ESADE
Business School
Universitat Ramon Llull

Master of Research in Management Sciences (MRes)

Academic Year: **2008-2009**
Module: **3**

Course: **Structural Equation Models**
Code: **08CMR55044**

ECTS Credits: **3**
Credit Category: **Optional**

Faculty: **Joan Manel Batista Foguet**

Objectives:

- To become familiar with the LISREL program.
- To enable participants to critically read articles in which these models are applied.

Upon completion of this course the participants will be able to:

- To specify models that relate variables measured with error.
- To specify Structural Equation Models with latent variables.
- To master all modeling stages of fitting these models. Emphasis will be place on model specification and on model diagnosis.
- To become familiar with the LISREL/SIMPLIS program.
- To critically read articles in which these models are applied.

Syllabus:

- History and objectives of Structural Equation Models (SEM).
- Example 1.
- Intuitive explanation of the basics of SEM. Interdependence analysis. Path analysis. The regression model from a different perspective. Degrees of freedom; residuals and goodness of fit.
- Measurement errors in regression models. Confirmatory factor analysis model, reliability, validity.
- Modelling stages. Theoretical and statistical grounds. Specification. Identification. Estimation.
- Goodness of fit assessment and model modification. The state of the art on SEM diagnosis.
- LISREL and PRELIS programs. Syntax, Results and interpretation.
- Example 2: Evaluation and analysis of the European Social Survey questions. Extensions: Measurement quality evaluation with the multitrait-multimethod model. Extension: ordinal variables.

- Example 3: Assessing Emotional Intelligence Competencies in Two Global Contexts. Extensions: Mean structures. Missing data. Multiple-group models. Factor invariance.
- Example 4: Simultaneous estimation of indirect and interaction effects using structural equation models Extension:Non-Linear effects

Bibliography:

Manuals

- W.E.Saris and I.N.Gallhofer (2007). Design, evaluation and analysis of questionnaires for survey research. Wiley.
- Hancock,GR. & Muller, RO. (Eds) (2006). Structural Equation Modeling. A second course. IAP
- Coenders, G., Batista-Foguet, JM. & Saris, W. (2005). Temas avanzados en modelos de ecuaciones estructurales. Madrid: La Muralla-Hespérides.
- Kline, R.B. (2005, 2nd ed). Principles and practice of STRUCTURAL EQUATION MODELING. Guildford
- Marcoulides GA & I. Moustaki (Eds) (2002). Latent Variable and Latent Structure Models (Quantitative Methodology Series). Sage.
- Du Toit, S., Du Toit (2001). Interactive LISREL. User's Guide. Chicago: Scientific Software International.
- Kaplan, D. (2000). Structural Equation Modeling: Foundations and Extensions. Thousand Oaks, CA: Sage Pub.
- Raykov, T. & Marcoulides, GA. (2000). A first course in structural equation modeling. Mahwah: Lawrence Erlbaum.
- Batista-Foguet, J.M. & Coenders, G. (2000). Modelos de ecuaciones estructurales. Madrid: La Muralla- Hespérides.
- Jöreskog, K. G., Sörbom, D. Du Toit, S. & Du Toit, M. (2000). LISREL8: New statistical features. Chicago: Scientific Software International.
- Bollen, K. A. (1989). Structural equations with latent variables. New York: John Wiley & Sons.
- M. Byrne (1989). A Primer of LISREL: Basic Applications and Programming for Confirmatory Factor Analytic Models. Springer-Verlag

Articles

- G. Coenders, Batista-Foguet, J.M. & Saris, W.E. (2008). Simple, Efficient and Distribution-free Approach to Interaction Effects in Complex Structural Equation Models. Quality & Quantity, 42, 369-396.
- Sánchez, M. & JM. Batista Foguet (2008). Predictive Model for the Intention of Condom Use. Affective and Cognitive Components of Attitude. Social Indicators Research, 87(1), 139-155
- Bisbe, J., Batista-Foguet, JM & R. Chenhall (2007). Defining management accounting constructs: A methodological note on the risks of conceptual misspecification. Accounting Organizations and Society, 32, (7-9), 789-820
- Batista-Foguet, JM, Boyatzis, R, Guillen, L. & R. Serlavós (2008). "Assessing Emotional Intelligence Competencies in Two Global Contexts" in Emmerling, R, Shanwal, V. & Mandal, M. (eds.) Emotional Intelligence: Theoretical and Cultural Perspectives (pp:89-114). San Francisco: Nova Science Publishers.

