TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MĀUI
VICTORIA
UNIVERSITY OF WELLINGTON

School of Information Management

INFO 513 QUANTITATIVE RESEARCH METHODS

Trimester 2, 2016

COURSE OUTLINE

Prescription

An examination of quantitative research methods appropriate to advanced research.

Course Learning Objectives

Students who pass this course should be able to:

1. Understand and apply the principles of theory operationalization using quantitative models in applied business disciplines
2. Understand and apply the principles of measurement and survey research in applied business disciplines
3. Understand and apply the principles and methods of quantitative analysis for hypothesis testing
4. Understand and interpret the results of statistical analysis using leading software packages

Course Content

1. Introduction to quantitative methods (R Kishore)

a. Objectives and assumptions of quantitative analysis and the scientific method
b. Post-positivism and quantitative methods
c. The role of quantitative methods in theory development and testing
d. What is a model? What is the difference between a model and a theory?

Required Readings

Colquitt, J., & Zapata-Pheelan, C. (2007). Trends in Theory Building and Theory testing: a Five Decade Study of the Academy of Management Journal. *Academy of Management Journal, 50*(6), 1281-1303.

Hair, J., Black, W., Babin, B., Anderson, R., & Tatham, R. (2006). *Multivariate data analysis (6th edition)*. New Jersey: Prentice Hall (Chapter 1)

Popper, K. (2000). Conjectures and Refutations. In T. Schick (Ed.), *Readings in the Philosophy of Science,* (pp. 9-13). Mountain View, CA: Mayfield Publishing Company.

Wolfs, F. (nd). Appendix E: Introduction to the Scientific Method (pp. 1-6). Rochester: University of Rochester.

Recommended Readings

Evermann, J., & Tate, M. (2011). Fitting Covariance Models for Theory Generation. *Journal of the Association of Information Systems, 12*(9), 632-661.

2. Exogeneity, independence, causality and prediction (R Kishore)

a. The difference between causality and prediction
b. Correlation is not causality
c. Identifying unobserved confounding variables
d. Making arguments for causality

Required Readings

William R.. Shadish, Cook, T. D., & Campbell, D. T. (2002). Experiments and Generalized Causal Inference. Chapter 1 of *Experimental and quasi-experimental designs for generalized causal inference*. Wadsworth Cengage learning, pp.1-32.

Aguinis, H., & Vandenberg, R. J. (2014). An ounce of prevention is worth a pound of cure: Improving research quality before data collection. *Annual Review of Organizational Psychology and Organizational Behavior, 1*(1), 569-595.

Van de Ven, A.H. (2007). Designing variance studies. Chapter 6 of *Engaged Scholarship: A Guide for Organizational and Social Research*. Oxford, UK: Oxford University Press, pp. 161-193

3. Measurement -1 (R Kishore)

a. What is measurement?
b. Introduction to latent variables (measuring 'existing objects' vs. measuring abstract constructs)
c. Scale and index development, item generation
d. Building a questionnaire – tips and techniques, including:
    i. Structure of a questionnaire
    ii. Question order
    iii. Introductions
    iv. Negatively worded questions
    v. Double-barrel questions
e. Using existing scales and adapting scales
f. Face validity, card sorting and non-statistical validation techniques

Required Reading

Boudreau, M.-C., Gefen, D., & Straub, D. (2001). Validation in Information Systems Research: A State-of-the-Art Assessment. *MIS Quarterly, 25*(1), 1-16.

DeVellis, R. F. (2003). *Scale Development: Theory and Applications, 2nd edition*. Newbury Park, California: Sage Publications. Chapter 1, 2, 5

MacKenzie, S., Podsakoff, P., & Podsakoff, N. (2011). Construct Measurement and Validation Procedures in MIS and Behavioral Research: Integrating New and Existing Techniques. *MIS Quarterly, 35*(2), 293-334.

Moore, G. C., & Benbasat, I. (1991). Development of an Instrument to Measure the Perceptions of Adopting an Information technology Innovation. *Information Systems Research, 2*(3), 192222.

Van Exel, N., & de Graaf, G. (2005). Q methodology: A sneak preview Retrieved from www.jobvanexel.nl website:

4. Measurement - 2 (R Kishore)

a. Theory and operationalisation
b. Ontology of latent constructs and indexes
c. Formative and reflective measures
d. Higher order factors

Required Reading

Bagozzi, R. P. (2011). Measurement and Meaning in Information Systems and Organizational Research: Methodological and Philosophical Foundations. *Mis Quarterly*, *35*(2), 261-292.

