management*, 13 (2), 23
- Basu, Meheli**, Hristina Nikolova, Jeff Inman (2019), “How Do Nutrition Promotions Impact Shoppers’ Sensitivity to Price Promotions?”, *North American Advances in Consumer Research*, 47, 291-296

Gu, W.*, **Basu, M.***, Chao, Z. and Lirong, W. (2017) “A Unified Framework for Credit Evaluation for Internet Finance Companies: Multi Criteria Analysis through AHP and DEA”, *International Journal of Information Technology and Decision Making*, Volume 16, 597-624

Basu, M., Mudumbai, R. and Dasgupta, S. (2015) “Intelligent Distributed Economic Dispatch in Smart Grids”, *Advances in Intelligent Systems and Computing*, Volume 385, 285-295

Bhattacharya, A., Dutta, S. and **Basu, M.** (2012) “Gravitational Search Algorithm Optimization for Short-Term Hydrothermal Scheduling”, *International Conference on Emerging Trends in Electrical Engineering and Energy Management, IEEE*, 216-221

Dutta, S.*, **Basu, M.*** and Bhattacharya, A. (2012) “Biogeography Based Optimization for Short-Term Hydrothermal Scheduling”, *International Conference on Emerging Trends in Electrical Engineering and Energy Management, IEEE*, 38-43

“Nutrition Promotions: Augmenting Traditional Price-Based Promotions with Simplified Nutrition Information”, with Hristina Nikolova and Jeff Inman, under review at *Journal of Marketing Research*

WORKING PAPERS

“Device and Time-Related Search Effects on Deadline-Driven Online Purchases”, with Jeff Inman and Kirk Wakefield, manuscript ready for resubmission at *Marketing Science* (preliminary results published as *MSI report*)

“NLP for Investigating Corporate Social Responsibility Initiatives: Examining the case of corporate Covid-19 response”, with Aniruddha Dutta and Purvi Shah, manuscript ready for submission at *Journal of Business Research*

“Do Corporate Sustainability Ratings reflect Employees’ Perceptions”, with Aniruddha Dutta, manuscript in preparation, to be submitted to *Journal of Service Research*

WORK IN PROGRESS

“Impact of Brand communities on Seller Engagement in Lateral Exchange Markets”, with Sushma Kambagowni and Vanitha Swaminathan, data analysis in progress (targeted at *Journal of Marketing*)

“The Impacts of Reviews and Reviewer Attributes on Revenues Generated in the Sharing Economy: an empirical study of Airbnb”, with Lu Xiao, data analysis in progress (targeted at *Journal of Marketing Research*)

“Empirical Investigation of Interactions between Corporate Environmental, Social and Governance Risk Factors and Firm Performance Stability”, with Hyoryung Nam, data analysis in progress

“Leveraging AI and Video Summarization Techniques for Content Creation in Digital Marketing”, with Tamal Batabyal and Jeff Inman, data analysis in progress

AWARDS AND HONORS

- 2020 Syracuse University Innovative and Interdisciplinary Research Grant (CUSE grant) for “Impact of user reviews of service attributes on revenues in the sharing economy: Examining the case of Airbnb”, (with Lu Xiao), \$20,000
- 2020 National Science Foundation XSEDE Startup grant for “Video content analysis for customer behavior”, \$1342
- 2019 Workshop on Machine Learning selected participant, Carnegie Mellon University
- 2017 and 2018 Marketing Science Doctoral Consortium Fellow
- 2017 Marketing Science Institute Grant for “The Impact of Device Used in Digital Paths on Deadline-Driven Purchase Decisions” (with Jeff Inman and Kirk Wakefield), \$5000
- 2015-2016 Graduate Research Fellowship, University of Pittsburgh, 2015-2016
- 2015-2020 Katz Graduate School of Business Doctoral Scholarship, University of Pittsburgh
- 2014, Ranked 2nd in NSF Iowa Experimental Program to Stimulate Competitive Research

