Kar maksimizasyon problemi: Blending Problem

Gizem AVCI

Kar = Gelir - Gider

$$\max \text{Kar} = 70[x_{11}+x_{21}+x_{31}] + 60[x_{12}+x_{22}+x_{32}] + 50[x_{13}+x_{23}+x_{33}]$$
$$- 45[x_{11}+x_{12}+x_{13}] - 35[x_{21}+x_{22}+x_{23}] - 25(x_{31}+x_{32}+x_{33})$$
$$- 0,1[x_{11}+x_{12}+x_{13}+x_{21}+x_{22}+x_{23}+x_{31}+x_{32}+x_{33}]$$

sbj to:

$$x_{11}+x_{12}+x_{13}+x_{21}+x_{22}+x_{23}+x_{31}+x_{32}+x_{33} \leq 14000 \quad (1)$$
$$x_{11}+x_{21}+x_{31} \geq 3000 \quad (2)$$
$$x_{12}+x_{22}+x_{32} \geq 2000 \quad (3)$$
$$x_{13}+x_{23}+x_{33} \geq 1000 \quad (4)$$

$$\frac{12x_{11}}{x_{11}+x_{21}+x_{31}} + \frac{6x_{21}}{x_{11}+x_{21}+x_{31}} + \frac{8x_{31}}{x_{11}+x_{21}+x_{31}} \geq 10$$

$$12x_{11} - 4x_{21} - 2x_{31} \geq 0 \quad \text{(oktan kısıt 1 yakıt)} \quad (5)$$
$$4x_{12} - 2x_{22} \geq 0 \quad (\text{" " 2 yakıt}) \quad (6)$$
$$6x_{13} + 2x_{33} \geq 0 \quad (\text{" " 3. yakıt}) \quad (7)$$

$$(8)\quad 0,005x_{11} + 0,1x_{21} - 0,2x_{31} \geq 0 \quad (\text{sülfür kısıtı 1 yakıt})$$
$$(9)\quad 0,015x_{12} - 0,01x_{32} \geq 0 \quad (\text{" " 2. " })$$
$$(10)\quad 0,005x_{13} - 0,01x_{23} - 0,02x_{33} \geq 0 \quad (\text{" " 3 yak.})$$

$$(11)\quad x_{ij} \geq 0 \quad i,j = \{1,2,3\}$$