

TENTANG

MANFAAT

POTENSI

“PERHITUNGAN MANUAL & SOURCODE”

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LINK GITHUB

<https://github.com/RikiRamadan12/RIKI-RAMADAN-TUGAS-FUZZY-KECERDASAN-BUATAN-221011401392-05TPLM007>



1. Fuzzifikasi

Hitung derajat keanggotaan (`fuzzy_demand` dan `fuzzy_supply`) menggunakan fungsi keanggotaan.

Permintaan (`input_demand = 3500`)

- Turun: $\mu_{\text{Turun}}(3500) = \max(0, \min(1, \frac{3000-3500}{3000})) = 0$
- Tetap: $\mu_{\text{Tetap}}(3500) = \max(0, \min(\frac{3500-3000}{2000}, \frac{7000-3500}{2000})) = \min(0.25, 1.75) = 0.25$
- Naik: $\mu_{\text{Naik}}(3500) = \max(0, \min(1, \frac{3500-7000}{3000})) = 0$

Fuzzy Demand:{Turun: 0, Tetap: 0.25, Naik: 0}

Persediaan (`input_supply = 500`)

- Sedikit: $\mu_{\text{Sedikit}}(500) = \max(0, \min(1, \frac{200-500}{200})) = 0$
- Sedang: $\mu_{\text{Sedang}}(500) = \max(0, \min(\frac{500-200}{200}, \frac{400-500}{200})) = \min(1.5, 0) = 0$
- Banyak: $\mu_{\text{Banyak}}(500) = \max(0, \min(1, \frac{500-400}{200})) = \min(1, 0.5) = 0.5$

Fuzzy Supply:{Sedikit: 0, Sedang: 0, Banyak: 0.5}





Evaluasi Aturan Secara Manual

Berikut evaluasi untuk masing-masing aturan:

1. Aturan: "Turun" AND "Sedikit" → Output: "Bertambah"

$$\mu_{Turun}=0, \mu_{Sedikit}=0$$

$$\text{Rule Strength}=\min(0,0)=0$$

2. Aturan: "Turun" AND "Sedang" → Output: "Berkurang"

$$\mu_{Turun}=0, \mu_{Sedang}=0$$

$$\text{Rule Strength}=\min(0,0)=0$$

3. Aturan: "Turun" AND "Banyak" → Output: "Berkurang"

$$\mu_{Turun}=0, \mu_{Banyak}=0.5$$

$$\text{Rule Strength}=\min(0,0.5)=0$$

4. Aturan: "Tetap" AND "Sedikit" → Output: "Bertambah"

$$\mu_{Tetap}=0.25, \mu_{Sedikit}=0$$

$$\text{Rule Strength}=\min(0.25,0)=0$$

5. Aturan: "Tetap" AND "Sedang" → Output: "Berkurang"

$$\mu_{Tetap}=0.25, \mu_{Sedang}=0$$

$$\text{Rule Strength}=\min(0.25,0)=0$$

6. Aturan: "Tetap" AND "Banyak" → Output: "Berkurang"

$$\mu_{Tetap}=0.25, \mu_{Banyak}=0.5$$

$$\text{Rule Strength}=\min(0.25,0.5)=0.25$$

7. Aturan: "Naik" AND "Sedikit" → Output: "Bertambah"

$$\mu_{Naik}=0, \mu_{Sedikit}=0$$

$$\text{Rule Strength}=\min(0,0)=0$$

8. Aturan: "Naik" AND "Sedang" → Output: "Bertambah"

$$\mu_{Naik}=0, \mu_{Sedang}=0$$

$$\text{Rule Strength}=\min(0,0)=0$$

9. Aturan: "Naik" AND "Banyak" → Output:

"Berkurang"

$$\mu_{Naik}=0, \mu_{Banyak}=0.5$$

$$\text{Rule Strength}=\min(0,0.5)=0$$

Hasil Evaluasi Aturan

Hasil evaluasi aturan adalah: $\{(0.25, \text{Berkurang})\}$



3. Defuzzifikasi

Gunakan metode Tsukamoto untuk menghitung keluaran.

Aturan yang Aktif

(0.25, Berkurang)

Fungsi Output

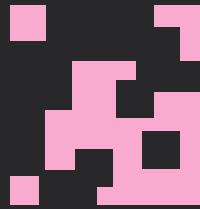
- Berkurang: $\text{Output} = 100 - (50 \times \text{Rule Strength})$
- Untuk Rule Strength = 0.25:

$$\text{Output} = 100 - (50 \times 0.25) = 100 - 12.5 = 87.5$$

Defuzzifikasi

$$\text{Hasil Akhir} = \frac{\sum(\text{Rule Strength} \times \text{Crisp Output})}{\sum(\text{Rule Strength})} = \frac{0.25 \times 87.5}{0.25} = 87.5$$





■ 4. Supply Setelah Produksi

Supply Setelah Produksi=Input Supply–Output Produksi

Supply Setelah Produksi= $500 - 87.5 = 412.5$

■ 5. Hasil Manual

- Fuzzy Demand: {Turun: 0,Tetap: 0.25,Naik: 0}
- Fuzzy Supply: {Sedikit: 0,Sedang: 0,Banyak: 0.5}
- Hasil Evaluasi Aturan: $\{(0.25,\text{Berkurang})\}$
- Hasil Defuzzifikasi: 87.5
- Supply Setelah Produksi: 412.5

