INTERNATIONAL UNIVERSITY OF APPLIED SCIENCES

# ORAL ASSIGNMENT

## Tasks for Course: DLMDSUCE01 – Use Case and Evaluation

### CONTENT

# 1. TASKS

There are different topic options to choose from for the oral assignment. Please select only one to cover in your presentation.

Please note that this course has a very applied focus and deals with AI and data science use cases in companies. The presentations ask you to step into a certain role, e.g., in the role of a senior data scientist. When you plan your presentation, remember that you also have to create it for a specific audience. Choose the audience you wish to present to and create the presentation accordingly: What will this audience need to know from you?



## 1.1 Task 1: Use-case Churn

Imagine you are the Chief Data Officer of a big company serving individual users (e.g., retail chain, telecom/mobile phone carrier, insurance, etc.) and one of the concerns is customer churn. Choose a specific setting for your fictitious company (for example, mobile phone contracts) and develop a use-case around customer churn. You will present the use case within your company with the aim to convince your audience that it is worthwhile to implement it.

In particular, use the Machine Learning Canvas and discuss: How does the use-case generate value? How can this value be quantified (i.e., how much money would such a use-case bring? And in contrast, how much money will it cost to implement the use case?). Which data are likely needed, which data sources are available, what needs to be predicted and what are the subsequent actions? How is "success" defined and how is it measured?

**Introductory Literature:**

AL-Najjar, D., Al-Rousan, N., & AL-Najjar, H. (2022). Machine Learning to Develop Credit Card Customer Churn Prediction. *Journal of Theoretical and Applied Electronic Commerce Research*, *17*(4), 1529–1542. https://doi.org/10.3390/jtaer17040077

Lalwani, P., Mishra, M. K., Chadha, J. S., & Sethi, P. (2022). Customer churn prediction system: a machine learning approach. *Computing, 104*(2), 271–294. https://doi.org/10.1007/s00607-021-00908-y

Ribeiro, H., Barbosa, B., Moreira, A. C., & Rodrigues, R. G. (2023). Determinants of churn in telecommunication services: a systematic literature review. *Management Review Quarterly.* Advance online publication. https://doi.org/10.1007/s11301-023-00335-7

Tyagi, R., & Sindhu, K. (2022). Customer Churn Analysis Using Machine Learning. In M. S. Uddin, P. K. Jamwal & J. C. Bansal (Eds.), Springer eBook Collection. *Proceedings of International Joint Conference on Advances in Computational Intelligence: IJCACI 2021* (1. Ed., p. 495–507). Springer https://doi.org/10.1007/978-981-19-0332-8_37

### 1.2 Task 2: Dashboard Design

A supermarket implements the machine learning based replenishment use-case discussed in the example in the course book. Imagine that you, as a senior data scientist, are asked to design a dashboard for a supply chain expert in charge of monitoring the automated replenishment system used across 100 stores in 10 countries. The dashboard should allow the expert to monitor the current performance, highlight issues and indicate where a manual intervention may be required.

Discuss your design choices, in particular regarding the KPIs and the selected visualizations. Show with the help of a mock-up how the supply chain expert would work with the dashboard. Anticipate which difficulties could occur when using the dashboard in the daily business and how the design of the dashboard helps to avoid them.

**Introductory Literature:**

Loth, A. (2019). *Visual Analytics with Tableau*. Wiley. https://app.knovel.com/hotlink/toc/id:kpVAT0000E/visual-analytics-with/visual-analytics-with

Nussbaumer Knaflic, C. (2015). *Storytelling with Data: A Data Visualization Guide for Business Professionals.* Wiley.

Powell, B. (2017). *Microsoft Power BI Cookbook*, Packt Publishing.

### 1.3 Task 3: Successful Adoption of a ML-Based Solution

Imagine you are head of a large supermarket chain which has so far worked with manual processes: Inventory in the store and storage is tracked manually each day, orders for the next day are assembled manually, approved by the supply chain experts and their manager before being sent out as orders to the supplier or wholesaler. This approach is very costly as many of the employees spent most of their time working on the numerous manual processes and despite all this effort large gaps remain in the shelves due to out-of-stock situations as well as a high rate of waste for perishable food.

In a strive to modernize your business you have defined the use-case discussed in the course book (supermarket replenishment with a machine learning based solution) with an expert Data Science provider. Now you need to implement the use-case in your fictitious company. Discuss how the organization needs to change in order to work effectively with the new machine learning-based solution. In particular, focus on the roles of the employees, their current and future work as well as how they can be enabled to do that work. Show as well as how processes have to be adapted and how decision making will change. Formulate a plan how to work with key employees and roles as well as those who do not wish to change. Laying off workers or redundancies must be avoided in the change process.

**Introductory Literature:**

Donald, M. (2019). *Leading and Managing Change in the Age of Disruption and Artificial Intelligence*. Emerald Publishing Limited. https://doi.org/10.1108/9781787563674

Helmold, M. (2020). *Lean Management and Kaizen: Fundamentals From Cases and Examples in Operations and Supply Chain Management*, Springer.

## 2. ADDITIONAL INFORMATION FOR THE EVALUATION OF THE ORAL ASSIGNMENT

When conceptualizing the oral assignment, the evaluation criteria and explanations given in the writing guidelines should be considered.

## 3. TUTORIAL SUPPORT

Several options are available for support with presentations. The student is responsible for making use of these resources. Tutors are available for subject consultation on the choice of topic as well as for specific and general questions on academic work. There is no provision for the tutor to confirm acceptable outlines, parts of the content, or presentation drafts, since independent preparation is part of the examination. However, hints may be given on rough drafts to facilitate the creation of academic work.