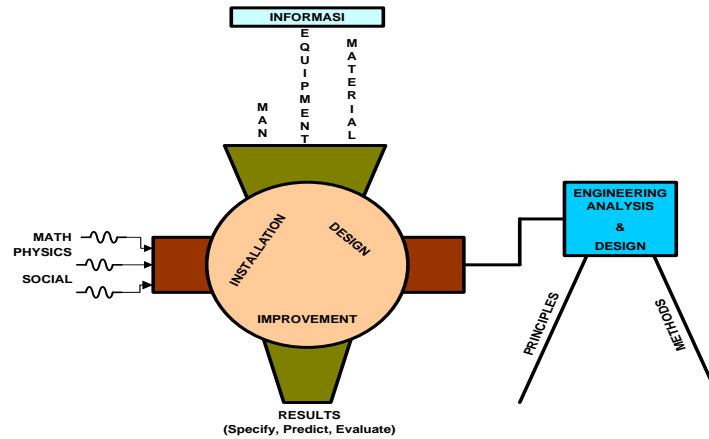


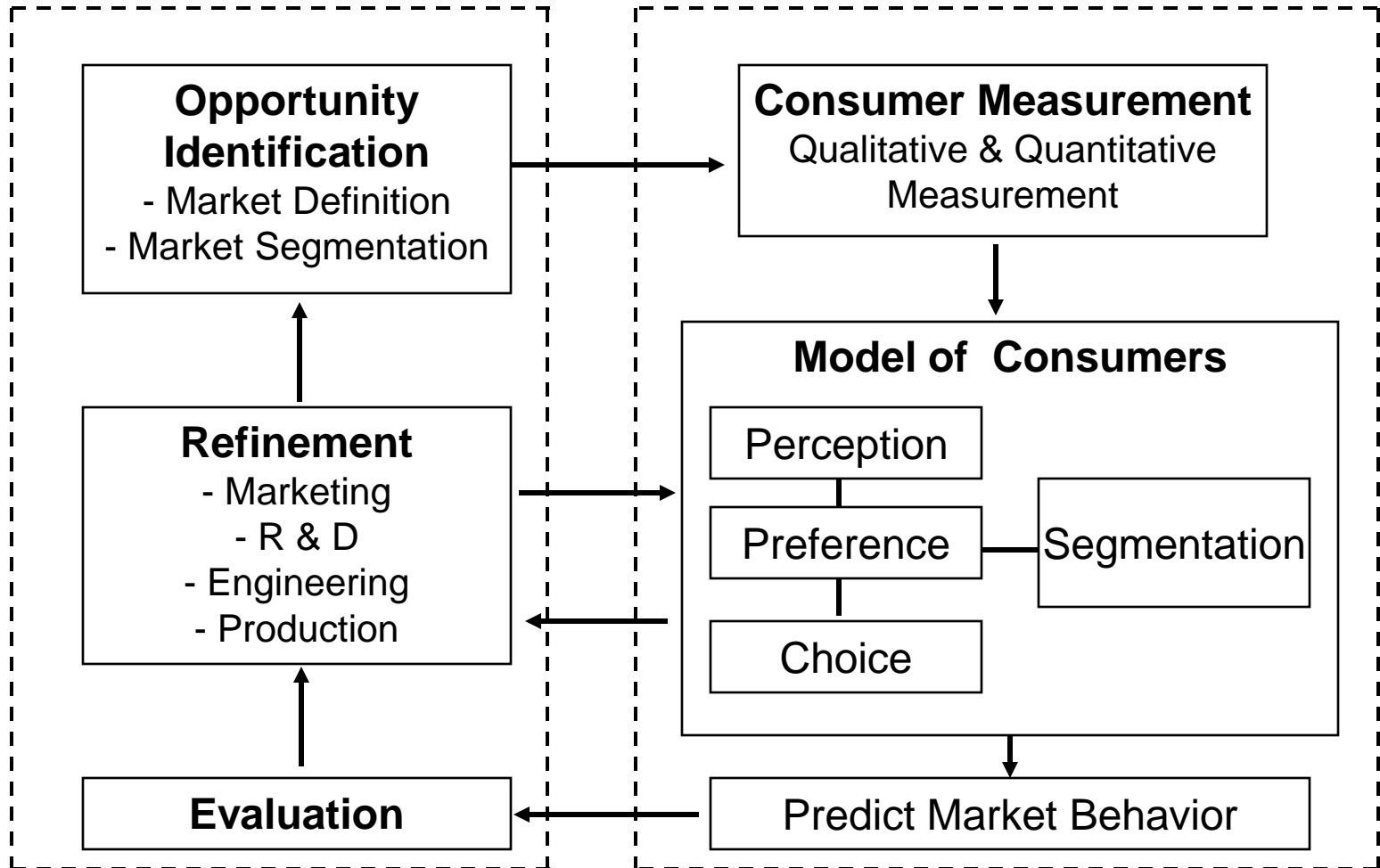
# Consumer Measurement



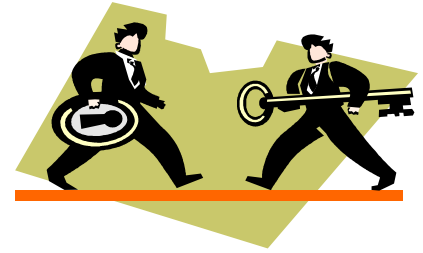
Gambaran Skematik Teknik Industri dianalogikan dengan sebuah Mesin



# New Product Design Process



# Success Key for