

## Ljubljana Doctoral Summer School

8 – 12 July 2024

9:00 – 13:00 (CET, Ljubljana)

## MULTILEVEL ANALYSIS (Multilevel Regression and Multilevel SEM) (ECTS: 4)

**Ad DE JONG**

Copenhagen Business School, Denmark

### Aims of the course

This workshop deals with multi-level (nested) data and offers hand-on software training.

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Key OBJECTIVES are:

- a. To familiarize participants with the key characteristics of nested data.
- b. To enable participants to critically examine nested data with specific software and draw meaningful conclusions.
- c. To enable participants to apply (where suitable) multilevel analysis to their own research.
- d. To provide participants with insights into how to publish multilevel research in top-tier academic journals

The objectives will be achieved when actively participating during the workshop, by engaging with the literature and by doing the presentations and the assignments.

### Syllabus

Tentative schedule:

#### Day One

Time	Activities	
9:00 – 9:30	Getting acquainted	Students + Ad de Jong: interactive discussion
9:30 – 11:00	Preparing for Multilevel Analysis: Multiple Regression Analysis	Ad de Jong teaching
11:00 – 13:00	Applications of Multilevel analysis in Management, Marketing and Psychological Research	Student presentations + interactive discussion

#### Day Two

Time	Activities	
9:00 – 13:00	Introduction Multilevel analysis	Ad de Jong teaching



	-Introduction to multilevel analysis -Random intercept model and random slope model -Model selection, testing, explained variance  Special topics: -Multilevel analysis and data-aggregation -Multilevel analysis group-mean centering vs. grandmean	
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**Day Three**

Time	Activities	
9:00 – 10.00	Introduction to Stata software	Ad de Jong (tutorial)
10.00 –13:00	Computer training Stata	Ad de Jong + Students (tutorial, in-class assignment)

**Day Four**

Time	Activities	
9.00-10.30	Applications of Multilevel analysis in Management and Marketing, and Psychological Research: Special Topics	Student presentations + interactive discussion
10.30 –13.00	Multilevel analysis: Special topics  -Endogeneity in multilevel analysis -Multilevel moderation -Multilevel analysis for longitudinal data	Ad de Jong (teaching)

**Day Five**

Time	Activities	
9.00-10.30	-Multilevel factor analysis -Multilevel SEM -Multilevel mediation	Ad de Jong
10.30-12:00	Computer training Mplus	Ad de Jong + Students (tutorial, in-class assignment)
12.30-13:00	Drawing conclusions	Ad de Jong

**Course delivery****Teaching methods:**

- Lecturing
- Tutorials
- Student presentations

- In-class Assignments
- Interactive discussion

### Software:

We will be making use of Stata software and Mplus software.

#### As for **Stata**,

you can easily download a short-licence version from the following website:

<https://www.stata.com/customer-service/short-term-license/>

#### As for **Mplus** software,

you can easily download a demo-version from the following website:

<https://www.statmodel.com/demo.shtml>

## Course materials / List of readings

The participants will make use of several academic journal articles (see further below under the list of readings).

Fu, Frank Q., Keith A. Richards, Douglas E. Hughes, and Eli Jones (2010), "Motivating Salespeople to Sell New Products: The Relative Influence of Attitudes, Subjective Norms, and Self-Efficacy," *Journal of Marketing*, 74 (6), pp. 61-76.

de Jong, A., K. de Ruyter, and J. Lemmink (2004), "Antecedents and Consequences of the Service Climate in Boundary-Spanning Self-Managing Service Teams," *Journal of Marketing*, 68 (2), pp. 18-35

de Jong, A., Zacharias, N., & Nijssen, E. (2021). How Young Companies Can Effectively Manage Their Slack Resources Over Time to Ensure Sales Growth: The Contingent Role of Value-Based Selling. *Journal of the Academy of Marketing Science*, 92 (2) 304-326

Hensen, Niek, Isobel Keeling, Ko de Ruyter, Martin Wetzels, and Ad de Jong (2016) "Making SENS: Exploring the Antecedents and Impact of Store Environmental Stewardship Climate" *Journal of the Academy of Marketing Science*. 44 (4) 497-515

Hofmann, D.A. (1997). An Overview of the Logic and Rationale of Hierarchical Linear Models. *Journal of Management* 23(6), pp.723-744.

Kidwell, R.E., and Mossholder, K.W. (1997). Cohesiveness and Organizational Citizenship Behavior: A Multilevel Analysis Using Work Groups and Individuals. *Journal of Management* 23(6), pp. 775-793.

Schmitz, Christian, You-Cheong Lee, & Gary L. Lilien (2014). Cross-Selling Performance in Complex Selling Contexts: An Examination of Supervisory- and Compensation-Based Controls. *Journal of Marketing* 78 (May), 1- 19

Snijders, T.A.B (2003). Multilevel Analysis. In: Lewis-Beck, M., Bryman A.E., and Liao T.F. (eds.) The Sage Encyclopedia of Social Science Research Methods (Vol. II), Sage 2003, pp. 673-677.