Borsboom, D., Mellenbergh, G., & van Heerden, J. (2003). The theoretical status of latent variables. *Psychological review*, *110*(2), 203-219.

Diamantopoulos, A. (2011). Incorporating Formative Measures into Covariance-Based Structural Equation Models. *Mis Quarterly*, *35*(2), 335-358.

Edwards, J. R. (2001). Multidimensional Constructs in Organisational Behavior Research: An Integrative Analytical Framework. *Organisational Research Methods*, *4*(2), 144-192.

Jarvis, C. B., MacKenzie, S., & Podsakoff, P. M. (2003). A Critical Review of Construct Indicators and Measurement Model Misspecification in Marketing and Consumer Research. *Journal of Consumer Research*, *30*(2), 199-218.

5. Surveys, Sampling and generalisability (R Kishore)

a. The survey process
b. Sources of survey error
c. Objective setting
d. Populations and frames
e. Sample design
f. Concepts of Weighting, Estimation, Bias, Variance

Required Reading

Bacharach, S. B. (1989). Organizational theories: Some criteria for evaluation. *Academy of management review*, *14*(4), 496-515.

Groves R.M., Fowler F.J., Couper M.P., Lepkowski J.M., Singer E., Tourangeau R. (2009) *Survey Methodology*, 2nd ed., Hoboken: Wiley (VUW library HA31.2 S963)

Gideon Lior (ed.) Handbook of Survey Methodology for the Social Sciences. (2012) Springer. (selected chapters) (VUW library: eBook: H62.G384.2012)

Lee, A. S., & Baskerville, R. L. (2003). Generalizing generalizability in information systems research. *Information systems research*, *14*(3), 221-243.

Seddon, P., & Scheepers, R. (2012). Towards the improved treatment of generalization of knowledge claims in IS research: drawing general conclusions from samples. *European Journal of Information Systems*, *21*(1), 6-21.

6. Preparing and inspecting data – measurement model (R Kishore)

a. Preparing the data for analysis / data scrubbing
b. Data characteristics / suitability of data for analysis
c. Missing data
d. Common method bias
e. Dealing with non-normal data
f. Inspecting the data

Required Reading

Field, A. (2005). *Discovering Statistics Using SPSS* (2nd ed.). London: Sage. (chapter 5)

Graham, J. (2009). Missing Data Analysis: Making It Work in the Real World. *Annual Review of Psychology*, *60*, 549-576.

Hair, J., Black, W., Babin, B., Anderson, R., & Tatham, R. (2006). *Multivariate data analysis (6th edition)*. New Jersey: Prentice Hall. (Chapter 2)

Hinkin, T. (1998). A brief tutorial on the development of measures for use in survey questionnaires. Retrieved from http://scholarship.sha.cornell.edu/articles/521

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

7. Introduction to the theory of quantitative techniques (1) (tbd)

a. Correlation
b. Regression

Required Reading

Field, A. *Discovering Statistics Using SPSS* London: Sage. (2nd ed (2005): Chapters 4, 5, 8, 9, 15; or 3rd ed (2009) Chapters 6, 7, 10, 11, 17)) Note: Both editions of the book are in the library, so two options are given. Please check the edition of the copy you are using.

8. Introduction to the theory of quantitative techniques (2) (tbd)

c. Analysis of variance
d. Moderation and mediation
e. Factor analysis

Required Reading

Field, A. *Discovering Statistics Using SPSS* London: Sage. (2nd ed (2005): Chapters 4, 5, 8, 9, 15; or 3rd ed (2009) Chapters 6, 7, 10, 11, 17)) Note: Both editions of the book are in the library, so two options are given. Please check the edition of the copy you are using.

Baron, R.M. and Kenny D. A. 1986. The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations. *Journal of Personality and Social Psychology*, 51: 1173-1182.

9. Introduction to the theory of quantitative techniques (3) (tbd)

a. Partial least squares (PLS)
b. Co-variance based structural equation models (CB-SEMs)
c. Selecting a method – comparing PLS and CB-SEM

Required Reading

Field, A. (2005). *Discovering Statistics Using SPSS* (2nd ed.). London: Sage.

