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(Hunt, 2001)

(ASAE)

(ASAE,

.2000b)

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(ASAE, 2000a)

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.(Ashtyani *et al.*, 2006)

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.(Najafi & Zibae, 2004)

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.(Koupahi & Kazem Nejad, 1997)

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(DEA)

(Najafi & Shajari,

.1997)

Farell,)

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.(Banaeian *et al.*, 2010)

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.(Mohammadi *et al.*, 1998)

(Imami

.Meybodi, 2000)

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(VRS)
 (Banker et al., 1984)

(Charnes et al., 1978)

$$\sum_r u_r y_{rj0} \text{ Max} \quad ()$$

$$\sum_i v_i x_{ij0} = 1 \text{ s.t.} \quad ()$$

$$\sum_r u_r y_{rj} - \sum_i v_i x_{ij} \leq 0 \quad \text{for } j=1,2,\dots,n$$

$$u_r \geq \varepsilon \quad \text{for } j=1,2,\dots,s$$

$$v_i \geq \varepsilon \quad \text{for } j=1,2,\dots,m$$

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(x)
 (y)
 (y/x)
 (Anon., 2007)

DEA-Solver

DEA

(Charnes,

(Ghasiri et al., 2008)

.1978)

$$= \frac{u_1 y_1^{j*} + u_2 y_2^{j*} + \dots + u_N y_N^{j*}}{v_1 x_1^{j*} + v_2 x_2^{j*} + \dots + v_M x_M^{j*}} \quad ()$$

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DEA-Solver

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(kg MJ⁻¹)

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(Zangeneh et al., 2010)

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