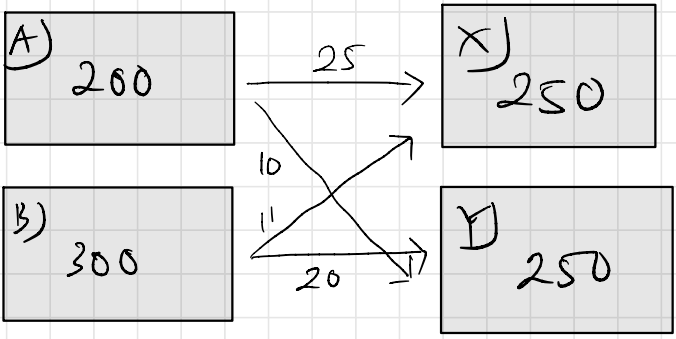
MODUL 6 - METODE TRANSPORTASI



1) Bagaimana strategi pengirimannya?

A	→ X	100	AX
A	→ Y	100	AY
B	→ X	150	BX
B	→ Y	150	BY

2) Berapakah biayanya?

$$Z = 25AX + 10AY + 11BX + 20BY$$
$$= 25(100) + 10(100) + 11(150) + 20(150)$$
$$= 2500 + 1000 + 1650 + 3000$$
$$= 6500 + 1650$$
$$= 8150$$

A. Stepping Stone

Contoh 6.1. Tiga daerah penjualan → Y, S, B
Tiga lokasi pabrik → M, P, K
Lihat tabel 6.1. Tabel biaya pengiriman

Dr \ ke	Y	S	B
M	15	3	18
P	17	8	30
K	18	10	24

Dr \ ke	Y	S	B	Kapasitas (Supply)
M	15	3	18	30 ~~0~~
	30			
P	17	8	30	~~40~~ ~~10~~ 0
	30	10		
K	18	10	24	~~50~~ ~~20~~ 0
		30	20	
Kebutuhan (Demand)	~~60~~ ~~30~~ 0	~~40~~ ~~30~~ 0	~~20~~ 0	

$Z = 15\,MY + 17\,PY + 8\,PS + 10\,KS + 24\,KB$
$= 15(30) + 17(30) + 8(10) + 10(30) + 24(20)$
$= 1820$

Trial #1

	S	B
P	8	30
	10	
K	10	24
	30	20

KB → PB
24 → 30 (+6)

PS → KS
8 → 10 (+2)

Dr \ ke	Y	S	B	kapasitas (Supply)
M	15 → 20	3 → 10		~~30~~ 0
P	17 → 40	8		~~40~~ 10 0
K		10 → 30	24 → 20	~~50~~ ~~20~~ 0
kebutuhan (Demand)	~~60~~ ~~30~~ 0	~~40~~ ~~30~~ 0	20 0	

TRIAL #2

PS → MS
8 → 3 (-5)

MY → PY
15 → 17 (+2)

30 MY
30 PY
10 PS
min = 10

$Z = 15MY + 3MS + 17PY + 10KS + 24KB$
$= 15(20) + 3(10) + 17(40) + 10(30) + 24(20)$
$= 1790$

TRIAL #3

Dr \ ke	Y	S	B	kapasitas (Supply)
M	15 → 20	3 → 10		~~30~~ 0
P	17 → ~~40~~ 10	8 → 30		~~40~~ 10 0
K	18 → 30	0 10 → ~~30~~ 20	24 → 20	~~50~~ ~~20~~ 0
kebutuhan (Demand)	~~60~~ ~~30~~ 0	~~40~~ ~~30~~ 0	20 0	

PY → KY
17 → 18 = (+1)

KS → PS
10 → 8 = (-2)

→ -1

min = (40, 30) = 30

$Z = 15MY + 3MS + 17PY + 8PS + 18KY + 24KB$
$= 15(20) + 3(10) + 17(10) + 8(30) + 18(30) + 24(20)$
$= 1760$

2> vogel

>> mulai dg stepping stone

dr \ ke	Y	S	B	kapasitas (Supply)
M	15	3 (30)	18	30
P	17 (30)	8 (10)	30	40
K	18 (30)	10	24 (20)	50
kebutuhan (Demand)	60 → 30	40 → 10 → 0	20	

min #2 − min #1

min #2	17−15	8−3	24−18
− min #1	= 2	5	6
	18−17	10−8	30−24
	1	2	6
	1	—	6

min #2 − min #1

M: 12, —, —

P: 9, 9, 13

K: 8, 8, 6

$Z = 3MS + 17PY + 8PS + 18KY + 24KB$

$= 3(30) + 17(30) + 8(10) + 18(30) + 24(20)$

$= 90 + 510 + 80 + 540 + 480$

$= 600 + 620 + 480$

$= 1700$

3> MODI

>> mulai dari metode stepping stone

dr \ ke	Y	S	B	kapasitas (Supply)
M	15 (30)	3	18	30
P	17 (30)	8 (10)	30	40
K	18	10 (30)	24 (20)	50
kebutuhan (Demand)	60	40	20	

i ↓

② mencari nilai baris & kolom

R → Baris K → kolom

$$R_i + K_j = C_{ij}$$

- $R_M = 0$, $R_M + K_Y = 15$, $K_Y = 15 - 0 = 15$
- $K_Y = 15$, $R_P + K_Y = 17$, $R_P = 17 - 15 = 2$
- $R_P = 2$, $R_P + K_S = 8$, $K_S = 8 - 2 = 6$
- $K_S = 6$, $R_K + K_S = 10$, $R_K = 10 - 6 = 4$
- $R_K = 4$, $R_K + K_B = 24$, $K_B = 24 - 4 = 20$

③ Hitung nilai index perbaikan

dr \ ke	Y	S	B	kapasitas (Supply)
M	15 (30)	3	18	30
P	17 (30)	8 (10)	30	40
K	18	10 (30)	24 (20)	50
kebutuhan (Demand)	60	40	20	

Index

- MS: $C_{MS} - R_M - K_S = 3 - 0 - 6 = -3$
- MB: $C_{MB} - R_M - K_B = 18 - 0 - 20 = -2$
- PB: $C_{PB} - R_P - K_B = 30 - 2 - 20 = 8$
- KY: $C_{KY} - R_K - K_Y = 18 - 4 - 15 = -1$

#4 Perbaiki alokasi

dr \ ke	Y	S	B	kapasitas (Supply)
M	15 **20**	3 **10**	18	~~30~~
P	17 **40**	8	30	~~40~~
K	18	10 **30**	24 **20**	~~50~~
kebutuhan (Demand)	~~60~~	~~40~~	~~20~~	

- Ingin mengisi MS

	Y	S
M	30	
P	30	10

⇒

-10	+10
20	10
40	0
+10	-10

↳ $Z = 15\,MY + 3\,MS + 17\,PY + 10\,PS + 24\,KB$
$= 15(20) + 3(10) + 17(40) + 10(30) + 24(20) = 1790$

-> Lanjut terus, hingga index perbaikan semua bernilai (+)

calon >> MB, PS, PB, KT << berhenti jika nilai indexnya semua positif

Step #2 & #3 & #4 terus diulangi

Lihat Tabel 6.15 << Tabel dengan alokasi optimal.