Product Project



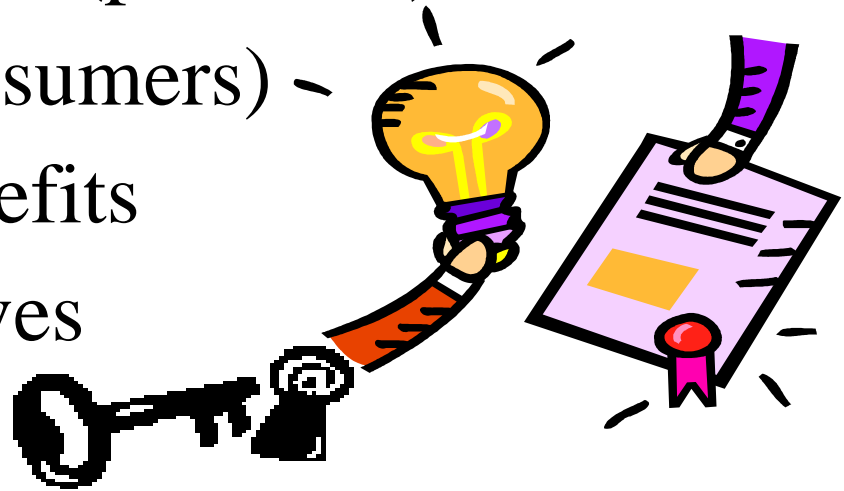
- ❑ The designation of the key benefits the product is to provide
- ❑ The psychological positioning of these benefits versus competitive Products
- ❑ The fulfillment of the product promises by physical features



