

	Rating	Technical characteristic 1	Technical characteristic 2
Customer requirement 1	4-6	moderate relation	strong relation
Customer requirement 2	5-4	strong relation	weak relation
Normalized individual rating	—	1.0	0.80

Table 1. Customer rating and relative importance.

Linguistic variable	Fuzzy number
strong relation	[4.0, 10.0]
moderate relation	[2.0, 8.0]
weak relation	[0.0, 6.0]

Table 2. Definition of linguistic variables.

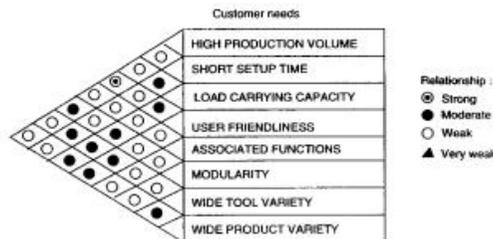


Figure 3. Inter-relationship between customer needs.

Example 1:

Technical characteristic 1:

$$\text{Individual rating}_1 = \sum_j^2 A_{1j} X_j$$

$$\text{Individual rating}_1 = 4.6[2, 8] + 5.4[4, 10] = [30.8, 90.8]$$

$$\text{Mean Individual rating}_1 = 60.8$$

Technical characteristic 2:

$$\text{Individual rating}_2 = \sum_j^2 A_{2j} X_j$$

$$\text{Individual rating}_2 = 4.6[4, 10] + 5.4[0, 6] = [18.4, 78.4]$$

$$\text{Mean Individual rating}_2 = 48.4$$

$$\text{Normalized Mean Individual rating}_1 = \frac{60.8}{60.8} = 1.0$$

$$\text{Normalized Mean Individual rating}_2 = \frac{48.4}{60.8} = 0.80$$