Title: Quantitative Research in Information Systems Technology (IST)

Instructors:

Class hours: Friday 3 hours (2+1)

Duration: 8 weeks

Course description:

This course is intended to prepare doctoral students in understanding the nature, assumptions and logic of quantitative research methodologies. The course will focus on issues related to design, concepts, analysis, interpretation, and evaluation of quantitative research procedures for information systems and technologies research.

Its major objective is to enable students to design information systems research, experiments and surveys including quantitative analytical parameters. Students will work in teams on an original research paper and will be expected to submit a short research paper. Research articles selected from a variety of research paradigms will be used throughout the course, addressing a diversity of IST topics.

Learning objectives:

Students will be expected to:
- Understand the nature of quantitative procedures
- Become familiar with quantitative research designs, and array of concurrent methods, to understand their uses, strengths, and limitations.
- Identify various ways of collecting quantitative data (survey, cross-sectional, longitudinal, etc.)
- Have a working knowledge on data analysis and strengths of various techniques
- Understand how to summarize, compile, interpret and report quantitative data
- Evaluate a research paper that reflects knowledge of quantitative methods in a research design.

Evaluation and Course Activities

1. Class attendance, participation- 25%
   (Regular attendance and active participation in the discussions)
2. Exercise and Home work- 25%
   (Responses to question and answer sessions, and tasks assigned for home)
3. Short Paper on a Specific Method- 25%
   (Critiquing a specific paper in terms of research methodology, analytical aspect, strengths and weaknesses, interpretation, or further improvement)
4. Evaluating the Research Paper- 25%
   (A 2-4 pages short paper. Could be an extension of item three above, or a separate paper on theme of team interest)

Week 1: Introduction, course overview, research topics
(No reading)

Introduction and course overview
Identification of a possible research topics

Week 2: IST Research Overview
(definition, concept, overview)

Readings:
  (Language of Research, Philosophy of Research, Ethics in Research, Conceptualizing)
Sample empirical paper (for discussion):


Additional recommended readings (Home work):


Week 3: IST Research Methodologies
(cross-sectional research vs. longitudinal research, from conceptualization to operationalization, choosing proper method)

Readings:


Sample empirical paper (Home work):


Additional recommended readings (Optional):


Week 4: Measure instruments, Reliability, Validity
(ensuring reliability and validity, data collection- secondary data collection, identifying sources of data, ensuring reliability and validity- putting secondary data in its proper context, referencing and citation, data treatment, coding and data input, data validation, pre-analysis)

Readings:


Sample empirical paper (Homework):

- Reading_1-Paper-7: Quantitative Positivist Research Methods in Information Systems (http://dstraub.cis.gsu.edu:88/quant; Please read the following link: Issues of measurement).

Additional recommended readings (Optional):


**Week 5: Questionnaire design, Survey techniques**
(compiling themes, identifying dependent and independent variables, measurements and scales, questionnaire design, pilot testing and refining)

**Readings:**
• QD-Paper-12: Practical guide for better questionnaires

**Sample empirical papers (Homework):**

**Additional recommended readings:**


• Paper-10: Sally Barnes (2001). Questionnaire Design and Construction, Institute for Learning and Research Technology


**Week 6: Sampling**
(identifying units of analysis, using lists and databases, sampling theory- different methods and techniques)


**Sample empirical paper (Homework):**

**Additional recommended readings (Optional):**

Week 7: Data analysis techniques
(inferential statistics- probability theory, hypothesis testing (z-test, t-test), anova, chi-square, u-test, h-test; advanced statistics- cluster analysis, factor analysis, conjoint analysis)

Readings:
  (Conclusion validity, Data preparation, Descriptive statistics, Inferential statistics)
- Reading_1-P7_Quantitative Positivist Research Methods in Information Systems (http://dstraub.cis.gsu.edu:88/quant): (Please read the following links: Data Collection Techniques, Data Analysis Techniques).

Sample empirical paper (Homework):

Additional recommended readings:

Week 8: Evaluation of IST research

Readings:
  (Evaluation research)
- Paper-23: Eric L. Dey and Joseph M. Fenty (u.d.). Instruments and tools of evaluation

Sample empirical paper (Homework):
- Report_1: Meta-study on lessons from existing evalua-tions as an input to the Review of EU spending, European Commission, 2008
- Report_2: Young People and Emerging Digital Services: An Exploratory Survey on Motivations, Perceptions and Acceptance of Risks, Institute for Prospective Technological Studies, 2009

Writing:
- A 2-4 short paper focusing a specific research topics