New suppliers

The multinational corporation Déjà vu Ltd decided an increase in the number of its suppliers, in relation to the next budget 2020. This decision is strategic, therefore they activated a data acquisition activity that "produced" one hundred of possible suppliers, and only 21 of them were pre-selected for evaluation and decision making. They are from Italy (A), Germany (B), France (C) China (D), United States (E) and Japan (F). Table 1 synthesizes the acquired data in relation to the characteristics that were considered useful:

Ť- time of product delivery (in number of days)
C_f- cost (euros/ product unit)
C_t- transport cost (euros/ large package)
Q- quality of the product (poor – 1; sufficient – 2; good – 3; very good – 4)
F- flexibility on the product quantity in specific periods of time (1 – flexible; flexible only in relation to some conditions – 2; not flexible – 3)
Open- when the supplier is at work during the year (every month 1; eleven months 2; ten months 3)
MP- quality of the used raw material (optimal – 1; good – 2; sufficient – 3; poor – 4)
#C_m- deliveries per month
R_c- delivery delay (average number of days)
C_o- monitoring and control (inspection number per year)
C_{nt}- fixed period of contract validity (number of months)
R_{pd}- production quickness (days to produce a technical series of X pieces)
C_{nd}- condition of the product at the delivery (no problems – 1; products to be repacked – 2; products to be partially reworked– 3; part of the products to be rejected – 4)
D_{gn}- customs problems (Yes – 1; sometimes – 2; No problems – 3)

Table 1 – Acquired data

Paesi	Ť	C_f	C_t	Q	F	Open	MP	#C_m	R_c	C_o	C_{nt}	R_{pd}	C_{nd}	D_{gn}
A1	2	0,11	120	2	2	2	3	7	3	4	18	5	2	3
A2	3	0,10	130	1	2	2	3	7	4	4	18	5	2	3
A3	1	0,11	115	2	2	2	3	6	3	5	18	4	2	3
A4	2	0,12	118	3	1	2	3	7	3	4	18	5	3	3
B1	4	0,32	420	4	2	2	2	5	1	4	15	3	4	1
B2	5	0,30	427	3	3	2	2	4	1	3	15	3	3	2
B3	5	0,28	425	3	3	2	3	5	2	3	15	3	4	1
C1	4	0,07	278	2	2	3	3	4	1	3	12	4	3	2
C2	4	0,08	275	2	2	3	2	5	1	3	12	4	3	3
C3	4	0,09	280	3	1	3	2	5	2	3	12	5	4	2
D1	30	0,05	1180	2	1	1	2	3	0	1	24	2	2	1
D2	28	0,04	1189	2	1	1	3	2	1	1	24	2	3	1
D3	31	0,05	1190	3	2	1	2	3	0	1	24	2	2	1
D4	33	0,06	1185	3	1	1	2	2	1	1	24	2	2	1
E1	24	0,11	920	2	2	1	3	4	2	2	12	4	1	2
E2	24	0,10	924	2	3	1	2	4	3	2	12	4	1	3
E3	25	0,12	928	3	2	1	3	4	2	1	12	5	1	2
E4	24	0,11	921	2	2	1	3	4	1	1	12	4	1	2
F1	32	0,09	1010	4	3	2	1	3	1	1	24	3	3	3
F2	33	0,08	1015	4	3	2	1	2	2	1	24	2	3	2
F3	33	0,10	1012	4	2	2	1	3	1	1	24	3	2	2

A sequence of steps has to be developed and the relative documentation (a power point file) has to be sent by e-mail. A new steps can only be activated after my approval of the previous step. These are the five steps.

1. The problem has to be formulated, in relation to a specific decision problem in a real organization (which enterprise, which kind of product and the conditions of the supply, the problem statement and the related suppliers to be evaluated, 1 or 2 power point pages)
2. The structure of the model, to evaluate the suppliers in relation to the decision problem and its formulation (main aspects, in relation to the problem formulation, and associated criteria, their relative importance). A tree can be used to describe the model structure and indicate the weights.
3. The other parameters of the model, in relation to the chosen method.
4. An ELECTRE method has to be applied to the model and the results to be analysed and documented.
5. The quality of the results can require a proposal of model improvement and/or a robustness analysis.