HEC MONTRÉAL | ZoneCours

80-724-07 Research Methods in IT

- Fall 2007 :J01

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Introduction

Objectives

The main objective of this seminar is to develop the students' knowledge and understanding of research methods in the field of information systems. A second objective is to develop the students' skills that will enable them to critically assess the quality of a research study. A third objective is to familiarize the students with the application of various research methods in the information systems filed.

To attain these objectives, the students will analyze research in information systems in terms of the methods currently used in the field and how well IT researchers are applying these methods. In addition, students will apply this new knowledge throughout the seminar through a variety of methodological exercises and by developing a research proposal on a subject of their choice.

Academic approach

Students will be encouraged to share their interpretations of the assigned readings, as well as analyze and critique them constructively. They will be asked to write summary syntheses on different subjects, complete methodological exercises and make presentations to their fellow students. Finally, students will draft a research proposal on a subject of their choice.

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Learning material

Bibliography

- Lecture notes

  Required Lecture notes 80724A available at the COOP bookstore.

- Kerlinger, F.N. & H.B. Lee (2000). *Foundations of Behavioral Research*, 4th edition, Wadsworth, Thomson Learning Inc.
  ISBN: 015507897
  Required textbook available at the COOP bookstore.

Assignments and examinations

- Participation (20%)
- Syntheses and methodological exercises (50%)
- Research proposal (30%)

Plagiarism

Please consult
List of sessions

Session 1 : THEME 1: Epistemological and Methodological Issues in IS Research (2007-SEPTEMBER-6)

Description

THEME 1

The objective of the first two sessions is to encourage the students to think through the arguments for and against the different epistemological and methodological views that IS researchers have adopted. The students are also encouraged to reflect how their own view of research compares to those found in the literature.

Readings

- **Hirschheim, R.A., "Information Systems Epistemology: An Historical Perspective," in Mumford, E., R. Hirschheim, G. Fitzgerald and T. Wood-Harper (eds.), Research Methods in Information Systems, Elsevier Science Publishers, North Holland, 1985.**
- **Kerlinger and Lee (2000), Chapters 1, 2 and 3.**
- **(x) Mason, R.O., "MIS Experiments: A Pragmatic Perspective", in Benbasat, I. (ed.), The Information Systems Research Challenge: Experimental Research Methods, Harvard Business School Research Colloquium, 2, Harvard Business School, Boston, Mass., 1989, 3-20.**
- **Weber, R., "Theoretically Speaking," Editor's comments, MIS Quarterly, 27, 3 (2003), iii-xi.**

Questions to ponder

1. **What is the scientific approach? How would you define a theory? A research framework?**
2. **What are the characteristics of a good research question?**
3. **How would you describe Hirscheim's (1985) view of research? What are the arguments he presents to justify his view? What is your position regarding his arguments? Do you agree or disagree with them? Why or why not?**
4. **How would you describe Mason's view (1989)? How does it compare to that of Hirscheim (1985)?**

Synthesis #1 (to be handed in class on September 6, 2007)

Identify a research question that you would be interested in studying. Describe it clearly and succinctly. Why do you find the question interesting and worthy of study? What in your opinion would be a good methodological approach to investigate your research question? Why? Try to be as specific and precise as possible in the description of the methodology you are proposing. Ideally, a proposal should be detailed enough so that another researcher who may wish to replicate your study would have all the information needed to be able to do so. However, as you need to fit everything into 3 single-spaced pages, you need to use your judgment to decide what to include and what to leave out of your text.

*****All texts marked with an X are not included in the Lecture notes 80724A but still constitute required reading for the course**

and should be read as part of your preparation for each session.***

Session 2 : THEME 1: Epistemological and Methodological Issues in IS Research (2007-SEPTEMBER-13)