Snijders, T.A.B., and Bosker R. (2012). Multilevel Analysis. London: Sage. Chapter 2: pp.6-13.  
Wieseke, Jan, Nick Lee, Amanda J. Broderick, Jeremy F. Dawson, and Rolf Van Dick (2008). Multilevel Analyses in Marketing Research: Differentiating Analytical Outcomes. *Journal of Marketing Theory and Practice*, vol. 16, no. 4 (fall 2008), pp. 321–339

Woisetschläger, David M.; Backhaus, Christof; Bettina Cornwell, T. (2017) Inferring Corporate Motives: How Deal Characteristics Shape Sponsorship Perceptions. *Journal of Marketing*, Vol. 81 Issue 5, p121-141

### ***Additional Literature (you don't necessarily need to read this for the course)***

Steenkamp, J-B.E.M., Ter Hofstede, F., and Wedel, M. (1999). A Cross-National Investigation into the Individual and National Cultural Antecedents of Consumer Innovativeness. *Journal of Marketing* 63(2), pp. 55-69.

Spencer (2008), "Models for Value-added Investigations of Teaching Styles Data," *Journal of Data Science*, 6, pp. 33-51

Lam, Son K., Florian Kraus, & Michael Ahearne (2010) The Diffusion of Market Orientation Throughout the Organization: A Social Learning Theory Perspective. *Journal of Marketing* Vol. 74 (61 September 2010), 61–79.

## **Prerequisites**

This course is meant for early-career researchers and doctoral students, and graduate students in Management, Marketing, Psychology, and related sciences, with an interest in latent variable and multi-level modelling analysis techniques. Familiarity with correlation and linear regression analysis is recommended.

## **Course credit**

Examination:

- One (10-minute) student presentation (either on Day One, or on Day Four): 33,3%
- Participation in discussions: 33,3%
- Two in-class Assignments: 33,3%

## **INSTRUCTIONS FOR THE STUDENT PRESENTATIONS:**

**Each participant is assigned to present one of the following articles, either on Day One or on Day Four.** Presentation is max. 10 MINUTES. **The aim is to present the study with focus on the METHODOLOGICAL aspects.** Please email the presentation and two discussion questions by **Saturday July 16 the latest to Ad de Jong ([adj.marktg@cbs.dk](mailto:adj.marktg@cbs.dk)).**

**Articles for student presentations DAY ONE:**

Kidwell, R.E., and Mossholder, K.W. (1997). Cohesiveness and Organizational Citizenship Behavior: A Multilevel Analysis Using Work Groups and Individuals. *Journal of Management* 23(6), pp. 775-793.

Schmitz, Christian, You-Cheong Lee, & Gary L. Lilien (2014). Cross-Selling Performance in Complex Selling Contexts: An Examination of Supervisory- and Compensation-Based Controls. *Journal of Marketing* 78 (May), 1– 19

De Jong, A., K. de Ruyter, and J. Lemmink (2004), "Antecedents and Consequences of the Service Climate in Boundary-Spanning Self-Managing Service Teams," *Journal of Marketing*, 68 (2), pp. 18-35

Fu, Frank Q., Keith A. Richards, Douglas E. Hughes, and Eli Jones (2010), "Motivating Salespeople to Sell New Products: The Relative Influence of Attitudes, Subjective Norms, and Self-Efficacy," *Journal of Marketing*, 74 (6), pp. 61-76.

**Articles for student presentations DAY FOUR:**

de Jong, A., Zacharias, N., & Nijssen, E. (2021). How Young Companies Can Effectively Manage Their Slack Resources Over Time to Ensure Sales Growth: The Contingent Role of Value-Based Selling. *Journal of the Academy of Marketing Science*, 92 (2) 304-326

Hensen, Niek, Isobel Keeling, Ko de Ruyter, Martin Wetzels, and Ad de Jong (2016) "Making SENS: Exploring the Antecedents and Impact of Store Environmental Stewardship Climate" *Journal of the Academy of Marketing Science*. 44 (4) 497–515

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**Course leader**

*Prof. Dr. Ad ("Addy") de Jong is a Professor of Marketing at Copenhagen Business School, Department of Marketing, Frederiksberg, DK. His research focuses on selling innovations; service marketing, frontline marketing, sales and service teams; multivariate analysis multilevel analysis. He is associate editor of the Journal of Service Research and serves on the editorial review boards of Industrial Marketing Management, and the Journal of Personal Selling & Sales Management and has published in journals, such as Management Science, the Journal of Marketing, the Journal of Management, the Journal of Retailing, the International Journal of Research in Marketing, the Journal of the Academy of Marketing Science, the Journal of Service Research, Industrial Marketing Management, the Journal of Product Innovation Management, the Journal of Management Studies, the British Journal of Management, Decision Sciences, Marketing Letters, European Journal of Marketing, Journal of Business Research, Journal of Personal Selling & Sales Management, Journal of Purchasing and Supply Management.*

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