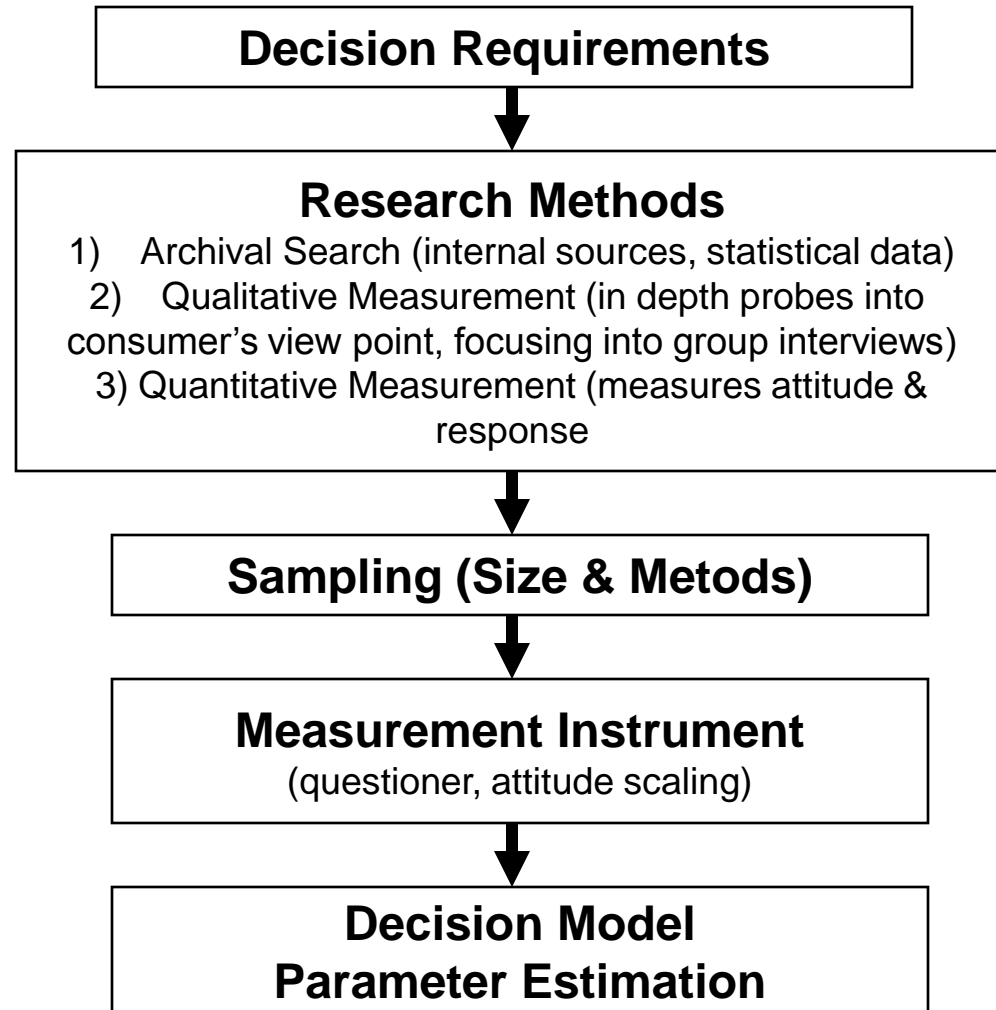
# The Key Benefits of the Product

(Core Benefit Proposition – CBP) 

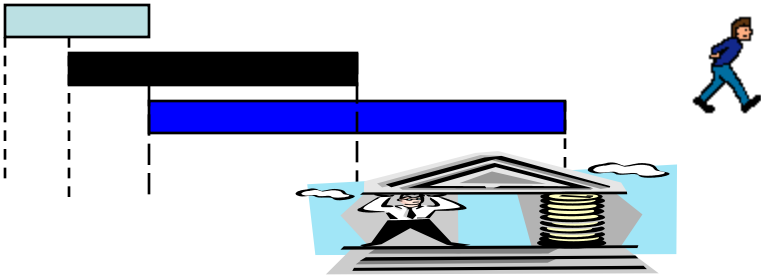
- ❖ Must be clear and concise
- ❖ Striking to the essential characteristics for the product
- ❖ What will be offered (producer), what will be gotten from it (consumers)
- ❖ It specifies the benefits the consumer derives from the product



# Consumer Measurement Process



# Attitude Scaling



js      j      c      b      sb

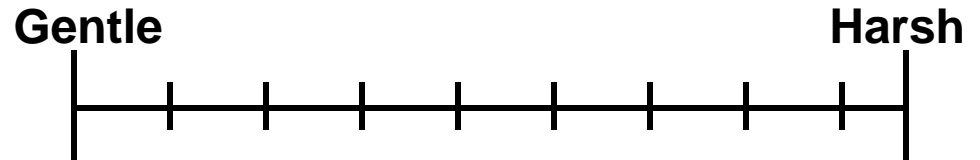
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## 1] Likert scale

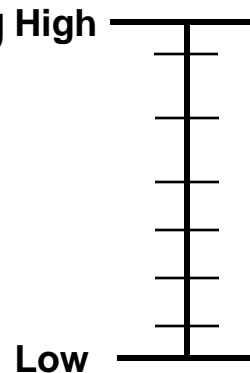
- measuring the intensity of one's pleasure
- Easy to be administered
- Able to respond quickly and easily

## Natural Fabrics

## 2] Semantic Differential



express feelings about something which must be assessed with how to "checking" of the categories properly selected



