

Introduction to Structural Equation Modeling

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This course will cover all the main areas of use of structural equation modeling in management, psychological, and social science research. Focus will be placed on specification of models, implementation of programs, and interpretation of findings.

Before the course begins, please read the following introductions (these and all readings will be provided for you):

1. “Classical Measurement Theory: Its Utility and Limitations for Attitude Research”
2. “Measurement in Marketing Research”
3. “LISREL models and methods” (This is Chapter 1, pages 1-36, in the *LISREL 8: User’s Reference Guide*; skim contents to simply get a sense of introductory topics and content of the LISREL program).
4. Read “LISREL Matrix Notation”, A 2-page handout. Try to become familiar with the 11 Greek letters, their English spelling, matrix representations, and descriptions.
5. Pages 323-341 in “Structural Equation Models in Marketing Research: Basic Principles”.

I. Day 1

Morning: Introduction to structural equation models and overview of many examples of use of LISREL. Discussion of notation and reliability.

Afternoon: Simple one-factor and two-factor models and interpretation of LISREL output. Higher-order confirmatory factor analysis models.

Background readings for reference:

“Structural Equation Models in Marketing Research: Basic Principles”.

Reading assignment: “Assessing construct validity in organizational research”.

II. Day 2

Morning: Finish of confirmatory factor analysis. Introduction to construct validity. Example of the classic Campbell and Fiske procedure (their 1959 *Psychological Bulletin* article is the highest cited article ever in psychology and the social sciences). Three trait, three method confirmatory factor analysis example.

Afternoon: Confirmatory factor analysis example for 4 trait, 2 method case. Correlated uniqueness model. Overview of alternatives (e.g., direct product model; models for cases when 2 or more trait-method measures exist). Issues of aggregation and item parceling.

Background readings for reference:

Bagozzi, R.P., Yi, Y., and Phillips, L.W. (1991). "Assessing Construct Validity in Organizational Research," *Administrative Science Quarterly*, 36, 421-458.

Bagozzi, R.P. and Yi, Y. (1992). "Testing Hypotheses about Methods, Traits, and Communalities in the Direct Product Model," *Applied Psychological Measurement*, 16, 373-421.

Bagozzi, R.P., Yi, Y., and Nassen, K.D. (1999). "Representation of Measurement Error in Marketing Variables: Review of Approaches and Extension to Three Facet Designs," *Journal of Econometrics*, 89, 393-421.

Read: "A General Approach for Representing Constructs in Organizational Research"

III. Day 3

Morning: Multiple sample analyses (e.g., for comparing confirmatory factor analyses across such groups as gender, organizations, or cultures). Structured means (i.e., tests of factor means across groups).

Afternoon: Miscellaneous topics. Formative versus reflective indicators. Identification. Evaluating model fit.

Examples.

Background readings for reference:

Bagozzi, R.P. and Edwards, J. R. (1998). "A general Approach for Representing Constructs in Organizational Research," *Organizational Research Methods*, 1, 45-87.

Bagozzi, R.P. and Heatherton, T.F. (1994). "A General Approach for Representing Multifaceted Personality Constructs: Application to State Self-Esteem," *Structural Equation Modeling*, 1, 35-67.

Read: "Self-categorization and Commitment as Distinct Aspects of Social Identity in the Organization".

IV. Day 4

Morning. Causality and causal models. Example of causal model in attitude context. Reciprocal causation.

Afternoon. Overview of social identity. Discussion of course project assignment.

Background readings as reference:

Bergami, M. and Bagozzi, R.P. (2000). "Self-categorization and commitment as Distinct Aspects of Social Identity in the Organization: Conceptualization, Measurement, and Relation to Antecedents and Consequences," *British Journal of Social Psychology*, 39, 555-577.

Bagozzi, R.P. (2007). "On the meaning of formative measurement and how it differs from reflective measurement," *Psychological Methods*, 12, 229-237.

Bagozzi, R.P. (2010). "Measurement and Meaning in Information Systems and Organization Research," forthcoming, *Management Information Systems Quarterly*.