Hair, J., Black, W., Babin, B., Anderson, R., & Tatham, R. (2006). *Multivariate data analysis (6th edition)*. New Jersey: Prentice Hall. (Chapters 9, 12, 13, 14, 15)

10. Analysing data and interpreting results – measurement model (tbd)

a. Interpreting measurement model metrics / measurement validity and reliability
b. Use of EFA and CFA
c. What happens if my measures are not valid?

Required Reading

Conway, J., & Huffcut, A. (2003). A Review and Evaluation of Exploratory Factor Analysis Practices in Organisational Research. *Organisational research Methods, 6*(2), 147-168.

DeVellis, R. F. (2003). *Scale Development: Theory and Applications, 2nd edition*. Newbury Park, California: Sage Publications. (Chapter 6)

Hair, J., Black, W., Babin, B., Anderson, R., & Tatham, R. (2006). *Multivariate data analysis (6th edition)*. New Jersey: Prentice Hall. (Chapter 3)

Straub, D., Boudreau, M.-C., & Gefen, D. (2004). Validation Guidelines for IS Positivist Research. *Communications of the ACM, 13, article 24*, 1-79.

11. Analysing data and interpreting results – the structural model – 1 (tbd)

a. Selecting appropriate model metrics
b. Hypothesis testing: interpreting structural model metrics (PLS)
c. Hypothesis testing: interpreting structural model metrics (CB-SEM)
d. Interpreting error terms, VIFs

Required Reading

Bagozzi, R. P., & Yi, Y. (2012). Specification, evaluation, and interpretation of structural equation models. *Journal of the Academy of Marketing Science, 40*(1), 8-34.

Chin, W. W., Peterson, R. A., & Brown, S. P. (2008). Structural equation modeling in marketing: Some practical reminders.*Journal of Marketing Theory and Practice, 16*(4), 287-298 Curto, J. D., & Pinto, J. C. (2011). The corrected VIF (CVIF).*Journal of Applied Statistics, 38*(7), 1499-1507.

Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of Marketing Research, 18*(3), 382-388.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*(1), 1-55.

Recommended Reading

Byrne, B. M. (2004). Testing for multigroup invariance using AMOS graphics: A road less traveled. *Structural Equation Modeling, 11*(2), 272-300. doi: 10.1207/s15328007sem1102_8

12. Analysing data and interpreting results – the structural model – 2 (tbd)

a. Analyzing moderation and mediation
b. Second order factors
c. Power and statistical significance
d. What happens if my model is not a good fit?
e. Comparing PLS and CB-SEM

Required Reading

Chin, W. W., & Todd, P. A. (1995). On the use, usefulness, and ease of use of structural equation modeling in MIS research: A note of caution. *MIS Quarterly, 19*(2), 237-246.

Chin, W. W. (1998). Issues and opinion on structural equation modeling. *MIS Quarterly, 22*(1), viixv.

Chin, W. W. (2010). How to write up and report PLS analyses. In V. E. Vinzi, W. W. Chin, J. Henseler, & H. Wang (Eds.),*Handbook of partial least squares: Concepts, methods and applications* (pp. 655-690). Heidelberg, Germany: Springer.

Hair, J. F., Sarstedt, M., Ringle, C. M., & Mena, J. A. (2012). An assessment of the use of partial least squares structural equation modeling in marketing research. *Journal of the Academy of Marketing Science, 40*(3), 414-433. doi: 10.1007/s11747-011-0261-6.

Wolf, E. J., Harrington, K. M., Clark, S. L., & Miller, M. W. (2013). Sample size requirements for structural equation models: An evaluation of power, bias, and solution propriety. *Educational and Psychological Measurement*. doi: 10.1177/0013164413495237

Trimester Dates

From Monday 11th July – Friday 14th October.

Withdrawal from Course

1. Your fees will be refunded if you withdraw from this course on or before Friday 22nd July 2016.
2. The standard last date for withdrawal from this course is Friday 23rd September. After this date, students forced to withdraw by circumstances beyond their control must apply for permission on an '*Application for Associate Dean's Permission to Withdraw Late'* including supporting documentation. The application form is available from either of the Faculty's Student Customer Service Desks or online

Names and Contact Details

	Staff	Contact Details	Room	Office Hours
Coordinator & Lecturer	Benoit Aubert	benoit.aubert@vuw.ac.nz	RH517	By appointment
Lecturers	Rajiv Kishore	rkishore@buffalo.edu	RH527	By appointment
	James Richard	james.richard@vuw.ac.nz	RH1104	By appointment
	Jean-Grégoire Bernard	jean-gregoire.bernard@vuw.ac.nz	RH518	By appointment

Class Times and Room Numbers

Thursday 09:30 - 12:20 Government Buildings GBG03

Course Delivery

Weekly seminars/debates.