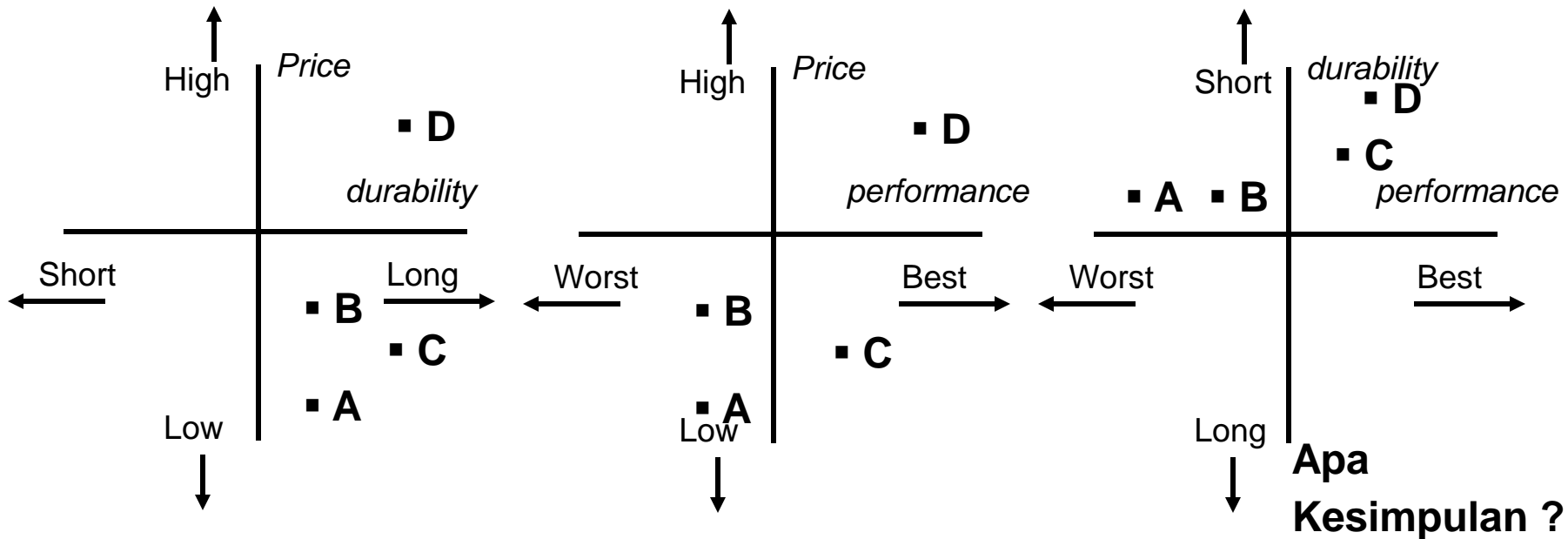
Reputation



# Perceptual Mapping



- Represent the position of products on set of evaluative dimensions
- It would show the consumers perception about the new product and presently products available (competitors) in some dimensions (price, quality, durability, performance, etc.)