Description

Readings

- **Benbasat, I. and R. Zmud, "The Identity Crisis within the IS Discipline: Defining and Communicating the Discipline's Core Properties," MIS Quarterly, 27, 2 (2003), 183-194.**
- **Orlikowski, W.J. and J.J. Baroudi, "Studying Information Technology in Organizations: Research Approaches and Assumptions," Information Systems Research, 2, 1 (1991), 1-28.**
- **Markus, L.M. and D. Robey, "Information Technology and Organizational Change: Causal Structure in Theory and Research," Management Science, 34, 5 (1988), 583 598.**
- **Gregor, S., "The Nature of Theory in Information Systems," MIS Quarterly, 30, 3 (2006), 611-642.**
- **Weber, R., "The Reflexive Researcher," MIS Quarterly, 27, 4 (2003), v-xiv.**
- **Weber, R., "The Rhetoric of Positivism Versus Interpretivism: A Personal View," MIS Quarterly, 28, 1 (2004), iii-xii.**

Questions to ponder

1. **Do you agree with Benbasat and Zmud's (2003) view of IS research? Why or why not? Are there any modifications that can be made to their model so that it better corresponds to your view of IS research?**
2. **What are the strengths and weaknesses that characterize IS research?**
3. **How are the concepts of variance theory and process theory defined? What are their similarities and differences?**

Synthesis #2 (to be handed in class on September 13, 2007)

What you are asked to do in Synthesis #2 depends on what you did in Synthesis #1. In essence, you are asked to investigate the research question you identified in Synthesis #1, but based on a different epistemological view than the one you adopted in Synthesis #1. For example, if you adopted a quantitative positivist approach to investigate your question in Synthesis #1, you need to propose in Synthesis #2 a different approach to investigate the same question.

Session 3 : THEME 2: Constructs, Measures, and their Validation in IS Research -- Construct Validation (2007-SEPTEMBER-20)

Description

THEME 2

Constructs are fundamental building blocks of any theory. Whether they borrow them from reference disciplines and apply them to an IS context, or create them from scratch, researchers need to be careful about several issues if they want to develop interesting and useful constructs. The objective of the next three sessions is to encourage the students to develop their thinking about constructs, as well as familiarizing them with some of the important approaches and tools positivist researchers employ for developing and validating constructs.

Readings

- **Churchill, G.A. Jr., "A Paradigm for Developing Better Measures of Marketing Constructs," Journal of Marketing Research, (1979), 64-73.**
- **Gerbing, D.W. and J.C. Anderson, "An Updated Paradigm for Scale Development," Journal of Marketing Research, 25 (1988), 186-192.**

- **Kerlinger and Lee (2000), Chapters 26, 27, 28 and 34.**
- **Peter, P.J., "Construct Validity: A Review of Basic Issues and Marketing Practices," Journal of Marketing Research, 18 (1981), 133-45.**
- **Straub, D., M.C. Boudreau, and D. Gefen, "Validation Guidelines for IS Positivist Research," Communications of AIS, 13, Article 24 (2004), 380-427.**

Questions to ponder

1. **Be prepared to define clearly and precisely the following terms: Construct; Conceptual definition; Operational definition; Reliability; Face validity; Content validity; Convergent validity; Discriminant validity; Construct validity.**
2. **What is the logic of the MTMM approach? What are its strengths and weaknesses?**
3. **How does the MTMM approach compare to that recommended by Gerbing and Anderson (1988)?**

Session 4 : THEME 2: Constructs, Measures, and their Validation in IS Research -- Construct Validation in IS Research (2007-SEPTEMBER-27)

Description

Readings

- **Davis, F.D., "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology," MIS Quarterly, 13, 3 (1989), 319-340.**
- **(x) Doll, W.J, T.S. Raghunathan, J. Lim, and Y.P. Gupta, "Research Report. A Confirmatory Factor Analysis of the User Information Satisfaction Instrument," Information Systems Research, 6, 2 (1995), 177-188.**
- **Ives, B., M.H. Olson and J.J. Baroudi, "The Measurement of User Information Satisfaction," Communications of the ACM, 26, 10 (1983), 785-795.**
- **Moore, G.C. and I. Benbasat, "Development of an Instrument to Measure Perceptions of Adopting an Information Technology Innovation," Information Systems Research, 2, 3 (1991), 192-222.**
- **Sethi, V. and R.C. King, "Non-linear and Non-compensatory Models in User Information Satisfaction Measurement," Information Systems Research, 10, 1 (1999), 87-96.**

