Series 1

1. For examples a)-e) answer the following questions:

1. If this is falls into descriptive, predictive or prescriptive analytics and why it falls into this group.
2. Which questions should be answered with the analytics?
3. Out of the methods and techniques you have learnt or heard about during your study / work experience which of them would you apply for solving this task? Explain why you would apply this methods.

a) A retail store is analysing the buying patterns of its customer.

b) An industry company is building up a new manufacturing plant. During the planning phase an optimised allocation of production processes as well as process steps has set up which determines the implementation of the manufacturing plant. One has to consider the different production step, the material used as well as the required skills of the workers.

c) A bank has to report to the regulator on a regular basis the number of employees who have traded own financial instruments within a restricted trading period. They should report it by function and business area.

d) A company is producing and selling elevators and additionally, the company sells the maintenance of the elevators as a service contract over a certain time period for a fixed price. If the maintenance takes place too late, and there is a breakdown of the elevator, the costs for repairing it a very high and higher than the fixed price. Thus, based on the experience with their elevators they want to determine the time point when a maintenance should take place.

e) An insurance company wants to test different marketing campaigns and marketing media (e-mail, advertisement, etc.) against each other.

The following information should be used to answer the questions of exercise 2 -4.

An international hotel chain has several hotels in Switzerland located in Geneva, Zurich, Lucerne, Lugano and Basel. The bed nights have decreased by 15% over the last two years to 182000, whereas 10% only in the last 12 month. The average rate per night is CHF 320. The revenue decreased by 20% over the last two years whereas 15% only over the last 12 month. The hotel uses already a dynamic pricing tool i.e. based on the forecasts of the bookings, special events in a certain area they adjusting the prices according the demand. The hotel chain is taking part at tourism conferences in Russia, Far East and since last year also in the Dubai tourism conference. The annual marketing budget is 5 M, split to the regions Switzerland 0.5 M, Europe 0.8 M, Russia 0.7 M, Far East 1 M, Middle East 1 M and North America 1 M. The guest are 20% Swiss, 10% other European countries, 20% Russian, 30% from Far East, 10% of Middle East and 10% of North America. Especially, the guests from the other European countries decreased as well as the guests from North America, whereas there was a strong increase of guests from Middle East. The hotel chain's parent company is located in the US and they recognised the decrease in revenues and asked the Swiss management about taking actions to reverse this trend. Thus, management makes the decision to investigate the trends, and causes and based on this to take appropriate actions. The CEO, CFO and responsible marketing person are setting up the project and engaging you for supporting them. The CEO knows that his further stay in this position will depend on the result of the analysis and whether the actions to reverse the decreasing revenues are successful or not. In six month there will be the next annual assembly where all the financial results will be presented. He also questions the marketing strategy and if they really reach out the right target group. He is keen in finding creative and beneficial solutions and has set up a budget of CHF 400000 for internal and external analyses. Not in that budget included is budget for the IT because the IT is currently anyway renewed and the costs will anyway occur. Nevertheless, the cost of the time which the IT people would have to invest in this project is not covered by any of these costs. He is also concerned about any negative publicity as this could lead to that the guests are choosing other hotels. His main focus is that guests feel comfortable and have best service. The CFO is as always concerned about the costs and the decrease in revenues. As the revenues decrease

and there is currently an overcapacity of hotel room, infrastructure as well as staff, he suggests an analysis how all these factors could be aligned. Further, he is not happy involving you for supporting them as this would result in additional costs with no additional value. The CFO also would prefer more local co-operations with travel agencies, transport companies, and local tourism associations. He is also concerned about the quality of the services which are delivered by the hotel staff. He is every year for vacation in Austria and thinks that the service there is more friendly and professional. He had already various discussions about that with the responsible hotel managers who would be also involved as part of the project. The responsible marketing person is convinced about her current marketing strategy and besides that she is also a member in working groups of the Swiss tourism. The marketing plan is linked to the Swiss tourism advertisements and goals. But she is of the mind that her marketing budget overall is not sufficient in the current market environment especially with the strong Swiss franc and would like to increase the marketing budget. She sees potential in Middle and Far East and would like to increase their marketing presence there. She is happy to support the project as she is expecting that the result of the project will be that she has not sufficient marketing budget and that the resulting action would be an increase in that. As the hotel is doing dynamic pricing, data about the utilised capacity, seasonal effects, nationalities, average spending and so on are available.

2. The 5 W's:

   a) Who are the stakeholders of this project? Who is a direct stakeholder and who is an indirect stakeholder? Give explanations why do you think, they might be stakeholder and why direct or indirect stakeholders.

   b) What problem has to be solved? What happen if the problem is not solved?

   c) Where does the problem happen?

   d) When does the problem occur? By when the problem has to be solved?

   e) Why this problem occur?

3. Stakeholder Analysis Worksheet: Answer the following questions and why do you think this is the answer. If there are ambiguities, state them and think about special considerations and follow-up questions:

   a) Documenting stakeholders needs:
      1. What are the needs of each and every stakeholder?
      2. Do they understand the problem and the possible solution? If not, what should be follow-up questions?
      3. Are there any special considerations? Which ones?

   b) Assessing and analysing stakeholder interest/influence:
      1. What are the stakeholders interest and/or influence?
      2. Who would be a supporter?
      3. How would provide budget and resources?
      4. Who could have a potential negative impact on the project?

   c) Managing stakeholders' expectations:
      1. Do they support a data analytics analysis?
      2. Are they clear about the possibilities and limitations of data analytics?
      3. Are all expectations realistic?

4. The business benefit of an analytics project: How you would sell the project to the stakeholder? What are the arguments to undertake the project? Certain figures for a quantitative analysis are missing or not known in detail. This is often the case in such projects and a range of different assumptions has to be taken. These are then typically discussed with the stakeholders. Thus, make some assumptions e.g. what would be the benefit when the bed nights could increase by X% or if an increase of guests from Middle East by Y% would be achieved with the project. Note: The return on investment is defined as

$$\frac{\texttt{benefits of the investment}}{\texttt{cost of the investment}} \tag{1}$$

a) What is the benefit of the project?

    1. What are the qualitative benefits?

    2. How you would estimate the quantitative benefit of the project?

    3. Which benefits would you allocate to which proportion to this project?

b) What are the investment costs for this project?

c) Are there any other considerations? E.g. special considerations?

d) Would you recommend to undertake this analytics project?

Discussion: Wednesday, 23. September.

Hand in: All tasks, Wednesday, 30. September.