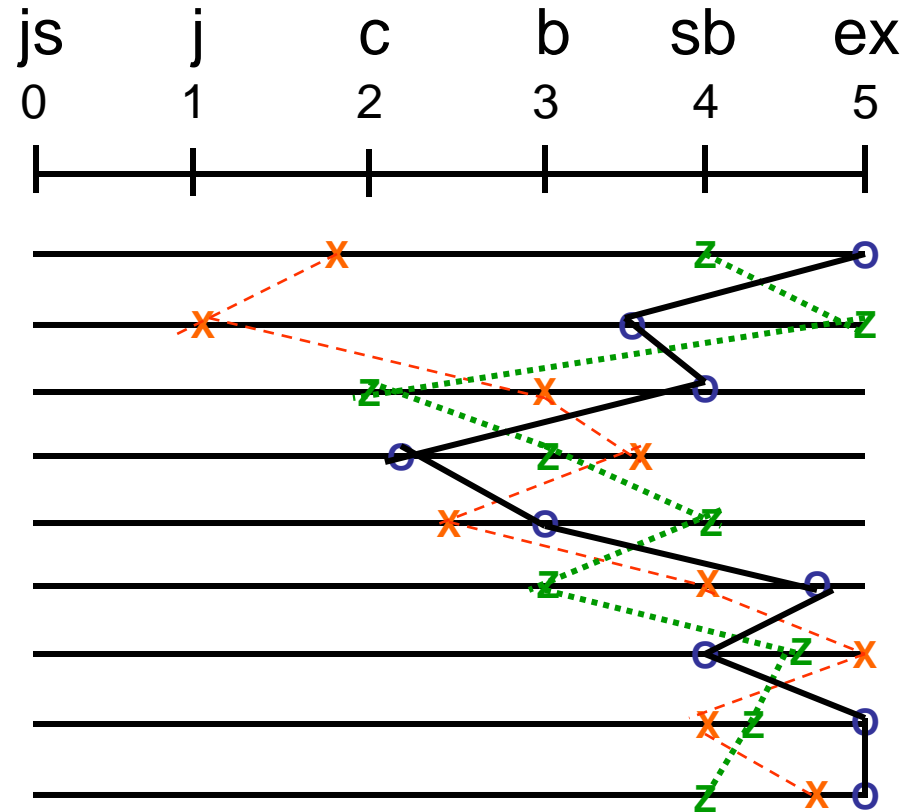


## Consideration Factors (dimensions)

- 01. Dimension # 1
- 02. Dimension # 2
- 03. Dimension # 3
- 04. Dimension # 4
- 05. Dimension # 5
- 06. Dimension # 6
- 07. Dimension # 7
- 08. Dimension # 8
- 09. Dimension # 9

Indicates the detailed strength and weakness of each product compared to other alternatives. It is still difficult to interpret

# Snake Plot (Multi-Dimension Map)





# Evaluation of Alternative Product Design

## (Preference Analysis – Multiple Objectives)



- Compare alternatives with different criteria goals (objectives). Will generally be found under conditions contradiction between the objective criteria by criteria other purpose.

(Contoh:

minimizing production costs >< maximazing performance, quality/reliability, etc.)

- Formulation  $P_{mi} = (R_{i1})^{W_1} (R_{i2})^{W_2} \dots (R_{im})^{W_m}$  ; atau  
 $\log P_{mi} = W_1 \log R_{i1} + W_2 \log R_{i2} + \dots W_m \log R_{im}$   
Dimana :  $P_{mi}$  = Preference Measure;  $R_{im}$  = Rating alternative;  
 $W_m$  = objective weight ;  $i = 1, 2, 3, \dots n$  (alternative Design);  $m = 1, 2, 3, \dots$  kinds of objectives



# Example

## Design of “Cassette Deck”

- 3 alternative design of cassette deck A, B, dan C
- 3 Objectives (1 sound performance (skala 1 – 100); (2) style, appearance, layout, dll (skala 1 – 10); dan (3) production costs estimation (\$/unit)
- Information data and the evaluation of assessment (performed by Tim Evaluator), as follows :

$$PMA = (RA_1)^{W1} (RA_2)^{W2} (1/RA_3)^{W3}$$

$$PMA = (8)^3 (10)^1 (1/100)^2 = 0.512$$

$$PMA = (9)^3 (8)^1 (1/120)^2 = 0.405$$

$$PMA = (7)^3 (9)^1 (1/90)^2 = 0.381$$

- Production costs besar  $\rightarrow$  PM, small / low, for the formulation for the cost should be reversed  $(1/R_{im})^{Wm}$

- PM A have the highest performance (the best)

Alternatif Rancangan Produk	Kriteria Objektif		
	1	2	3
A	8	10	\$ 100
B	9	8	\$ 120
C	7	9	\$ 90
Nilai Bobot	W1= 3	W2 = 1	W3= 2



# “Paired Comparison”



- Special form of comparison simple  
Assessment carried out by comparing the alternatives in pairs (paired comparison); for example if there are four design alternatives (A, B, C, and D),
- the pairwise comparisons can be expressed as follows:  
 $A > B$ ;  $A > C$ ;  $A > D$ ;  $B > C$ ;  $B > D$ ; and  $C > D$
- Assessment can be done by the method of scoring with a scale value between 0-10, or by the method of "forced choice" with a value of 0 (not prefer) or 1 (prefer)



# Cara Penilaian

## ( Forced Choice Paired Wise Comparison)

Assessment carried out by using the rules when assessors prefer the first alternative is given a score of 1 (placed in the column matrix), while other comparable alternative is given a score of 0 (not like) and placed in a row matrix. Sign "tally" (which reflects the assessment like) can be placed in the relevant matrix cells, for example can be seen in the matrix as follows:

	A	B	C	D
A		<del>    </del>      = 9	<del>    </del>     = 8	 = 3
B	 = 1		 = 3	 = 1
C	 = 2	<del>    </del>    = 7		 = 1
D	<del>    </del>    = 7	<del>    </del>      = 9	<del>    </del>      = 9	

