

طراحی یک مدل تلفیقی برای انتخاب تامین کننده و تخصیص سفارشات با استفاده از روش استدلال موردگرا و برنامه ریزی ریاضی چند هدفه

فرهاد فائز

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چکیده

Case-Based Reasoning (CBR)

CBR

واژه های کلیدی :

مقدمه

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مرور مطالعاتی

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روش استدلال موردگرا (CBR)

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$$S_{IR} - I$$

$$(0 \leq S_{IR} \leq 1) R$$

$$I -$$

$$R -$$

$$i -$$

$$W_i -$$

$$f_i^I, f_i^R -$$

$$(i=1,2,\dots,n)$$

$$(\sum W_i=1) i$$

$$f_i^R$$

$$f_i^I$$

$$sim -$$

$$sim$$

$$sim(f_i^I, f_i^R) = 1 - \frac{|f_i^I - f_i^R|}{\beta_i - \alpha_i}, f_i^I, f_i^R \in [\alpha_i, \beta_i]$$

$$()$$

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تخصیص سفارش بکمک برنامه ریزی ریاضی
چند هدفه

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$$Z_1 = \text{Min} \sum_{i=1}^n C_i X_i$$

$$()$$

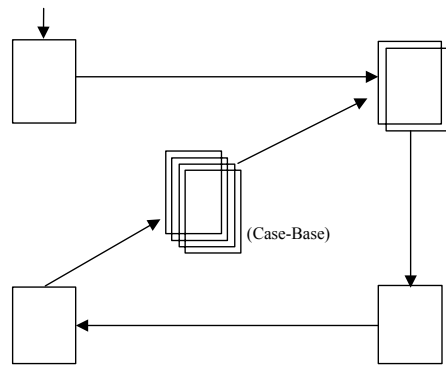
$$Z_2 = \text{Min} \sum_{i=1}^n Q_i X_i$$

$$()$$

$$Z_3 = \text{Min} \sum_{i=1}^n S_i X_i$$

$$()$$

Subject to:



شکل ۱: چرخه روش استدلال بر مبنای مورد (CBR).

CBR

$$S_{IR} = \frac{\sum_{i=1}^n w_i \times sim(f_i^I, f_i^R)}{\sum_{i=1}^n w_i}$$

$$()$$

$$\sum_{i=1}^n X_i = D \quad ()$$

$$Y_i(\text{Min } O_i) \leq X_i \leq Y_i(\text{Max } O_i); \text{ for all } i = 1, 2, \dots, n \quad ()$$

$$\sum_{i=1}^n Y_i = P \quad ()$$

$$Y_i = 0 \text{ or } 1; \text{ for all } i = 1, 2, \dots, n \quad ()$$

Min $Z(X_1, X_2, \dots, X_n) = \sum_{i=1}^n W_i (Z_i^- - Z_i^+) / (Z_i^- - Z_i^+)$ ()

Z_i^- () Z_i^+ () W_i () Z_i ()

Z_i^- () Z_i^+ () Z_i ()

Z_i^- () Z_i^+ () Z_i ()

