

MMAI 5200

Final Project Proposal

Deadline for handing in the proposal: Friday Nov 26, 2021 at 11:59pm.

Please take the following into consideration when handing in the assignment:

- 1) **This is a group assignment! Please let me know by email until Tuesday Nov 23 the names of the group members so I will form the groups on Canvas.**
- 2) Please submit your proposal as a pdf file on Canvas!
- 3) Put your student numbers in the name of the pdf file. For example, the name becomes "123456-234567.pdf."
- 4) The participants should develop a proposal (maximum 2 pages, single-spaced) detailing the relevant issues that must be addressed:
 - a) how the analysis will be approached,
 - b) the delegation of responsibilities to each group member,
 - c) how the (potentially) separate analyses will be combined,
 - d) what the group wishes to conclude from their work,
 - e) and any relevant implications (e.g., ethical, social, financial) or limitations of their results.

Problem and Data Description

Kordsa (<https://www.kordsa.com/en/>) is global manufacturing firm operating in the tire and construction reinforcement as well as the advanced composites industries. The company has 11 production facilities in five countries, namely Turkey, Brazil, Indonesia, Thailand, and the US, employing 4500 people. Reinforcing one third of automobile tires and two thirds of aircraft tires in the world with its tire reinforcement technologies, Kordsa is now in a position to reinforce the landing trucks of the aircrafts with its construction reinforcement technologies; and aircraft fuselage engine, and wings with its composite technologies. Its annual revenues were around \$800 million for the years before the pandemic. The revenues for 2020 are 30% less than the initial estimates.

The tire cords product segment supplies products to global tire manufacturers. The orders are placed by the customers well in advance of when the products are needed. If a customer placed a purchase order on August 1, 2020 with a requested delivery date of August 21, 2020, the *demand lead time* for this order is 20 days. The demand lead times vary substantially. Some orders have long demand lead times such that they can be produced over time. These types of orders are considered as advance orders. Having long lead times for the advance orders allows Kordsa to utilize idle capacity efficiently

over the demand lead time period. Some orders, however, have very short demand lead times. These orders are considered as urgent orders. Fulfilment of advance orders is not difficult because Kordsa has enough time to schedule their production owing to the long demand lead times. On the other hand, urgent orders may not be fulfilled if there is not enough capacity to produce them in a short time period. If urgent orders are not fulfilled, they are simply lost, causing a profit loss for Kordsa. Additionally, the customers whose urgent orders are not met may switch to Kordsa's competitors. Kordsa aims to fulfil first the advance orders and then the urgent orders as much as possible.

Kordsa develops monthly production plans. For that reason, the company uses a cut-off length of one month to differentiate advance demand from urgent demand. In other words, if the demand lead time for an order is longer than one month, the order is considered advance order. Otherwise, it is considered urgent order. In the final project, you will be given monthly demand and advance demand values for one product over 25 months. You are asked to develop a demand forecasting model.