- ❑ **Catatan:** Tally assessment can be done through the panel from a group of people who have the experience and authority to pass judgment



# Matriks Proporsi

- By changing the tally matrix into a matrix of proportion and put the proportion of 0.50 in each diagonal cell, it will obtain a new matrix as follows:



	A	B	C	D
A	0.50	0.90	0.80	0.30
B	0.10	0.50	0.30	0.10
C	0.20	0.70	0.50	0.10
D	0.70	0.90	0.90	0.50

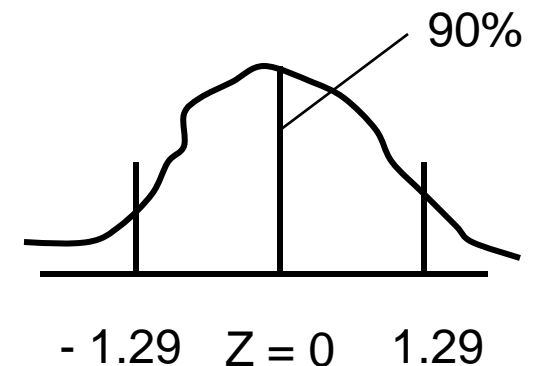




# Matriks Nilai Z (Distribusi Normal)

- ❖ By changing the matrix in proportion to the value of z (the number found in the normal distribution), you will get a new matrix by adjusting the value of z, as follows:

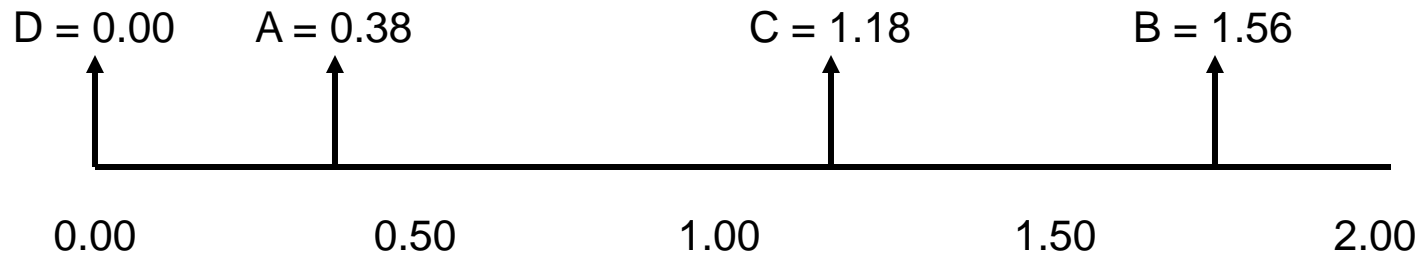
	A	B	C	D
A	0.00	1.29	0.84	- 0.53
B	- 1.29	0.00	- 0.53	- 1.29
C	- 0.84	0.53	0.00	0.10
D	0.53	1.29	1.29	0.00
$\Sigma x$	= - 1.60	3.11	1.60	- 3.11
XI rata-2	= - 0.40	0.78	0.40	- 0.78





# Nilai Ukuran Preferensi

- When the value of  $X$ , the average added  $0.78 +$  (to eliminate the negative sign is there), then the size of the preference values obtained as follows:  $A = 0.38$ ,  $B = 1.56$ ,  $C = 1.18$ , and  $D = 0.00$ ; or the scale of preferences can be described :



- Priority ranking of design alternatives B, C, A, and D





# Metode Pendekatan Brown & Gibson

- Decision making of some of the alternatives (to the best of the alternative selected for each) based on data considered two criteria, namely (1) objective data (quantitative) and (2) Data subjective (qualitative)
- Objective data can be data economical (economical / production costs), while the data can be subjective qualitative expressions (preference) or a style, appearance, etc..





# Formulation Approach B & G

- $OF_i = [C_i \sum I/C_i]^{-1}$ ;  $\sum OF_i = 1.0$ ;  $1.0 \geq OF_i \geq 0$
- $SF_i = R_i W_i$  ;  $\sum SF_i = 1.0$ ;  $1.0 \geq SF_i \geq 0$
- $PM_i = k (OF_i) + (1-k)(SF)$ ;  
 $\sum PM_i = 1.0$ ;  $1.0 \geq PM_i \geq 0$ ;  
     $k$  = weights of the objective factors  
     $(1-k)$  = the weight of subjective factors