Questions to ponder

1. **How was the MTMM approach used by Davis (1989)?**
2. **How would you describe Ives et al.'s (1983) conceptualization of the UIS construct?**

Synthesis #3 (to be handed in class on September 27, 2007)
You will receive a data file and the questionnaire that was used to generate it. You are asked to analyze the reliability and validity of the following constructs that were measured with this questionnaire: perceived usefulness, perceived ease of use, psychological ownership, facilitating conditions, cognitive absorption, involvement, and participation (the context of the study and

the items that were used to assess each construct will be communicated in class). The text portion of your synthesis should not exceed 3 single-spaced pages. However, if you wish you may attach an appendix of results tables.

Session 5 : THEME 2: Constructs, Measures, and their Validation in IS Research -- Construct Validation in IS Research (2007-OCTOBER-4)

Description

Readings

- **Agarwal, R. and V. Venkatesh, "Assessing a Firm's Web Presence: A Heuristic Evaluation Procedure for the Measurement of Usability," Information Systems Research, 13, 2 (2002), 168-186.**
- **Barki, H., "Thar's Gold in them Thar Constructs," Canada Research Chair in IT Implementation and Management working paper #07-02 (August 2007) (to be distributed electronically).**
- **Barki, H., R. Titah and C. Boffo, "Information System Use-Related Activity: An Expanded Behavioral Conceptualization of Information System Use," Information Systems Research, 18, 2 (2007), 173-192.**
- **Barki, H., S. Rivard and J. Talbot, "Toward and Assessment of Software Development Risk," Journal of Management Information Systems, 10, 2 (1993), 203-225**
- **(x) Salisbury, Wm. D., W.W. Chin, A. Gopal and P.R. Newsted, "Research Report. Better Theory Through Measurement--Developing a Scale to Capture Consensus on Appropriation," Information Systems Research, 13, 1 (2002), 91-103.**

Questions to ponder

1. **How are formative constructs defined? In what ways do their conceptualization and validation differ from that of reflective constructs? What are some concepts that interest you as a researcher and for which a formative conceptualization would be appropriate?**

Synthesis #4 (to be handed in class on October 4, 2007)

Based on your readings so far, you are asked to review a manuscript that will be distributed in class. Guidelines for reviewing will be distributed electronically. Your hand-in should be maximum 3 pages (single-space).

Session 6 : THEME 3: Collecting Data -- Issues in Data Collection and Surveys (2007-OCTOBER-11)

Description

THEME 3

While research data can be collected via different approaches, the survey method is one that IS researchers have frequently used. In these two sessions we will examine the issues and challenges involved in survey research and discuss how some of its pitfalls can be avoided.

Readings

- **Hufnagel, E.M. and C. Conca, "User Response Data: The Potential for Error and Biases," Information Systems Research, 5, 1 (1994), 48-73.**
- **Kerlinger and Lee (2000), Chapters 8, 25, 29 and 30.**
- **(x) Pinsonneault, A. and K. Kraemer, "Survey Research in Management Information Systems: An Assessment, " Journal**

of Management Information Systems, 10, 2 (1993), 75-105.

- **Podsakoff, P.M., S.B. MacKenzie, J.Y. Lee, and N.P. Podsakoff, "Common Method Bias in Behavioral Research: A Critical Review of the Literature and Recommended Remedies," Journal of Applied Psychology, 88, 5 (2003), 879-903.**

Questions to ponder

1. **What are the strengths and weaknesses of different data collection approaches such as interviews, the questionnaire, direct observation, and "unobtrusive" measures?**
2. **What are the advantages and disadvantages of longitudinal data collection approaches? Describe a research question for which a longitudinal data collection approach would be appropriate.**
3. **Describe a research question for which the questionnaire would not be an appropriate data collection tool.**
4. **Examine the articles you have read so far to identify those that have assessed their constructs with questionnaire measures. Among the items of the questionnaires that were used, can you identify any that would be better measured with a different method?**

Synthesis #5 (to be handed in class on October 11, 2007)

Prepare a structured list of criteria that a researcher needs to think about when considering survey research. Your list should be as exhaustive as possible and structured in a logical manner. Think of it as a researcher's check list that can be used to make sure all important aspects of a study are adequately handled. Such a list can also be useful when reviewing and evaluating the quality of the data collected in other papers and research studies.

