LECTURE PLAN

Version: 22 January 2024 *(updated 4 April - changes in red)*

Calendar week (order)	Topic	Lecturer
	INTRODUCTION	
5 (1)	Course Organization & Objectives	AAT
	EXPLAINING CUSTOMER BEHAVIOR	
5 (2)	Factor Analysis (I)	AAT
6 (3)	Factor Analysis (II)	AAT
6 (4)	Structural Equation Modelling (I)	AAT
7 (5)	Structural Equation Modelling (II)	AAT
7 (6)	Structural Equation Modelling (III)	AAT
8 (7)	*Application/Case Study*	AAT
8 (8)	Partial Least Squares (I)	MBJ
9 (9)	Partial Least Squares (II)	MBJ
9 (10)	Partial Least Squares (III)	MBJ
10 (11)	Partial Least Squares (IV)	MBJ
	CAUSAL DISCOVERY, PRODUCT RECOMMENDATION & TARGETING (I)	
10 (12)	Bayesian Networks (I)	AAT
11 (13)	Bayesian Networks (II)	AAT
11 (14)	Bayesian Networks (III)	AAT
	WEB ANALYTICS	
12 (15)	Click-path analysis (I)	AAT
12 (16)	Click-path analysis (II)	AAT
14 (17)	Choice modeling (I)	AAT
14 (18)	Choice modelling (II) (1h) and *Description of Company Case Competition (1h)*	AAT/MBJ
	CUSTOMER SEGMENTATION	
15 (19)	Segmentation (I)	MBJ
15 (20)	Segmentation (II)	MBJ
16 (21)	Segmentation (III)	MBJ
16 (22)	Segmentation (IV)	MBJ
17 (23)	Segmentation (V)	MBJ
	PRODUCT RECOMMENDATION & CUSTOMER TARGETING (II)	
17 (24)	Association rules mining	MBJ
18 (25)	Collaborative filtering (CL) and Memory-based methods	MBJ
18 (26)	CL Model-based methods: Latent factor models and matrix factorization	MBJ
19 (27)	Wrap up product recommendation & customer targeting (II)	MBJ
19 (28)	*Students' presentations, incl. company feedback & reward for the best solutions (2h)*	AAT/MBJ

Notes:
Course description can be found here: https://kursuskatalog.au.dk/en/course/122979/Customer-Analytics

In Spring 2024, this course is thought by the following lecturers:

- Morten Berg Jensen (MBJ), Associate Professor (PhD)
- Ana Alina Tudoran (AAT) Associate Professor (PhD), course coordinator, anat@econ.au.dk

For administrative issues, please contact: Gitte Isager, gi@econ.au.dk

MAIN LITERATURE

Weeks 5(2) – 8(7). EXPLAINING CUSTOMER BEHAVIOR

FOR FACTOR ANALYSIS:

- Mehmetoglu M and Mittner M. (2022). *Applied Statistics using R: A guide for the Social Sciences*, Sage. **Chapter 13.** Available on Brightspace.

FOR STRUCTURAL EQ. MODELLING:

- Mehmetoglu M and Mittner M. (2022). *Applied Statistics using R: A guide for the Social Sciences*, Sage. **Chapter 14.** Available on Brightspace.
- Rosseel, Y. (2012). *Lavaan*: An R package for Structural Equation Modeling and more. *Journal of Statistical Software*, 48(2), 1-36. http://dx.doi.org/10.18637/jss.v048.i02 Also, useful *Lavaan* tutorial at: https://lavaan.ugent.be/tutorial/
- Chapman C. & Feit E. M. (2015). *R for Marketing Research and Analytics*, Springer. **Chapter 10.** Retrieved from https://soeg.kb.dk/permalink/45KBDK_KGL/1pioq0f/alma99123062640905763

Weeks 8(8) – 10(11). EXPLAINING CUSTOMER BEHAVIOR

- Hair Jr, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R: A Workbook. Available from: https://link.springer.com/book/10.1007/978-3-030-80519-7
  FOR:
  a. *Partial Least Squares Structural Equation Modelling (I):* **chapters 1, 3 and appendix A**
  b. *Partial Least Squares Structural Equation Modelling (II):* **chapters 3,4 and appendix A+B**
  c. *Partial Least Squares Structural Equation Modelling (III):* **chapters 5 and 6**
  d. *Partial Least Squares Structural Equation Modelling (IV):* **chapters 6, 7, and 8**

