Course Information

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Ph.D Research Seminar in Information Systems</th>
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<tr>
<td>Time</td>
<td>Monday, 9:30-1:15 PM</td>
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<td>Location:</td>
<td>SOM 2.902</td>
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<td>Professors:</td>
<td>Varghese Jacob, Eric Zheng</td>
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Course Description

This research seminar consists of two parts. The first part will cover empirical research methods in information systems. Students will learn various methods to deal with common problems in empirical studies. We’ll address issues such as the missing data problem, heterogeneity, endogeneity, serial correlation, self-selection bias and causation; explore common empirical methods including econometrics analysis, SEM, mixture models, latent variable modeling, event study, data matching and longitudinal data modeling will be explored. Time permits, we’ll also discuss several new empirical methods such as MCMC simulation, latent growth modeling, stochastic frontier, structural models and causality inference. Through the readings, you will also get familiar with classic IS topics (e.g. IT productivity, IT capability, firm performance and RVB theory) as well as several emerging IS topics (e.g. IT innovation and IT diffusion, social network analysis, online community, word-of-mouth through online reviews and blogs etc.) We will also introduce relevant SAS modules for some of the econometrics analyses.

The Second part of the course will cover analytical methods used in information systems. Students will learn the methodologies and discuss specific papers that have applied these techniques to specific problems in the IS field.

Course organization

We will discuss two papers each week, a primary one (around 2 hours) and a secondary one (around 1 hour). Students will be responsible for presenting the papers to the class and leading the discussion during and following the presentation. The presentation should be detailed in all aspects of the paper. Roughly two students will be assigned each week, one for each paper.

Students will work in ad-hoc groups (two members) to summarize each topic we discuss in class. The summary (around two pages) should discuss the problem addressed by the paper, the empirical or analytical model and data collection or problem framing, and the key results. List at least one limitation and one extension (that do not appear in the paper). Briefly state how the extension can be done (e.g. in terms of methodology enhancement, possible new data collection, changing assumptions etc.)
Each student will submit a term paper at the end of the semester. The term paper should address a potential research problem and explore the problem in depth. It is not expected that the term paper should be of publishable quality immediately, however sufficient effort should be put into the idea development, literature review, research design and a proposal for empirical validation (or model formulation for analytical papers), so that the idea can be developed further into a potentially publishable paper. Students are encouraged to talk to faculty members to get intermediate feedback throughout the project.

**Topics and Readings (Tentative)**

**January 12, 2009**

- **Course organization**
- **Introduction to IS empirical research in IS: history, present and future**
- **How to conduct a good empirical study?**
- **Readings**
  - Uncovering the intellectual core of the IS discipline. Anna Sidorova et al. MISQ 2008.

**January 19, 2009 (Martin Luther King Day – No Class)**

**January 26, 2009**

- **Methodology** - Structural equation modeling, Proc SYSLIN in SAS
- **Empirical Issues to discuss** – reliability, validity (internal, external), construct validity, discriminate validity, interaction, mediation, moderating effects
- **IS Topic** – IT Capability
- **Primary Readings**
    (Won the best paper award in IS 2007)

**Supplemental Readings**

**February 2, 2009**

- **Methodology** – Econometrics Modeling, SUR, SAS Proc GLM, GENMOD,
- **Empirical Issues to discuss** – bias, consistency, heterogeneity, multicollinearity, heteroscedasiticity, correlated error terms
- **IS Topic** – IT productivity, Firm performance
- **Primary Readings**
- **Supplemental Readings**

**February 9, 2009**

- **Methodology** – Econometrics analysis, instrument variable modeling, 2SLS, 3SLS
- **Empirical Issues to discuss** – endogeneity, measurement error
- **IS Topic** – IT Investment return, RVB, IT spillover
- **Primary Readings**
• Supplemental Readings
  o Information technology governance in IT investment decision processes: the impact of investment characteristics, external environment, and internal context. Yajiong Xue et al. MISQ08.

February 16, 2009

• Methodology – Longitudinal Data Analysis, SAS Proc MIXED, NLMIXED, event study
• Empirical Issues to discuss – fixed vs. random effects, linear vs. nonlinear, dynamic models
• IS Topic – Social network, IT innovation
• Primary Readings
  o Or Lavie’s Management Science paper on strategic alliance, and social network

• Supplemental Readings (on event study)
  o ERP Investments and the Market Value of Firms: Toward an understanding of Influential ERP Project variables, C. Ranganathan, Carol Brown, ISR, 17 (2), 145-161, 2006. (event study)

February 23, 2009

• Methodology – Empirical modeling
• Empirical Issues to discuss – self-selection
• IS Topic – Online review, online community, WOM
• Primary Readings
  o Self-Selection and Information Role of Online Product Reviews. Xinxin Li. Lorin Hitt, Forthcoming at ISR.

• Supplemental Readings
  o Competition Among Virtual Communities and User Valuation: The Case of Investing-Related Communities. Bin Gu, Prabhudev Konana Balaji Rajagopalan Hsuan-Wei Michelle Chen. ISR Vol. 18, No. 1, March 2007, pp. 68–85

March 2, 2008

• Methodology – Hierarchical Models, Multi-level Models, latent Growth Models
• Empirical Issues to discuss – modeling change both in intercept and slope
• IS Topic – Information Sharing
• Primary Readings
  o Information sharing from aggregated data, Peter fader, Zhiqiang (Eric) zheng, Balaji Padmanabhan. Working paper.
• Supplemental Readings

March 9, 2008

• Methodology – Causality inference, propensity score approach, Bayesian network
• Empirical Issues to discuss – observational vs. experimental data analysis, d-separation, causal Markov assumption
• IS Topic – TAM simulation, potential outcome
• Primary Readings
  o From Association to Causation via a Potential Outcomes Approach. Sunil Mithas and M.S. Krishnan, ISR 2009 Forthcoming.
• Supplemental Readings


Reading List for the Second Half of the course will be provided later

Topics that will be covered are provided

March 16, 2008 (Spring Break – No Class)

March 23, 2008

Modeling Fundamentals

March 30, 2008

Game Theory Applications

April 6, 2008

Game Theory Applications

April 13, 2008

Auctions and Pricing Models in IS

April 20, 2008

Auctions and Pricing Models in IS

April 27, 2008

Student Paper Presentations

May 4, 2008

Student Paper Presentations

Other tentative readings (for interests only) covering event study, MCMC, stochastic frontier, MSM etc.


Governance-Knowledge Fit in Systems Development Projects Amrit Tiwana, ISR forthcoming.


Cristina O. Siqueira, Judge Business School, University of Cambridge, Effects of innovation and organizational capabilities on firm performance: Evidence from UK small and medium enterprises (in press at the International Journal of Innovation Management, on dynamic capability theory)

*These descriptions, topics and timelines are subject to change at the discretion of the Professor.*