CONFERENCE PRESENTATIONS

1. **INFORMS Marketing Science Virtual Conference** (2021), “Measuring Corporate Response to Covid-19 Using NLP on Press Releases”.
2. **INFORMS Marketing Science Conference** (2019), “Comparative Analysis of Nutrition and Price Promotional Sensitivities of Shoppers”, University of Roma Tre, Italy.
3. **Marketing Academic Research Colloquium** (2019), “Impact of Heightening Nutritional Value on Price Promotional Sensitivity”, Georgetown University, USA.
4. **INFORMS Marketing Science Conference** (2018 (invited), “Impact of Device Switching on Online Purchase Likelihood”, Temple University, USA.
5. **INFORMS Marketing Science Conference** (2017 (invited), “Digital Path to Purchase on Mobile Devices”, University of Southern California, USA.
6. **Marketing Academic Research Colloquium** (2017), “Differential Usage of Mobile in Online Search and Purchase”, University of Pittsburgh, USA.
7. **INFORMS Annual Meeting** (2017), “Using Data Envelopment Analysis and Analytical Hierarchical Process for Credit Evaluation in Banks”, Nashville, USA.
8. **Production & Operations Management Society Annual Conference** (2016), “Unified Framework for Credit Evaluation”, Orlando, USA.
9. **NSF EPSCOR Iowa Experimental Program to Stimulate Competitive Research** (2014), “Distributed Control Algorithm for Demand Response in Smart Grids”, Iowa State University, USA.

PROGRAMMING SKILLS

- Mathematical Tools: Weka (ML software), HLM, SAS, Stata, and SPSS Modeler
- Programming Languages: Python, R, MATLAB

TEACHING EXPERIENCE

Instructor, Syracuse University

- **Marketing Analytics** (BBA and MBA sections combined curriculum), Fall 2021
- **New Product Management** (BBA), Fall 2021, Fall 2020
- **Product Development** (BBA), Fall 2021, Fall 2020
- **PHD Readings Seminar in Marketing and Supply Chain Management**, co-instructor, Fall 2021

Instructor, University of Pittsburgh

- **Product Development and Management** (BBA), Spring 2020
- **Introduction to Marketing** (BBA), Fall 2018, Summer 2020
- **Marketing Fundamentals** (BBA), Spring 2018

Teaching Assistant, University of Pittsburgh

- **Introduction to Marketing** (BBA), Fall 2017
- Workshop on **Digital and Social Media Analytics** (MBA), Spring 2017
- **Data Analysis for Business**, Spring 2017
- **Data Mining** (MBA and BBA), Fall 2016

STUDENT SUPERVISION AND MENTORSHIP

Syracuse University

1. Courtney McEvoy, Whitman School (Undergraduate Honors Thesis Advisor)
2. Xiaobo Lin, PhD student, Whitman School (mentor)

University of Pittsburgh

1. Tutor for MBA Students in **Data Mining**, Fall 2016
2. Mentor for MBA Team on **Term Project**, Spring 2016

TEACHING INTERESTS

Digital marketing, marketing analytics, product management, marketing fundamentals, marketing research, data mining

RELEVANT GRADUATE COURSEWORK

Linear optimization	Applied machine learning
Linear regression analysis	Text Mining
Structural equation modeling	Econometric theory
Hierarchical linear modeling	General econometrics
Numerical methods and programming	Micro-economics and game theory
Probability and stochastic processes	Marketing behavior research
Bayesian statistics	Marketing models
Multivariate analysis	Consumer behavior
Statistical computing in R	Marketing strategy
Data mining workshop with Python	Research in sustainability

PROFESSIONAL SERVICE AND AFFILIATIONS

- Reviewer for *European Journal of Business Research*
- Reviewer for *European Journal of Operational Research (EJOR)*
- Reviewer for *Expert Systems with Applications*
- American Marketing Association member
- INFORMS member

REFERENCES

J. Jeffrey Inman
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& Albert Wesley Frey Professor of Marketing
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University of Pittsburgh
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SELECTED RESEARCH ABSTRACTS