Weeks 10(12) - 11(14). CAUSAL DISCOVERY, PRODUCT RECOMMENDATION & TARGETING (I)

FOR BAYESIAN NETWORKS (I):

- Neapolitan, R. E., & Jiang, X. (2007). Bayesian Networks. In *Probabilistic methods for financial and marketing informatics* (1st edition ed). San Fransisco, CA: Morgan Kaufmann Publishers. Retrieved from https://ebookcentral-proquest-com.ez.statsbiblioteket.dk:12048/lib/asb/detail.action?docID=344676 **Chapters 3, 4**
- Scutari, M. (2010). Learning Bayesian Networks with the *bnlearn* R Package. *Journal of statistical software, 35*(3), 1-22. doi:10.18637/jss.v035.i03. Retrieved from http://dx.doi.org/10.18637/jss.v035.i03
- Marcot, B. G. (2012). Metrics for evaluating performance and uncertainty of Bayesian network models. *Ecological modelling, 230*, 50-62. doi:10.1016/j.ecolmodel.2012.01.013. Retrieved from http://ez.statsbiblioteket.dk:2048/login?url=http://dx.doi.org/10.1016/j.ecolmodel.2012.01.013

FOR BAYESIAN NETWORKS (II):

- Neapolitan, R. E., & Jiang, X. (2007). Bayesian Networks. In *Probabilistic methods for financial and marketing informatics* (1st edition ed). San Fransisco, CA: Morgan Kaufmann Publishers. Retrieved from https://ebookcentral-proquest-com.ez.statsbiblioteket.dk:12048/lib/asb/detail.action?docID=344676 **Chapter 11**

FOR BAYESIAN NETWORKS (III):

- Neapolitan, R. E., & Jiang, X. (2007). Bayesian Networks. In *Probabilistic methods for financial and marketing informatics* (1st edition ed). San Fransisco, CA: Morgan Kaufmann Publishers. Retrieved from https://ebookcentral-proquest-com.ez.statsbiblioteket.dk:12048/lib/asb/detail.action?docID=344676 **Chapters 12**

Weeks 12(15) - 14(18). WEB ANALYTICS

FOR CLICKSTREAM ANALYSIS:

- Chapman C. & Feit E. M. (2015). *R for Marketing Research and Analytics*, Springer. **Chapter 14**. Retrieved from https://soeg.kb.dk/permalink/45KBDK_KGL/1pioq0f/alma99123062640905763 *required only sections 14.2 and 14.4*
- Scholz, M. (2016). R Package clickstream: Analyzing clickstream data with Markov Chains. *Journal of Statistical Software, 74*(4), 1-17. doi:10.18637/jss.v074.i04. Retrieved from http://ez.statsbiblioteket.dk:2048/login?url=http://dx.doi.org/10.18637/jss.v074.i04

FOR CHOICE MODELING:

- Chapman C. & Feit E. M. (2015). *R for Marketing Research and Analytics*, Springer. **Chapter 13**. Retrieved from https://soeg.kb.dk/permalink/45KBDK_KGL/1pioq0f/alma99123062640905763 *required only sections 13.1. and 13.3.*

Weeks 15(19) – 17(23). CUSTOMER SEGMENTATION

FOR SEGMENTATION (I):

- ~~James G. et al. (2021). *An Introduction to Statistical Learning with Applications in R, 2. edition,* Springer. **Chapter 12.4, 12.5.3.** Retrieved from https://www.statlearning.com/~~
- Chapman C. & Feit E. M. (2015). *R for Marketing Research and Analytics*, Springer. **Chapters 11.1-11.3.** Retrieved from https://soeg.kb.dk/permalink/45KBDK_KGL/1pioq0f/alma99123062640905763

FOR SEGMENTATION (II):

- ~~James G. et al. (2021). *An Introduction to Statistical Learning with Applications in R, 2. edition,* Springer. **Chapter 12.4, 12.5.3.** Retrieved from https://www.statlearning.com/~~
- Chapman C. & Feit E. M. (2015). *R for Marketing Research and Analytics*, Springer**. Chapters 11.1-11.3**. Retrieved from https://soeg.kb.dk/permalink/45KBDK_KGL/1pioq0f/alma99123062640905763
- II. Stahl D. & Sallis H. (2012). Model-based cluster analysis. *Wiley Interdisciplinary Reviews: Computational Statistics*, 4, 341-358. Retrieved from https://soeg.kb.dk/permalink/45KBDK_KGL/1f0go08/cdi_proquest_journals_2007955996

