**NBER Digitization Tutorial**

**Applicant : Karthik Babu Nattamai Kannan**

1. **Please provide contact information, including email.**

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1. **Please provide a short description of the course of study pursued during graduate work, including the type of course work pursued, major and minor focus of study, year of advance, and so on.**

I am a 5th year PhD student with concentration in Information Technology Management at Scheller College of Business, Georgia Tech. I have close to 10 years of work experience as a technology and process consultant during which time I have consulted for clients such as Johnson and Johnson, GE, Citigroup and The Home Depot. I am also an American Society for Quality (ASQ) certified Six Sigma Black Belt.

In this PhD program, I have taken courses covering the foundations of economics, econometrics & research design, theory construction and seminars. I have also participated in 2 workshops – causal inference workshop organized by Nortwestern Law School in July 2014 and Structural Modeling Workshop organized by Carnegie Mellon University in August 2014.

While I focus on the economics of information systems, I use econometric analysis, field experiments and analytical modeling for analyzing these problems.

Selected coursework: Econometrics, Multivariate statistics, Advanced econometrics, Survival analysis, Microeconomics, Industrial organization, Game theory, Theory construction, PhD seminar – experimental methodology, PhD seminar – operations strategy, PhD seminar – e-commerce, PhD seminar – identification strategies for casual reasoning.

Software: Java, Python, SAS, Stata, R, Matlab

Courses taught: Business Analytics – Fall 2014, Fall 2015

1. **Please provide a short description of general research interests or other projects pursued. If the student has proposed a dissertation, and formed a committee, please provide a short description, expected date of completion, and general details.**

I am interested in studying the economics of information systems. I proposed my dissertation in August 2016 and plan to defend it by Summer 2017.

**Title**: Essays on the economics of Internet enabled markets: e-commerce, mobile Internet, and digital media convergence

**Committee Members**: Dr. Sridhar Narasimhan (co-chair), Dr. Jeffrey Hu (co-chair), Dr. Eric Overby, Dr. Saby Mitra

This dissertation explores the innovations in Internet enabled markets increase market access for both physical and information goods. In the *first essay* I explore how local entrepreneurs who are part of the Maker Movement overcome high buyer search costs in order to succeed in nationwide e-commerce markets or on their own websites. In the *second essay*, I explore how local businesses play an important role in the last mile delivery of Internet by providing free Wi-Fi hotspots to their customers. In the *third essay*, I explore how adoption of unlimited mobile data plan impacts the production and consumption of digital media across rural and urban areas. Please find below abstracts of these three essays:

1. **Social Media, Flash Sales, and the Maker Movement: An Empirical Analysis** - with Jeffrey Hu and Sri Narasimhan (submitted to Journal of Marketing July 2016)

The emergence of the maker movement has democratized the production of goods and increased consumer demand for designer goods, leading to the founding of e-commerce platforms such as Etsy, Fab, and Gilt. Designers with little brand recognition have to overcome high buyer search costs in order to succeed in these markets or on their own websites. We study two mechanisms that designers use to promote their products—flash sales and social media—by collecting data for 24,446 products sold from June to July 2013 on a popularUS-based e-commerce platform specializing in the sale of products made by local designers. We find that social media activities predict successes in product launches. Using two different identification techniques, we find that social media activities such as Facebook Likes, Pinterest Pins, and Faves have positive but different magnitudes of impact on sales, moderated by product type. Also, flash sale promotions increase average daily sales on the designer’s primary website by up to 0.8 units in the first week after a flash sale is initiated.

1. **Impact of Promoting Free Wi-Fi on Mobile Data Usage: Evidence from a Field Experiment** - with Jeffrey Hu and Sri Narasimhan

With the rapid proliferation of free Wi-Fi hotspots in public locations such as restaurants, shopping malls, airports etc., mobile users have the choice of accessing Internet either via paid mobile data plans or through the free Wi-Fi hotspots. We conduct a field experiment in July 2015 to study the *impact of promoting free Wi-Fi service on mobile data usage*. We work with a leading national mobile carrier in the USA[[1]](#footnote-1) to randomly choose 500,000 subscribers who receive a promotional text message about the availability of free Wi-Fi hotspots and compare them with a control group made of 500,000 customers who do not receive any promotional message. We use the monthly mobile and Wi-Fi data consumption information from March to October 2015 to study data consumption patterns. We find that customers are predominantly either mobile or Wi-Fi users. We use K-Means clustering to segment customers based on the time spent in hotspot locations, Wi-Fi data consumption and mobile data plan to segment customers who have a strong preference for Wi-Fi. We find that that the treated group has a statistically higher rate of Wi-Fi adoption, while the increase in Wi-Fi data usage is moderated by the mobile data plan. We are examining how Wi-Fi usage changes when customers reach high utilization of their monthly mobile data limits.

1. **Impact of Unlimited Mobile Data Plan on Media Consumption: A Natural Experiment** - with Eric Overby and Sri Narasimhan

In this article, we examine the impact of adoption of unlimited mobile data plan on data and TV consumption. We work with our partner company study a quasi-natural experiment that resulted when this company allowed its subscribers with both TV and wireless connection to switch to unlimited mobile data plan. We find that adoption of this plan increases monthly data usage by as much as 3.5GB per month. Surprisingly, this increase in data usage is moderated by the type of data plan previously held by the customer, with those who had plans with lower data caps almost doubling their consumption while others only marginally increasing their consumption. Also, TV consumption through streaming in mobile apps and browser-based access increased by as much as 6 minutes per user per month. Interestingly, music and sports related content exhibited the largest increase while local channels and family based entertainment had the smallest increase. We arrived at these results after controlling for individual heterogeneity, a time trend, and other unobserved time variant trends.

1. The company wishes to remain anonymous [↑](#footnote-ref-1)