Session 7 : THEME 3: Collecting Data -- Survey Research in IS (2007-OCTOBER-18)***READING WEEK (2007-OCTOBER-25)***

Description

Readings

- **Barki, H. and J. Hartwick, "Interpersonal Conflict and its Management in Information System Development," MIS Quarterly, 25, 2 (2001), 195-228.**
- **Barki, H., S. Rivard and J. Talbot, "An Integrative Model of Software Project Risk Management," Journal of Management Information Systems, 17, 4 (2001), 37-70.**
- **Ewusi-Mensah, K. and Z.H. Przasnyski, "On Information Systems Project Abandonment: An Exploratory Study of Organizational Practices," MIS Quarterly, 15, 1 (1991), 67-87.**
- **Mahmood, M.A., "System Development Methods ¿ A Comparative Investigation," MIS Quarterly, 11, 3 (1987), 293-311.**
- **McKeen, J.D., "Successful Development Strategies for Business Application Systems", MIS Quarterly, 7, 3 (1983), 47 67.**

Synthesis #6 (to be handed in class on October 18, 2007)

Based on the structured list of criteria you developed in your Synthesis#5, you are asked to evaluate the five papers you read for today's class.

Session 8 : THEME 4: Investigating Casualty -- Experimental Research in IS (2007-NOVEMBER-1)

Description

THEME 4

Researchers are often interested in examining and testing possible causal relationships between constructs. With its guarantees of internal validity and variables that can be controlled and manipulated, the experimental method has until relatively recently been the positivist investigator's only means for testing hypotheses of causality. However, powerful data analysis approaches that

have been developed over the last years enable researchers to analyze their data by going much beyond relatively simple correlational inferences. These approaches are generally labeled second-generation methods and are based on solving structural equations. In these three sessions we will first examine the experimental approach, followed by an examination of second generation approaches.

Session 8

The experimental method is considered to be the most rigorous methodology for testing research hypotheses and a vast literature exists on the subject. This session is intended as an introduction to the subject.

Readings

- **(x) Mason, R.O., "MIS Experiments: A Pragmatic Perspective", in Benbasat, I. (ed.), The Information Systems Research Challenge: Experimental Research Methods, Harvard Business School Research Colloquium, 2, Harvard Business School, Boston, Mass., 1989, 3-20. (included in the readings of Session 1)**
- **Jarvenpaa, S., Dickson, G.W., DeSanctis, G., "Methodological Issues in Experimental IS Research: Experiences and Recommendations," MIS Quarterly, 9, 2 (1985), 141-156.**
- **Kerlinger and Lee (2000), Chapters 18, 19, 20 and 21.**
- **Pinsonneault, A., H. Barki, R. B. Gallupe and N. Hoppen, "Electronic Brainstorming: The Illusion of Productivity", Information Systems Research, 10, 2 (1999), 110-133.**

Questions to ponder

1. **What are the strengths and weaknesses of the experimental approach? What about laboratory experiments versus field experiments?**
2. **What are the differences between a pure experiment and a quasi-experiment?**
3. **According to Benbasat (1990) what were the weaknesses of experimental research in the IS field at that time? What were the recommendations made to overcome these weaknesses?**

Synthesis #7 (to be handed in class on November 1, 2007)

Is Jarvenpaa et al.'s (1985) framework appropriate for evaluating most experimental research in IS? Why or why not? Are there any additions or modifications that you would like to suggest to their framework, and if so what are they and why do you think they would be appropriate?

