
**رتبه‌بندی واحدهای کارا با ترکیب رویکرد تحلیل
پوششی داده‌ها و فرآیند تحلیل سلسله مراتبی در
سازمان‌های بازرگانی استانی**

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$$E_j = \max_{u_r, v_k} \frac{\sum_{r=1}^k u_r y_{rj}}{\sum_{i=1}^s v_i x_{ij}}$$

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s k j I x_{ij} r y_{rj}

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$$Maxy_1 = \theta - \varepsilon \left(\sum_{r=1}^s s_r^+ + \sum_{i=1}^m s_i^- \right)$$

St :

$$\sum_{j=1}^n \lambda_j y_{rj} - s_r^+ = \theta y_r, \quad (r = 1, 2, \dots, s)$$

$$\sum_{j=1}^n \lambda_j x_{ij} + s_i^- = x_i, \quad (i = 1, 2, \dots, m)$$

$$\sum_{j=1}^n \lambda_j = 1$$

$$\lambda_j, s_r^+, s_i^- \geq 0, \theta : free \quad (j = 1, 2, \dots, n)$$

		ε	θ
	s_r^+	λ_j	
i		s_i^-	r
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	$\frac{1}{\theta^*}$	θ^*	LINGO.8

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	θ^*			θ^*	
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$$a_{jj} = 1 \quad a_{AB} = \frac{E_{AA} + E_{AB}}{E_{BB} + E_{BA}}, \quad a_{BA} = \frac{1}{a_{AB}}$$

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$E_{AA} = \max Z_{AA} = \sum_{r=1}^s u_r y_{rA}$ <p>ST</p> $\sum_{i=1}^m v_i x_{iA} = 1$ $\sum_{r=1}^s u_r y_{rA} \leq 1$ $\sum_{r=1}^s u_r y_{rB} - \sum_{i=1}^m v_i x_{iB} \leq 0$ $u_r \geq 0 \quad r = 1, 2, \dots, s.$ $v_i \geq 0 \quad i = 1, 2, \dots, m.$	$E_{BA} = \max Z_{BA} = \sum_{r=1}^s u_r y_{rB}$ <p>ST</p> $\sum_{i=1}^m v_i x_{iB} = 1$ $\sum_{r=1}^s u_r y_{rB} \leq 1$ $\sum_{r=1}^s u_r y_{rA} - E_{AA} \sum_{i=1}^m v_i x_{iA} = 0$ $u_r \geq 0 \quad r = 1, 2, \dots, s.$ $v_i \geq 0 \quad i = 1, 2, \dots, m.$
$E_{BB} = \max Z_{BB} = \sum_{r=1}^s u_r y_{rB}$ <p>ST</p> $\sum_{i=1}^m v_i x_{iB} = 1$ $\sum_{r=1}^s u_r y_{rB} \leq 1$ $\sum_{r=1}^s u_r y_{rA} - \sum_{i=1}^m v_i x_{iA} \leq 0$ $u_r \geq 0 \quad r = 1, 2, \dots, s.$ $v_i \geq 0 \quad i = 1, 2, \dots, m.$	$E_{AB} = \max Z_{AB} = \sum_{r=1}^s u_r y_{rA}$ <p>ST</p> $\sum_{i=1}^m v_i x_{iA} = 1$ $\sum_{r=1}^s u_r y_{rA} \leq 1$ $\sum_{r=1}^s u_r y_{rB} - E_{BB} \sum_{i=1}^m v_i x_{iB} = 0$ $u_r \geq 0 \quad r = 1, 2, \dots, s.$ $v_i \geq 0 \quad i = 1, 2, \dots, m.$

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$$\lambda = 0.301117\lambda_{\gamma} + 0.503114\lambda_{\nu} + 0.1494\lambda_{\gamma\phi} + 0.037111\lambda_{\gamma q}$$

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		$\lambda_{\gamma} \lambda_{\gamma_1} \lambda_{\gamma_2} \lambda_{\gamma_3} \lambda_{\gamma_4} \lambda_{\gamma_5} \lambda_{\gamma_6} \lambda_{\gamma_7} \lambda_{\gamma_8} \lambda_{\gamma_9}$ $\lambda_{\gamma_{10}} \lambda_{\gamma_{11}} \lambda_{\gamma_{12}} \lambda_{\gamma_{13}} \lambda_{\gamma_{14}} \lambda_{\gamma_{15}} \lambda_{\gamma_{16}} \lambda_{\gamma_{17}} \lambda_{\gamma_{18}} \lambda_{\gamma_{19}}$ $s_{\gamma}^+ \lambda_{\gamma_{20}} \lambda_{\gamma_{21}} \lambda_{\gamma_{22}} \lambda_{\gamma_{23}} \lambda_{\gamma_{24}} \lambda_{\gamma_{25}} \lambda_{\gamma_{26}} \lambda_{\gamma_{27}}$ $s_{\nu}^+ s_{\gamma\phi}^+ s_{\gamma q}^+$					
/	s_{γ}^+	/	$s_{\gamma_1}^-$	/	λ_{ν}		
/	s_{ν}^+	/	$s_{\gamma_2}^-$	/	λ_{γ}		
/	$s_{\gamma\phi}^+$	/	$s_{\gamma_3}^-$	/	$\lambda_{\gamma\phi}$		

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