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معرفی مدل طراحی شده

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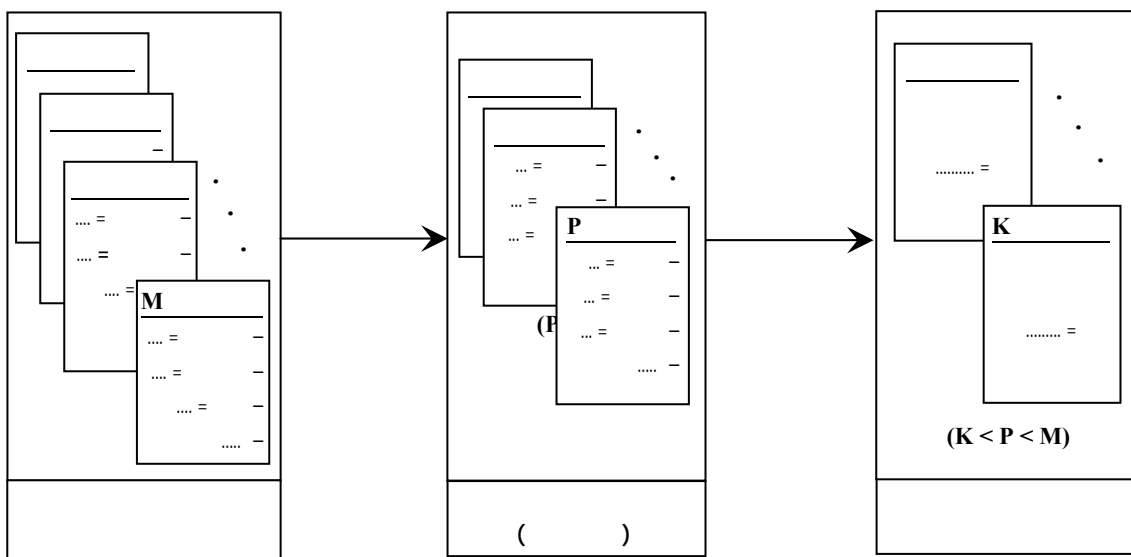
(Short List)

برپائی پایگاہ اطلاعاتی تامین کنندگان

ماژول اول - تهیه فهرست مختصر

CBR

CBR



شکل ۲: مدل طراحی شده در سطح کلان .

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جدول ۲: نحوه تبدیل متغیر کلامی معیار "داشتن امکانات تولیدی" به شاخص کمی.

		A
		B
		C
		D
	()	E

جدول ۱: نحوه ارزیابی معیارهای انتخاب تامین کننده.

		()	
/		()	
		()	
B			
C			
/		()	
		()	

جدول ۳: نحوه تبدیل متغیر کلامی معیار "داشتن امکانات پشتیبانی" به شاخص کمی.

		A
	()	B
		C
		D
		E

جدول ۴: ساختار نگهداری اطلاعات خریدها (مخزن خریدها).

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.....			()
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.....	C	A	
.....	D	C	
.....			()
.....			()
.....			

تطبيق تامین کنندگان (نهایی سازی لیست مختصر)

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تعیین اهمیت معیارها

ثبت اطلاعات خرید جدید در مخزن خریدها

(AHP)

ماژول دوم - انتخاب نهایی و تخصیص سفارشات

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تعیین روش (مکانیزم) بازیابی

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تهیه فهرست مختصر

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جدول ۵: نحوه محاسبه امتیاز تامین کنندگان در رابطه با معیار "تحويل".

$$Z_1 = \text{Min} \sum_{i=1}^n C_i X_i \quad ()$$

$$Z_2 = \text{Max} \sum_{i=1}^n Q_i X_i \quad ()$$

$$Z_3 = \text{Max} \sum_{i=1}^n S_i X_i \quad ()$$

:

$$\text{Min } Z(X_1, X_2, \dots, X_n) = W_1(Z_1 - Z_1^+) / (Z_1^- - Z_1^+) + \sum_{i=2}^3 W_i(Z_i^+ - Z_i) / (Z_i^+ - Z_i^-) \quad ()$$

Z_1^-

Z_1^+

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جدول ۶: نحوه محاسبه امتیاز تامین کنندگان در رابطه با معیار "کیفیت".