Session 9 : THEME 4: Investigating Casualty -- Second Generation Methods (2007-NOVEMBER-8)

Description

Readings

- **Carte, T.A. and C.J. Russell, "Research Essay. In Pursuit of Moderation: Nine Common Errors and Their Solutions," MIS Quarterly, 27, 3 (2003), 479-501.**
- **Chin, W. W. and P.A. Todd, "On the Use, Usefulness, and Ease of Use of Structural Equation Modeling in MIS Research: A Note of Caution," MIS Quarterly, 19, 2 (1995), 237-246.**
- **Gefen, D., D.W. Straub, and M.C. Boudreau, "Structural Equation Modeling and Regression: Guidelines for Research and Practice," Communications of AIS, 4, 7 (2000).**
- **Im, K.S. and V. Grover, "The Use of Structural Equation Modeling in IS Research: Review and Recommendations," in Whitman, M. E and A.B. Woszczynski (eds.), The Handbook of Information Systems Research, Hershey: PA, Idea Group Publishing, 2004, 44-65.**

- **Kerlinger and Lee (2000), Chapters 32, 33, 34 and 35.**

Questions to ponder

1. **What are the objectives, principles, strengths and weaknesses of the following analysis approaches: discriminant analysis, factor analysis, path analysis, canonical correlation, MANOVA and logistic regression?**
2. **What do the terms "measurement model" and "structural model" mean in structural equation modeling? What is the meaning of "correlated error terms" and how should they be handled? What is meant by "equivalent models"?**

Synthesis #8 (to be handed in class on November 8, 2007)

Using the data base that was distributed earlier, propose and test a research model linking the following constructs: system use, perceived ease of use, perceived usefulness, psychological ownership, social influence, facilitating conditions, cognitive absorption, involvement, and participation.

Session 10 : THEME 4: Investigating Casualty -- Second Generation Methods in IS Research (2007-NOVEMBER-15)

Description

THEME 4

Researchers are often interested in examining and testing possible causal relationships between constructs. With its guarantees of internal validity and variables that can be controlled and manipulated, the experimental method has until relatively recently been the positivist investigator's only means for testing hypotheses of causality. However, powerful data analysis approaches that have been developed over the last years enable researchers to analyze their data by going much beyond relatively simple correlational inferences. These approaches are generally labeled second-generation methods and are based on solving structural equations. In these three sessions we will first examine the experimental approach, followed by an examination of second generation approaches.

Readings

- **Barki, H. and J. Hartwick, "Interpersonal Conflict and its Management in Information System Development," MIS Quarterly, 25, 2 (2001), 195-228 (included in the readings of Session 7).**
- **(x) Barki, Henri, Guy Paré and Claude Sicotte, "Psychological Ownership as a Mediator of the Influence of User Participation on User Acceptance of Information Technology," working paper, (July 2007). (to be distributed electronically)**
- **Davis, F.D., R.P. Bagozzi and P.R. Warshaw, "User Acceptance of Computer Technology: A Comparison of Two Theoretical Models," Management Science, 35, 8 (1989), 982-1003.**
- **Hartwick, J. and H. Barki, "Explaining the Role of User Participation in Information Systems Use," Management Science, 40, 4 (1994), 440-465.**
- **Rai, A., S.S. Lang and R.B. Welker, "Assessing the Validity of IS Success Models: An Empirical Test and Theoretical Analysis," Information Systems Research, 13, 1 (2002), 50-69.**
- **Taylor, S. and P.A. Todd, "Understanding Information Technology Usage: A Test of Competing Models," Information Systems Research, 6, 2 (1995), 144-176.**

Synthesis #9 (to be handed in class on November 15, 2007)

Complete the list of criteria you prepared for survey research by incorporating the criteria that a researcher needs to think about when considering or evaluating causal analyses. Then, based on your criteria, evaluate the six articles you have read for this class.

Session 11 : THEME 5: Qualitative Approaches, Multi-Method Research and Ethical Issues in IS Research -- Qualitative Approaches in IS (2007-NOVEMBER-22)

Description

Session 11

The use of qualitative methods in information systems research is a relatively recent phenomenon. Although these methods used to be considered unreliable, they have gained credibility because of their successful application by several researchers. Furthermore, studies based on qualitative methods have not all shared the same epistemological position; some have been positivist, and others have taken a more interpretive perspective. (Mike Myers's Web site at http://www.qual.auckland.ac.nz/ is a good source of references on qualitative research).