Device and Time-Related Search Effects on Deadline-Driven Online Purchases

Understanding what drives higher online sales on different devices for deadline-driven purchases such as travel reservations and event tickets is important for retailers of time constrained products and services. We analyze 4.5 years of ticket purchases on StubHub to examine device use, search, and purchase behavior in online sessions. Using a conditional mixed-effects Type II Tobit model with a system of equations on 1.65M search sessions, we find that device and time-related contextual factors are associated with deadline-driven online purchases. Specifically, an online session on a mobile phone (vs PC) yields a lower purchase conversion rate. However, conditional on purchase, the average purchase price on an online mobile session is significantly higher than a PC session. Time of search plays a significant role in deadline-driven purchases. Higher purchase prices occur in earlier (vs later) online sessions, moderated by device switching from the prior online session. Conditional on purchase, the average purchase price on mobile sessions is higher in later (vs earlier) online sessions. The research offers several other insights and findings that call for online retailers to adapt marketing strategies based upon device type, device switching, time before the event, and average time of search in order to maximize revenue for deadline-driven purchases and effectively manage inventory.

Leveraging AI and Video Summarization Techniques for Content Creation in Digital Marketing

The burgeoning phenomenon of digital marketing on video distribution services such as YouTube and Vimeo, and social media platforms such as Facebook and Snap have led researchers to extensively delve into the effectiveness of specific characteristics of digital advertising, including video advertisements, such as use of positive content, humor, information and length of exposure time in generating consumer awareness and likelihood of purchase of a given product that is being promoted. But a lack of algorithmic exploration of digital videos has led to a massive gap in understanding the mindset of the targeted consumer, which renders viable video content creation as a major challenge in digital marketing. This research aims at bridging this gap, by using machine learning methods to process and analyze the vast library of available movie trailer videos (aimed at promotion of movies) from YouTube to understand key content features that improve users' engagement with a video. We semantically segment the video into key frames in a trailer by using video summarization techniques and use a fully convoluted network (FNN) to identify individual features in the key movie frames. Using natural language processing, the objective is to validate the FNN identified features with those determined from user comments on specific trailer aspects. Labels for the degree of favorability/success of trailers among viewers will be generated by using viewer statistics for a given video. Successful and highly engaging trailers along with associated ML identified features will then be aggregated to measure the contribution of specific key features in generating a highly favorable and successful movie trailer. Our objective is to decode any existing relationship among raw features in a sequence of trailers which may

increase consumer engagement with a given trailer (advertisement) and improve the odds of success of the movie (product). Metadata statistics will be investigated to examine spill-over effect of trailer success to the success of the movie. This research has broad implications for marketers and content creators to identify what type of video content increases user engagement in the digital platform, by analyzing existing video content.

Impact of Brand communities on Seller Engagement in Lateral Exchange Markets

The meteoric volatility of GameStop stock price due to engagement on a Reddit thread r/wallstreetbets in early 2021 is an example of how communication on online communities in social media can impact firms. Online communities (or internet groups) form because of members' common interest, admiration, sympathy, and often times such communities are born out of engagement for a specific brand and are referred to as Online Brand Communities. They are specialized brand communities that form in a virtual setting where members' interaction is primarily Internet-mediated. Extant research suggests that such communities are important to firms as they lead to higher brand awareness and loyalty, and increase firms' understanding of customers. However, there exists a gap in understanding the role of such communities for online peer-to-peer marketplaces such as Airbnb, Uber, Poshmark. A rise in conscious consumerism, desire for easy access, and shifting attitudes towards ownership, has led to high growth of online peer-to-peer marketplaces. Often, sellers on such platforms participate in online brand communities to gain information due to lower information search costs, perceived lack of information, and sometimes lack of trust in commercial information. Our research is aimed at understanding what drives engagement in online brand communities of peer-to-peer platforms and how that affects seller's engagement on the platform. Our key research questions are (a) What motivates sellers of peer-to-peer platforms to engage on online brand communities? (b) What aspects of online brand community posts/communications drive increased social engagement of sellers? (c) Does higher social engagement lead to higher engagement of sellers on peer-to-peer platforms?

