# Operations research Lab
# Fall 2019
# Simplifying assumptions for the LAB Project 2019-20
# Production and distribution optimization of beach equipment for the Marinero company

6 novembre 2019

## 1 Major change w.r.t. main description

The fixed costs of the production plants must be considered as monthly costs. For each month that a production center is working, there is a cost; if it does not work, no cost is considered.

- at most one of the three production plants can be closed along the three months;
- you must neglect both cost and availability of power;
- you must neglect the fixed cost of opening sales center.

## 2 Simplifying assumptions

Assume the following:

- $\sharp_{months} = 3$ May-June-July: the months along which production must be determined
- $\sharp_{product} = 3$ products: sun bed, director's chair, frisbee;
- $\sharp_{sale} = 4$ the sales center are Fiumicino, Genova, Bari, Milano; exactly three of the four can be opened;
- $\sharp_{material} = 3$ raw materials used in the manufacturing of the products: plastic, aluminium, textile;

- the advertising coefficient has be changed in

$$A_{kj}^{\text{mkt}} = \frac{S_k^{\text{mkt}} + 10F_{kj}}{10^4},$$

- you can choose the prices by *What if* analysis;

# 3 Bans

In order to use simplifications in your model it is important to remark the fact that **you must not**:

- reduce the number of sales center by closing more than one of them;
- close at most one of the production plants for all the production period;

# 4 Final Remarks

**Observation.** You can use different strategies for the warehouse management, some of them are easier to model than others, but of course simplifications will deteriorate the solution

**To pass the exam is required to find a feasible solution with nonnegative profit.**

**This is checked by means of the *Solution Assessment tool* "Marinero.exe".** The toolbox is distributed during the first meeting.

**We remark that you must go through a mathematical programming model to quantify your decision.**

To model and solve the problem you can use Excel (with OpenSolver)or any other software (Matlab, CPLEX ecc)

# 5 Submission

Instructions for the submission of the project will be released by email. You will be guided through a Google form for uploading the needed files.