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یک مثال

Case-Base
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AHP

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Expert Choice

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(i " " : S_i -

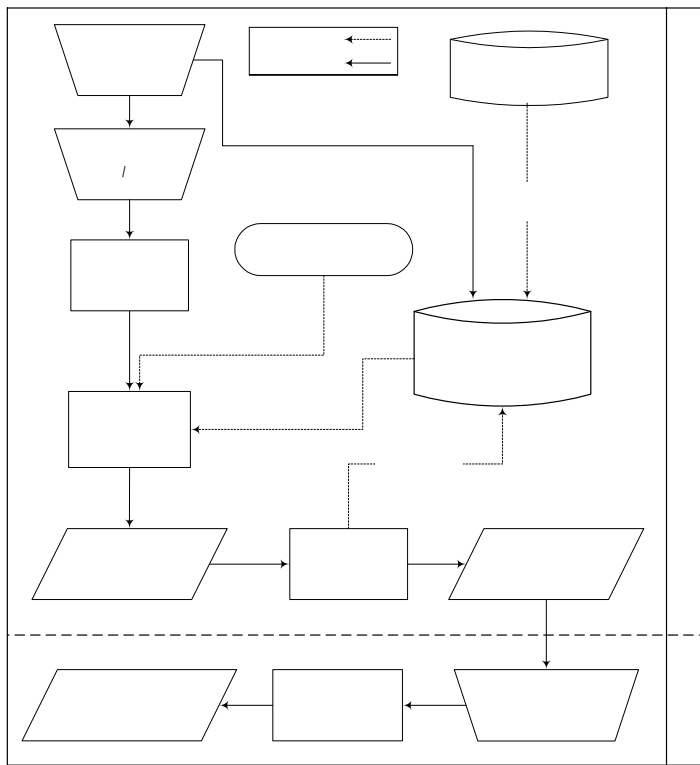
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) i " " : Q_i -

" i " "

" " " "

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شکل ۳: نمودار جریان روش پیشنهادی.

جدول ۷: مقایسه‌های زوجی و مقادیر نهائی اوزان معیارها.

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AHP

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S3

() S10 S7 S4 S6

جدول ۸: اطلاعات تامین کنندگان موجود در پایگاه و ویژگی های تامین کننده جدید.

	()										
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											()
'	'	'	'	'	'	'	'	'	'	'	()
B	B	A	D	C	E	A	A	D	C	A	
B	A	B	E	B	A	D	D	B	D	C	
											()
											()
	S10	S9	S8	S7	S6	S5	S4	S3	S2	S1	

جدول ۹: میزان شباهت مشخصات تامین کنندگان با ویژگی های مد نظر خریدار.

S10	S9	S8	S7	S6	S5	S4	S3	S2	S1	
'	'	'	'	'	'	'	'	'	'	

جدول ۱۰: جزئیات شرایط فروش تامین کنندگان منتخب اولیه.

S10	S7	S6	S4	S3		
'	'	'	'	'	()	
'	'	'	'	'		

$$\begin{aligned} & (Z_i^+) \quad P=3 \\ \text{Max } Z_3 \quad \text{Max } Z_2 \quad \text{Min } Z_1 & \quad (\quad) \quad D=2300 \quad (\\ & (Z_i^-) \quad (\quad) \quad \text{Min}(O_i)=0 \\ \text{Min } Z_3 \quad \text{Min } Z_2 \quad \text{Max } Z_1 & \quad - \quad . \\ & (\quad) \quad : \quad (\quad) \end{aligned}$$

$$\text{Min } Z_1 = (5.3X_3 + 5.4X_4 + 6.2X_6 + 5.2X_7 + 5.7X_{10}) \quad ()$$

$$\text{Max } Z_2 = (6.0X_3 + 7.0X_4 + 8.0X_6 + 9.0X_7 + 5.0X_{10}) \quad ()$$

$$\text{Max } Z_3 = (8.0X_3 + 6.0X_4 + 7.0X_6 + 5.0X_7 + 9.0X_{10}) \quad ()$$

Subject To:

$$X_3 + X_4 + X_6 + X_7 + X_{10} = 2300 \quad ()$$

$$0 \leq X_3 \leq 900Y_3 \quad ()$$

$$0 \leq X_4 \leq 1100Y_4 \quad ()$$

$$0 \leq X_6 \leq 700Y_6 \quad ()$$

$$0 \leq X_7 \leq 800Y_7 \quad ()$$

$$0 \leq X_{10} \leq 1000Y_{10} \quad ()$$

$$Y_3 + Y_4 + Y_6 + Y_7 + Y_{10} = 3 \quad ()$$

$$Y_3, Y_4, Y_6, Y_7 \text{ \& } Y_{10} = 0 \text{ or } 1 \quad ()$$

جدول ۱۱: بهترین و بدترین مقادیر توابع هدف بصورت تک معیاره.

