	Name:

Model-based Decision Support

Exam 7 (home assignment) Enrolment number: Till June 7, 2018

The Management of the chain of stores Doberhams has taken the following 3 Outputs and 2 Inputs as crucial for efficiency measuring of their branches:

(O) Sales (unit sold articles)   (I) Employees (full time equivalent)
(O) Total Revenue (unit £)   (I) Sales Area (unit 100 m²)
(O) Profits (unit £)

Data collection yields the following operating figures:

Store	(I) Employee	(I) Area	(O) Sales	(O) Revenue	(O) Profits
Doberhams A	14	20	700	6000	700
Doberhams B	18	1Z	1000	12000	1700
Doberhams C	20	1X	800	11000	1900
Doberhams D	25	1Y	1200	23000	2600
Doberhams E	28	13	900	18000	4000
Doberhams F	16	21	1200	10000	3200
Doberhams G	13	32	1100	12000	3100
Doberhams H	24	9	600	18000	5000
Doberhams I	17	21	1300	13000	3400
Doberhams J	13	32	1400	13000	3100
Doberhams K	29	15	900	19000	4500
Doberhams L	16	21	900	12000	3600
Doberhams M	13	28	1500	14000	3400
Doberhams N	15	17	900	13000	3700

For X use the last digit of your student enrolment number, Y the last but one digit, and Z the last but two (If X=4, then 1X is 14).

Use Banxia Frontier Analyst demo version

https://banxia.com/frontier/

to compute **CCR-efficiency** for thestores A-L of Doberhams (input-oriented). Describe **verbally** (i.e. in words) which store operates efficiently and which not. If you do this, it will be sufficient to be rewarded with 5 points. Your submission should be handed in at next but one class on June 7th, 2018; on May 24th, 2018 in-class submission is possible. Keep in mind that the Banxia's Frontier Analyst demo version is limited to 12 DMUs – otherwise the demo version does not compute any results. An easy way to provide data to Frontier Analyst is to prepare the data in a MS Excel Spreadsheet and in the opened Excel document select the data area. In Frontier Analyst start a new project (cancel loading an existing one) and choose the option "use current selection from Excel".

Alternatively, you can model DEA CCR in GAMS and solve the efficiency measures **for all 14 stores** A-N. If you choose this option, submit your gams code and efficiency results for Doberhams stores A-N. Then I reward you with 3 extra bonus points – in total you can achieve 8 points for this home assignment, if you use GAMS. In this alternative option, you

are free to give Banxia's Frontier Analyst a trial, but if you use GAMS to compute the results, it will be sufficient to get the full 8 points.

Next class is on May 24th, and the next written exam is scheduled on June 7th, 2018.

The final class is scheduled on June 14th (have 3 bonus points in mind).