Readings

- **Barley, S., "Technology as an Occasion for Structuring: Evidence from Observation of CT Scanners and the Social Order of Radiology Departments," Administrative Science Quarterly, 31 (1986), 78-108.**
- **Benbasat I., D. Goldstein M. Mead, "The Case Research Strategy in Studies of Information Systems," MIS Quarterly, 11, 3 (1987), 369 387.**
- **Dubé, L. and G. Paré, "Rigor in IS Positivist Case Research: Currents Practices, Trends, and Recommendations," MIS Quarterly, 27, 4 (2003), 597-635.**
- **Eisenhardt, K. M. "Building Theories from Case Study Research," Academy of Management Review, 14, 4 (1989), 532-550.**
- **Klein, H.K. and M.D. Myers, "A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems," MIS Quarterly, 23, 1 (1999), 67-93.**
- **Lapointe, L. and S. Rivard, "A Multilevel Model of Resistance to Information Technology mplementation," MIS Quarterly, (29:3), 2005, pp.461-491.**
- **Lee, A.S., "A Scientific Methodology for MIS Case Studies," MIS Quarterly, 13, 1 (1989), 33-52.**

Questions to ponder

1. **What are the strengths and weaknesses of qualitative approaches in general, and the case method in particular?**
2. **Can the notions of reliability, construct validity and internal validity apply in case research? How? Why or why not?**
3. **What criteria would you add to your list for assessing the quality of qualitative studies in general, and case studies in particular?**

Synthesis #10 (to be handed in class on November 22, 2007)

Based on your readings so far, you are asked to review a manuscript that will be distributed in class. Your hand-in should be maximum 3 pages (single-space).

Session 12 : THEME 5: Qualitative Approaches, Multi-Method Research and Ethical Issues in IS Research -- Multi-Method Approaches in IS (2007-NOVEMBER-29)

Description

Readings

- **Christiaanse, E. and N. Venkatraman, "Beyond SABRE: An Empirical Test of Expertise Exploitation in Electronic Channels," MIS Quarterly, 26, 1 (2002), 15-38.**

- **Kaplan, B. and D. Duchon, "Combining Qualitative and Quantitative Methods in Information Systems Research: A Case Study," MIS Quarterly, 12, 4 (1988), 571 588.**
- **Lee, A.S. and R.L. Baskerville, "Generalizing Generalizability in Information Systems Research," Information Systems Research, 14, 3 (2003), 221 243.**
- **Mingers, J., "Combining IS Research Methods: Towards a Pluralist Methodology," Information Systems Research, 12, 3 (2001), 240-259.**
- **Sussman, S.W. and W.S. Siegal, "Informational Influence in Organizations: An Integrated Approach to Knowledge Adoption," Information Systems Research, 14, 1 (2003), 47-65.**

Questions to ponder

1. **What part of Kaplan and Duchon's (1988) study is interpretive?**
2. **What are Minger's (2001) arguments for using multi-method approaches? In which cell of Minger's (1988) framework does the research question of your proposal belong? Why?**

Session 13 : THEME 5: Qualitative Approaches, Multi-Method Research and Ethical Issues in IS Research -- Ethical Issues in IS Research (2007-DECEMBER-6)

Description

Readings

- **Banerjee, D., "Modeling IT Ethics: A Study of Situational Ethics," MIS Quarterly, 22, 1 (1998), 31-60.**
- **Kerlinger and Lee, 2000, Chapter 17.**
- **Kock, N. and R. Davison, "Dealing with Plagiarism in the Information Systems Research Community: A Look at Factors that Drive Plagiarism and Ways to Address Them," MIS Quarterly, 27, 4 (2003) 511-532.**
- **Panel: IS Research Ethics: Defining Ethical, Barely Ethical and Unethical Behavior, ICIS 2000, Brisbane, Australia.**

Questions to ponder

1. **What are your answers to the questions asked in the ICIS 2000 panel?**
2. **What ethical issues, if any, are there in using for different purposes the manuscripts that have been reviewed for a journal? What different purposes can you think of?**
3. **What potential ethical issues can exist in the order of authorship of a paper?**
4. **What do you think are some of the ethical issues a professor can encounter during an academic career?**

Session 14 : Proposal Presentations (2007-DECEMBER-17)

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