- Saris, W.E. y Batista-Foguet, J.M. & G. Coenders (2007). Selection of Indicators for the Interaction Term in Structural Equation Models with Interaction. Quality & Quantity, 41 (1), 55-72
- Bisbe, J, Coenders, G, Saris WE & JM. Batista-Foguet (2006). Correcting Measurement Error Bias in Interaction Models. Methodolôski Zvezki, 3 (2), 267-288
- Batista-Foguet, J.M., Coenders, G., Saris, WE. & Bisbe, J. (2004). "Simultaneous estimation of indirect and interaction effects using structural equation models", Metodološki Zvezki, 1, 1, 163-184
- Batista-Foguet, JM, Coenders, G& J Alonso (2004). Análisis factorial confirmatorio. Su utilidad en la validación de cuestionarios relacionados con la salud", Medicina Clínica, 122, 21-27.
- Corten, I.W., Saris, W.E., Coenders, G., van der Veld, W., Aalberts, C.E. & Kornelis, C. (2002). Fit of Different Models for Multitrait-Multimethod Experiments. Structural Equation Modeling, 9, 213-232.
- Batista-Foguet, JM. (2002). Structural Equation Modeling. QÜESTIIO. 26(3), 351-354
- Batista-Foguet, JM., Coenders, G. & Artés, M. (2001). Using Structural Equation Models to Evaluate the Magnitude of Measurement Error in Blood Pressure. Statistics in Medicine, 20, 2351-2368.
- Coenders, G. & Saris, W. E. (2000). Testing nested additive, multiplicative and general multitrait-multimethod models. Structural Equation Modeling, 7, 219-250.
- Coenders, G., Saris, W. E., Batista-Foguet, J. M. & Andreenkova, A. (1999). Stability of three-wave simplex estimates of reliability. Structural Equation Modeling, 6, 135-157.
- Batista-Foguet, J.M. & Saris, W. E. (1997). Tests of stability in attitude research. Quality & Quantity, 31, 269-285.
- Batista-Foguet, JM., Coenders, G. & Sureda, J. (1996). Satisfaction in Catalonia, Spain. In: Saris, WE., Veenhoven, R., Scherpenzeel, AC. & Bunting, B. (Eds.) A comparative study of satisfaction with life in Europe, (pp. 155-174). Budapest: Eötvös University Press.
- Coenders, G., Batista-Foguet, JM. & Satorra, A. (1995). Scale dependence of the true score MTMM model. In: Saris, W. E. & Münnich, Á. (Eds.), The multitrait-multimethod approach to evaluate measurement instruments, (pp. 71-87). Budapest: Eötvös University Press.
- Batista-Foguet, JM. & Saris, WE. (1992). A new measurement procedure for attitudinal research. Analysis of its psychometric and informational properties. Quality & Quantity, 26, 127-146.
- Batista-Foguet, JM. & WE. Saris (1988). Reduction in variation in response function for Social Sciences variables: Job Satisfaction. In Willem E. Saris (ed) Variation in response function a source of measurement error in survey research. Amsterdam, Sociometric Research Foundation.

Methodology:

During the sessions participants will be provided with the material needed to follow this course. The material includes both the theoretical content of the different subjects to be discussed and practical exercises related to these subjects to be solved using LISREL/SIMPLIS.

Participants will be asked to solve exercises outdoors, as well as, compulsory reading assignments on subsequently topics addressed in class. Outside class exercises to be done and handed in the week immediately after each topic is discussed

Assessment:

Handout practical exercises and to discuss readings proposed during the sessions.

The compulsory quiz and the presentation of a "PAPER" consisting of the completion of an exercise covering most of the subjects discussed. Data and the specific problem to solve will be chosen by the student from the "Emotional Competences web data base" and according to the course "Overview of Survey Research Techniques".

Incompatibilities:

Quantitative Methods. Regression Models and Multivariate Analysis Models.
Exploratory Factor Analysis and Cluster Analysis.

Timetable:

Monday 16/02/09
Wednesday 18/02/09
Every Monday from 23/02/09 to 02/03/09
Every Wednesday from 25/02/09 to 04/03/09
Monday 23/03/09
Wednesday 25/03/09

Exam 24/04/09
At 09:00 h.