The Impacts of Reviews and Reviewer Attributes on Revenues Generated in the Sharing Economy: an empirical study of Airbnb

In recent years, peer-to-peer markets, also commonly referred as the “sharing economy” or more technically, Lateral Exchange Markets have generated great interest both among consumers, and the research community. Examples of such companies include Craigslist, Uber, Airbnb, Lending Club, Kickstarter, among others. Among important topics of research interest in this area, is understanding the preference of users who choose such service platforms over other commercially available alternatives. Especially interesting is the emergence of Airbnb, arguably the poster child of the “sharing economy”, which has revolutionized peer-to-peer accommodation with a new technology-driven platform and has disrupted the traditional tourism lodging industry such as the hotel sector. Scholarly research on Airbnb has focused on understanding consumer preferences, but there is lack of literature on the spill-over effects of consumer preferences on revenues earned

(profitability) by individual “micro-entrepreneurs” providing service on such platforms (see Background section below). To that end, our research objective is to identify significant service features (both favorable and unfavorable) from existing user reviews on the Airbnb website, that are associated with profitable vs unprofitable listings (services on a sharing platform). We predict revenue potential (profitability) of a new listing (newly listed individual service on a sharing platform), measured in terms of average occupancy rates and monthly revenues, by building a machine learning model based on the identified features. Furthermore, we examine the moderation effects of reviewer profile and seasonality. This research is supported by a Syracuse University Interdisciplinary Research Grant and the data analysis is currently in progress.

NLP for Investigating Corporate Social Responsibility Initiatives: Examining the case of corporate Covid-19 response

In today’s age of freely available information, policy makers have to take into account a huge amount of information while making decisions affecting relevant stakeholders. While increase in the amount of information sources and documents increases credibility of decisions based on the corpus of available text, it is challenging for policymakers to make sense of this information. This paper demonstrates how policy makers can implement some of the most popular topic recognition methods, such as Latent Dirichlet Allocation and the Deep Distributed Representation method, along with recent developments in text summarization approaches, such as Word Based Sentence Ranking method and TextRank for sentence extraction method, to summarize the content of large volume of documents to understand the gist of the overload of information. We have applied popular NLP methods to corporate press releases during the early period (March to May 2020) and advanced period (June to August 2020) of Covid-19 pandemic which has resulted in a global unprecedented health and socio-economic crisis, when policymaking and regulations have become especially important to standardize corporate practices for employee and social welfare in the face of similar future unseen crises. The study aims to provide a framework for extracting insights from relevant corporate documents for decision-making by key stakeholder groups, such as policy makers, consumers and investors.

Nutrition Promotions: Augmenting Traditional Price-Based Promotions with Simplified Nutrition Information

This research examines how featuring simplified nutritional information next to price promotions of products in weekly promotional circulars (referred to as nutrition promotions) impacts retailers’ sales. Although past research has studied the effect of price promotions on sales, our research examines if the simple act of adding simplified nutrition information in a grocery retailer’s weekly circular provides an additional boost to the retailer’s sales. To that end, I build a multilevel Heckman model to analyze panel data of 6.1M product purchases over a 27-month period across four product categories for 40,000 shoppers of a grocery chain's frequent shopper program, and demonstrate that by

featuring simplified nutrition information in their weekly grocery circular, retailers can significantly increase sales volume of the promoted products above and beyond the effect of price promotion on the products, as well as sales volume of other non-promoted products in the promoted product category. Results also support our prediction that the effects of nutrition promotions on product sales are moderated by product healthiness and shopper nutrition consciousness. Further, a retailer can harness significant additional lift in weekly category dollar sales by including simplified nutrition information on some of the featured product promotions in their weekly flyers.