

# MEASUREMENT THEORY & SCALING

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## Course Objectives

The purpose of this intensive course is to provide a broad introduction to measurement theory and alternative approaches for developing and assessing multi-item scales. The course is designed for non-experts and the emphasis is on the steps associated with the development and validation of sound measures for use in empirical studies. Its target audience includes doctoral students and academic researchers involved in quantitative research. **Important:** the course assumes previous knowledge of data analysis and basic multivariate statistics. It also assumes that participants have already completed an introductory structural equations modeling (SEM) course.

## Scope & Approach

The course seeks to familiarize participants with the various stages associated with the construction of sound measures for use in empirical research, highlighting key decisions and potential problems at each stage. Following an introduction of the key concerns of measurement theory, the conceptual underpinnings of alternative measurement perspectives – namely reflective and formative measurement – are discussed. These set the conceptual background for considering operational procedures for developing reflective scales and formative indices and for offering detailed guidelines for measure validation. To enable participants experience measure development “in action”, the various issues are illustrated with concrete examples of reflective scale development and formative index construction drawn from the literature.

Once participants have become familiar with basic measurement principles, more advanced topics will be addressed such as higher-order models, parceling strategies, and single-item measures. Note that in several of the illustrations used, the LISREL program will be applied to estimate the relevant models and, therefore, it is highly desirable that participants are familiar with basic structural equations modeling (SEM) procedures (see also Course Objectives above).

The course will take the form of interactive workshop sessions, placing particular emphasis on student participation. Participants are strongly encouraged to read widely on the subject (see Readings below) and would also benefit from having access to SEM software such as the LISREL program (a free student version of the latter is available for downloading under [www.ssicentral.com](http://www.ssicentral.com)).

## Readings

*Readings marked with an asterisk "\*" should ideally be read **prior** to the course; the remainder are more technical/advanced and best tackled **after** attending the course. Readings denoted (A) involve applications/illustrations of measurement development procedures in substantive research situations and can be consulted at any time.*

(A)Balabanis, G. and Diamantopoulos, A. 2016. Consumer xenocentrism as determinant of foreign product preference: A system justification perspective. *Journal of International Marketing*, 24(3): 58-77.

Bollen, K. A. 2011. Evaluating effect, composite, and causal indicators in structural equation models. *MIS Quarterly*, 35(2): 359-372.

Bollen, K.A. and Bauldry, S. 2011. Three Cs in measurement models: Causal indicators, composite Indicators, and Covariates. *Psychological Methods*, 16(3): 265-284.

Bollen, K. A. and Diamantopoulos, A. 2015. In defense of causa-formative indicators: a minority report. *Psychological Methods*, in press. doi:10.1037/met0000056.

\*Bollen, K. A. and Lennox, R. 1991. Conventional wisdom on measurement: A structural equation perspective. *Psychological Bulletin*, 110: 305-314.

Cenfetelli, R. T. and Bassellier, G. 2009. Interpretation of formative measurement in information systems research. *MIS Quarterly*, 33(4): 689-707.

\*Churchill, G. A. 1979. A paradigm for developing better measures of marketing constructs. *Journal of Marketing Research*, 16: 64-73.

\*Danes, J. E. and Mann, K. O. 1984. Unidimensional measurement and structural equation models with latent variables. *Journal of Business Research*, 12(3): 337-352.

Diamantopoulos, A. 2006. The error term in formative measurement models: Interpretation and modeling implications. *Journal of Modelling in Management*, 1(1): 7-17.

Diamantopoulos, A. 2011. Incorporating formative measures into covariance-based structural equation models. *MIS Quarterly*, 35(2): 335-358.

Diamantopoulos, A. 2013. MIMIC models and formative measurement: some thoughts on Lee, Cadogan & Chamberlain. *Academy of Marketing Science Review*, 3(1): 30-37.

Diamantopoulos, A. and Papadopoulos, N. 2010. Assessing the cross-national invariance of formative measures: guidelines for international business researchers. *Journal of International Business Studies*, 41(2): 360-370.

Diamantopoulos, A. and Riefler, P. 2011. Using formative measurement in international marketing models: A cautionary tale using consumer animosity as an example. *Advances in International Marketing*, 22: 11-30.

\*Diamantopoulos, A. and Siguaw, J. A. 2006. Formative versus reflective indicators in organizational measure development: A comparison and empirical illustration. *British Journal of Management*, 17(4): 263-282.

Diamantopoulos, A. and Temme, D. 2013. MIMIC Models, Formative indicators and the joys of research. *Academy of Marketing Science Review*, 3(3):160-170.

\*Diamantopoulos, A. and Winklhofer, H. 2001. Index construction with formative indicators: An alternative to scale development. *Journal of Marketing Research*, 37: 269-277.

Diamantopoulos, A.; Riefler, P. and Roth, K. P. 2008. Advancing formative measurement models. *Journal of Business Research*, 61(12): 1203-1218.