FOR SEGMENTATION (III):

- Dolnicar et al. (2018). *Market Segmentation Analysis*, Springer. **Chapters 1-2 & Appendix A**. Retrieved from https://soeg.kb.dk/permalink/45KBDK_KGL/1pioq0f/alma99123003863505763
- Dolnicar S. & Leisch F. (2010). Evaluation of structure and reproducibility of cluster solutions using the bootstrap. *Marketing Letters*, 21(1), 83–101. Retrieved from https://soeg.kb.dk/permalink/45KBDK_KGL/1f0go08/cdi_proquest_miscellaneous_743794250
- Dolnicar S. & Leisch F. (2017). Using segment level stability to select target segments in data-driven market segmentation studies. *Marketing Letters*, 28(3), 423–436. Retrieved from https://soeg.kb.dk/permalink/45KBDK_KGL/1f0go08/cdi_proquest_journals_1929386332

FOR SEGMENTATION (IV):

- Vermunt J. K. & Paas L. J. (2017). Mixture models. In Leeflang, Wieringa, Bijmolt and Pauwels (Eds), *Advanced Methods for Modeling Markets*, Springer. Retrieved from https://soeg.kb.dk/permalink/45KBDK_KGL/1pioq0f/alma99123046653705763

FOR SEGMENTATION (V):

- Vermunt J. K. & Paas L. J. (2017). Mixture models. In Leeflang, Wieringa, Bijmolt and Pauwels (Eds), *Advanced Methods for Modeling Markets*, Springer. Retrieved from https://soeg.kb.dk/permalink/45KBDK_KGL/1pioq0f/alma99123046653705763
- De Keyser A., Schepers J. & Konuş U. (2015). Multichannel customer segmentation: Does the after-sales channel matter? A replication and extension. *Intern. J. of Research in Marketing*, 32, 453-456. Retrieved from https://soeg.kb.dk/permalink/45KBDK_KGL/1f0go08/cdi_proquest_journals_1762713010
- V. Bijmolt T. H. A., Paas, L. J. & Vermunt J. K (2004). Country and consumer segmentation: Multi-level latent class analysis of financial product ownership. *Intern. J. of Research in Marketing*, 21, 323-340. Retrieved from https://soeg.kb.dk/permalink/45KBDK_KGL/1f0go08/cdi_proquest_journals_196641665

Weeks 18(24) – 19(28). PRODUCT RECOMMENDATION & CUSTOMER TARGETING (II)

FOR ASSOCIATION RULES MINING:

- Agrawal, R., Imieliński, T., & Swami, A. (1993). Mining association rules between sets of items in large databases. *Proceedings of the 1993 ACM SIGMOD international conference on Management of data,* June, 207-216. Retrieved from https://soeg.kb.dk/permalink/45KBDK_KGL/1f0go08/cdi_openaire_primary_doi_5b55a4036bbb1dc2e9306c1d6e9a1cd4
- Chapman C. & Feit E. M. (2015). *R for Marketing Research and Analytics*, Springer. **Chapters 12.1-12.3.** Retrieved from https://soeg.kb.dk/permalink/45KBDK_KGL/1pioq0f/alma99123062640905763

FOR COLLABORATIVE FILTERING AND MEMORY-BASED METHODS:

- Aggarwal C. C. (2016). *Recommender systems*, Springer. **Chapters 2.1-2.4 (29-47).** Retrieved from https://soeg.kb.dk/permalink/45KBDK_KGL/1f0go08/cdi_openaire_primary_doi_ae1c611cdd33164ff9cdd7878d6cebdd
- R package: Recommenderlab

FOR LATENT FACTOR MODELS AND MATRIX FACTORIZATION:

- Aggarwal C. C. (2016). *Recommender systems*, Springer. **Chapters 2.6-2.6.2 (51-56), 3.6-3.6.4.6 (90-109).** Retrieved from https://soeg.kb.dk/permalink/45KBDK_KGL/1f0go08/cdi_openaire_primary_doi_ae1c611cdd33164ff9cdd7878d6cebdd
- Koren Y., Bell R. & Volinsky C. (2009). Matrix Factorization Techniques for Recommender Systems, *Computer*, August, 30-37. Retrieved from http://ez.statsbiblioteket.dk:2048/login?url=http://dx.doi.org/10.1109/MC.2009.263