Readings

The readings are listed in the weekly scheduled and on Blackboard available via Talis Aspire.

Mandatory Course Requirements

Students must submit all pieces of assessment.

If you believe that exceptional circumstances may prevent you from meeting the mandatory course requirements, contact the Course Coordinator for advice as soon as possible.

If you cannot complete an assignment or sit a test or examination, refer to www.victoria.ac.nz/home/study/exams-and-assessments/aegrotat

Expected Workload

To achieve satisfactory grades, you will need to spend at least 12.5 hours per week on INFO513, including time spent in class. Some aspects of the course will require less time, whereas others will require slightly more, depending on your previous knowledge of the topic. Before each session, please read the material for the week's topic and be ready to discuss the readings and other set work prepared for the class.

Expected Workload

To achieve satisfactory grades, you will need to spend at least 12.5 hours per week on INFO513, including time spent in class. Some aspects of the course will require less time, whereas others will require slightly more, depending on your previous knowledge of the topic. Before each session, please read the material for the week's topic and be ready to discuss the readings and other set work prepared for the class.

Assessment

The Assessment Handbook will apply to all VUW courses, see http://www.victoria.ac.nz/documents/policy/staff-policy/assessment-handbook.pdf.

Assessment items and workload per item		%	CLOs	Due Date
1	Participation and presentation	10	1 to 3	ongoing
2	Quantitative research project (survey design, data gathering, data analysis)	50	1 to 4	Week 12
3	Paper review and critique - 1 (max 1500 words)	20	1 to 4	Week 6
3	Paper review and critique - 2 (max 1500 words)	20	1 to 4	Week 11

Participation and Presentation: Each seminar session would be led by one student as a session leader who will make a 30-minute presentation to the class. The presenting student should send me a soft copy of his/her presentation by e-mail before the class and hand over a hard copy of the presentation (not more than 2 slides per page) to me at the beginning of the class. The presentation should include a discussion of the following items with respect to the assigned reading set. Please include separate slides in your presentation that address each of these questions individually.

1. The common themes that run through the set of papers/other assigned reading material
2. The key and novel aspects in this set of readings
3. The insightful and interesting ideas these readings provide
4. The important takeaways from this set of readings
5. At least two questions that you would like to ask and discuss in the class from this reading set
6. At least one research idea of interest to you based on this reading set that you can potentially use for developing the required seminar paper

Item #6 is important as it will allow to think of application of the methods covered in the reading set in your own research. So keep this issue always at the back of your mind as you read the assigned reading set.

Penalties

No assignment will be accepted late without prior arrangement.

Extensions

Personal extensions are granted only in special circumstances and supporting evidence such as a medical certificate

Non-extendable assessments. For reviews, there is no possibility of late submission as the elements will be discussed in class immediately after submission date.

Use of Turnitin

Student work provided for assessment in this course may be checked for academic integrity by the electronic search engine http://www.turnitin.com. Turnitin is an on-line plagiarism prevention tool which compares submitted work with a very large database of existing material. At the discretion of the Head of School, handwritten work may be copy-typed by the School and submitted to Turnitin. A copy of submitted materials will be retained on behalf of the University for detection of future plagiarism, but access to the full text of submissions will not be made available to any other party.

Student feedback

This course is offered for the second time. Adjustments were made to the assignments and material from week 7 was spread over 2 weeks.

Communication of Additional Information

Information will be provided using blackboard. Please monitor the site regularly.

Link to general information

For general information about course-related matters, go to
http://www.victoria.ac.nz/vbs/studenthelp/general-course-information

Note to Students

Your assessed work may also be used for quality assurance purposes, such as to assess the level of achievement of learning objectives as required for accreditation and academic audit. The findings may be used to inform changes aimed at improving the quality of VBS programmes. All material used for such processes will be treated as confidential, and the outcome will not affect your grade for the course.

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