Z_i^+	Z_i^-	(Z_i^-)	(Z_i^+)	
				Z_1
				Z_2
				Z_3

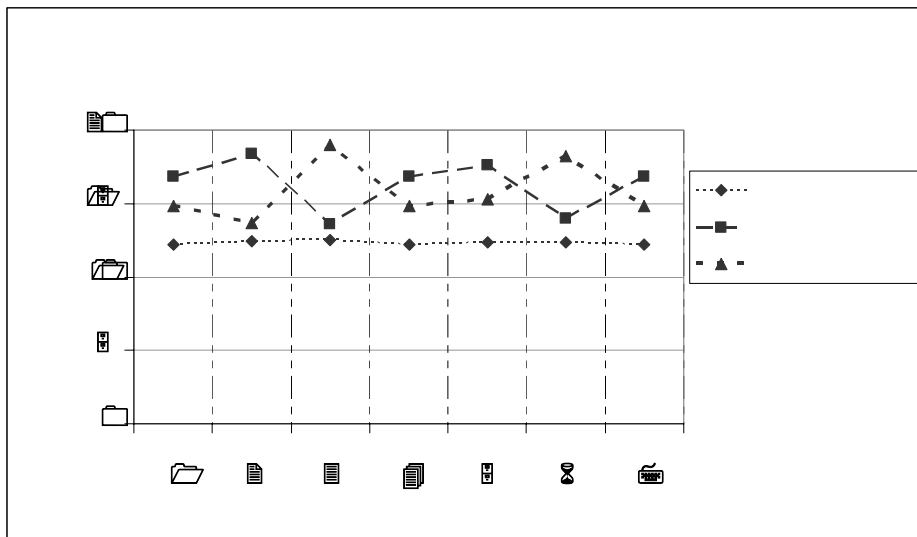
$$\text{Min } Z(X_1, X_2, X_3) = \frac{W_1(Z_1 - 12170)}{490} + \frac{W_2(18400 - Z_2)}{5200} + \frac{W_3(19000 - Z_3)}{5600} \quad ()$$

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جدول ۱۲: پاسخ نهائی مدل چند هدفه در حالات مختلف وزن.

/	/	/	/				W_1 ()
/	/	/	/				W_2 ()
/	/	/	/				W_3 ()
							Z_1
							Z_2
							Z_3
/	/	/	/				Z
$X_3 =$	$X_3 =$	$X_3 =$	$X_3 =$	$X_3 =$	$X_4 =$	$X_3 =$	
$X_4 =$	$X_7 =$	$X_6 =$	$X_4 =$	$X_6 =$	$X_6 =$	$X_4 =$	
$X_7 =$	$X_{10} =$	$X_7 =$	$X_7 =$	$X_{10} =$	$X_7 =$	$X_7 =$	



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نتیجه گیری و پیشنهادها برای مطالعات و پژوهش های آتی

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$$W_i X_i \quad \text{Max} \sum W_i X_i$$
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واژه های انگلیسی به ترتیب استفاده در متن

- 1 - Component Parts
 - 2 - Linear Weighting Method
 - 3 - Analytical Hierarchy Process (AHP)
 - 4 - Mixed Integer Programming (MIP)
 - 5 - Data Envelopment Analysis (DEA)
 - 6 - Outsourcing
 - 7 - Make or Buy Decision
 - 8 - Benchmark
 - 9 - Attribute (Feature or Criterion)
 - 10 - Matching Method
 - 11 - Case-Base
 - 12 - Nearest Neighbor (NN)
-