\*Diamantopoulos, A., Sarstedt, M., Fuchs, C., Wilczynski, P. and Kaiser, S. 2012. Guidelines for choosing between multi-Item and single-Item scales for construct measurement: a predictive validity perspective. *Journal of the Academy of Marketing Science*, 40(3), pp. 434-449.

(A)Foedermayr, E.; Diamantopoulos, A. and Sichtmann, C. 2009. Export segmentation effectiveness: Index construction and link to export performance. *Journal of Strategic Marketing*, 17(1): 55-73.

\*Fuchs, C. and Diamantopoulos, A. 2009. Using single-item measures for construct measurement in management research. *Die Betriebswirtschaft*, 69(2): 195-210.

\*Gerbing, D. W. and Anderson, J. C. 1988. An updated paradigm for scale development incorporating unidimensionality in its assessment. *Journal of Marketing Research*, 25: 186-192.

Jarvis, C. B.; MacKenzie, S. B. and Podsakoff, P. M. 2003. A critical review of construct indicators and measurement model misspecification in marketing and consumer research. *Journal of Consumer Research*, 30: 199-218.

\*Law, K. S.; Wong, C.-S. and Mobley, W. H. 1988. Toward a taxonomy of multidimensional constructs. *Academy of Management Review*, 23(4): 741-755.

MacKenzie, S. B.; Podsakoff, P. M. and Podsakoff, N. P. 2011. Construct measurement and validation procedures in MIS and behavioral research: Integrating new and existing techniques. *MIS Quarterly*, 35(2): 293-334.

Mowen, J. C. and Voss, K. E. 2008. On building better construct measures: Implications of a general hierarchical model. *Psychology & Marketing*, 25(6): 485-505.

\*Netemeyer, R. G., Bearden, W. O. and Sharma, S. 2003. *Scaling Procedures*, Sage Publications.

Noar, S. M. 2003. The role of structural equation modeling in scale development. *Structural Equation Modeling*, 10(4): 622-647.

(A)Oberecker, E. and Diamantopoulos, A. 2011. Consumers' emotional bonds with foreign countries: Does consumer affinity affect behavioral intentions? *Journal of International Marketing*, 19(2): 45-72.

Petter, S., Straub, D. and Rai, A. 2007. Specifying formative constructs in information systems research. *MIS Quarterly*, 31(4): 623-656.

Ping, R. A. Jr. 2004. On assuring valid measures for theoretical models using survey data. *Journal of Business Research*, 57(2): 125-141.

(A)Riefler, R. P., Diamantopoulos, A. and Siguaw, J. 2012. Cosmopolitan consumers as a target group for segmentation. *Journal of International Business Studies*, 43: 285-305.

(A)Schoefer, K. and Diamantopoulos, A. 2008. Measuring experienced emotions during service recovery encounters: Construction and assessment of the ESRE scale. *Service Business*, 2: 65-81.

\*Spector, P. E. (1992): *Summated Rating Scale Construction: An Introduction*, Sage Publications.

\*Steenkamp, J. B. E. M. and van Trijp, H. C. M. 1991. The use of LISREL in validating marketing constructs. *International Journal of Research in Marketing*, 8: 283-299.

Temme, D. and Diamantopoulos A. 2016. Higher-order models with reflective indicators: A rejoinder to a recent call for their abandonment. *Journal of Modelling in Management*, 11(1): 180-188.

Temme, D., Diamantopoulos, A. and Pfegfeidel, V. 2014. Specifying formatively-measured constructs in endogenous positions in structural equation models: caveats and guidelines for researchers. *International Journal of Research in Marketing*, 31(2): 309-316.

## **Instructor**

Univ-Prof. DDr. Adamantios Diamantopoulos holds the Chair of International Marketing at the University of Vienna, Austria. He is also Visiting Professor at the University of Ljubljana, Slovenia and Senior Fellow at the Dr. Theo and Friedl Schoeller Research Center for Business & Society, Nuremberg, Germany. During the academic year 2012/13, he was the “*Joseph A. Schumpeter Fellow*” at Harvard University. His main research interests are in international marketing and research methodology, and he is the author of some 150 journal articles in these areas. His work has appeared, among others, in the *Journal of Marketing Research*, *Journal of International Business Studies*, *Journal of the Academy of Marketing Science*, *International Journal of Research in Marketing*, *Journal of Service Research*, *Journal of International Marketing*, *Journal of Retailing*, *MIS Quarterly*, *Organizational Research Methods*, *Psychological Methods*, *Information Systems Research*, and *Journal of Business Research*. He has been the recipient of several Best Paper Awards, including the 2013 Hans B. Thorelli Award for the article published in *Journal of International Marketing* that has made the most significant and long-term contribution to international marketing theory or practice. He sits on the Editorial Review Boards of a dozen academic journals, and acts as a referee for several professional associations and funding bodies. In 2000, he was elected Fellow of the British Academy of Management and in 2013 Fellow of the European Marketing Academy. In the research performance rankings by the *Handelsblatt* newspaper (2009, 2012, 2014), he has been consistently ranked #4 in terms of "Lifetime Achievement" among all business administration academics in Germany, Austria and Switzerland.