

DAFTAR PUSTAKA

- Aminudin. 2005. **Prinsip-Prinsip Riset Operasi**. Penerbit Erlangga, Jakarta.
- Gede, I. **Penerapan Metode Modified Distribution Dalam Sistem Pendistribusian Barang Pada PT. Miswak Utama**. Jurnal Teknik Informatika Vol. 3 No. 4, 2008.
- Hamdy A Thaha, 2007. *Operations Research An Introduction Eighth*. Pearson precentice Hall. New Jersey
- Heizer J, Render B, 2005. **Prinsip-Prinsip Manajemen Operasi**. Salemba Empat. Jakarta.
- Ismaniah. 2009. **Penyelesaian Masalah Riset Operasi dengan Menggunakan Program Solver**. *Jurnal Kajian Ilmiah Lembaga Penelitian Ubhara Jaya* Vol.10 No.1, P: 973-988
- Liberman, Gerald j. **Pengantar Riset Operasi**. Erlangga. Jakarta. 2006.
- Morse dan G.E. Kimball. 1951. *Method of Operation Research*. John Wiley&Sons. New York.
- Mulyono, S. 2004. **Riset Operasi**. Jakarta: Lembaga Penerbit Fakultas Ekonomi Universitas Indonesia.
- Putri. Nurjuliawati. *Aplikasi Steppring Tone Untuk Optimalisasi Perencanaan biaya Pada suatu Proyek Kontruksi*. Jurnal Sipil Statik Vol 1 No.8. Juli 2013.
- Sasmito, Agus. *Visualisasi Teori Optimalisasi Biaya Transportasi Untuk Pembelajaran Riset Operasi*. Jurusan Teknik Informatika UPN “Vetran” Yogyakarta. Vol. 3 No. 1. 2010.
- Sari, J.K. **Penyelesaian Persoalan Transportasi dengan Kendala campuran**. 2010.

Siswanto. 2007. *Operations Research*. Penerbit Erlangga

Situmorang, Marihat. *Aplikasi Metode Transportasi dalam meminimalisai Biaya Distribusi Beras Miskin (Raskin) Pada Perum Bulog Sub Drive Medan*. Jurnal Sintia Matematika. Vol. 02. No. 03. 2014.

Subagyo, P. 2005. *Dasar-Dasar Operations Research*, Penerbit BPFE, Yogyakarta.

Tarliah, Tjutu. *Operation Research (Model-Model Pengambilan Keputusan)*. Bandung: Sinar Batu Algesindo. 2006.

Lampiran Data Pengiriman Air Mineral dalam Kemasan 240 ml Club 2017-2019

Distribusi Air Mineral Club 240/Box Tahun 2019													
	1	2	3	4	5	6	7	8	9	10	11	12	Total
Tujuan/Sumber	Gowa												
Syech Yusuf	28305	26650	17930	22050	24320	20558	16651	19379	7356	19650	17300	22151	242300
Kima	10000	1260	15670	4200	15000	6500	1260	13673	5000	1268	8430	4265	86526
Maros	1055	900	1120	-	675	-	900	-	450	200	1050	-	6350
Pangkep	700	1855	951	759	877	1759	851	920	1378	890	1778	595	13313
Barru	2171	1768	2975	2538	2729	3000	1067	975	2279	1676	2079	2540	25797
Pare-Pare	2829	763	888	-	1805	-	1655	400	-	528	-	2800	11668
Tujuan/Sumber	Takalar												
Syech Yusuf	16581	15750	12557	13010	15057	12057	13125	18516	11865	15510	17505	10572	172105
Kima	5576	4800	6949	4523	4855	6499	3230	5760	4762	1885	840	6492	56171
Maros	750	510	450	400	510	450	400	750	750	510	510	450	6440
Pangkep	1380	1200	1475	1080	1231	1557	1085	1734	1803	1135	1213	1751	16644
Barru	1900	800	1410	2205	631	1413	2291	1521	1908	731	565	1124	16499

Pare-Pare	1150	1300	800	2920	1300	800	2920	1150	1150	1300	1300	800	16890
Tujuan/Sumber	Permintaan												
Syech Yusuf	44886	42400	30487	35060	39377	32615	29776	37895	19221	35160	34805	32723	414405
Kima	15576	6060	22619	8723	19855	12999	4490	19433	9762	3153	9270	10757	142697
Maros	1805	1410	1570	400	1185	450	1300	750	1200	710	1560	450	12790
Pangkep	2080	3055	2426	1839	2108	3316	1936	2654	3181	2025	2991	2346	29957
Barru	4071	2568	4385	4743	3360	4413	3358	2496	4187	2407	2644	3664	42296
Pare-Pare	6900	3331	5273	4743	5165	4413	5013	2896	4187	2935	2644	6464	53964

Distribusi Air Mineral Club 240/Box Tahun 2018													
	1	2	3	4	5	6	7	8	9	10	11	12	
Tujuan/Sumber	Gowa												Total
Syech Yusuf	26000	28159	17930	25951	22010	20152	17505	19650	11865	17300	17505	13125	237152
Kima	10000	2699	15670	8886	11025	6835	4762	13673	5000	1268	8430	4265	92513
Maros	1233	729	1120	450	-	923	-	200	528	-	-	1050	6233
Pangkep	673	1656	951	1006	820	1759	822	920	1378	890	2279	595	13749
Barru	2475	1300	2975	2681	2915	1751	1067	565	1778	800	2079	1676	22062
Pare-Pare	2290	500	888	1695	-	1885	-	-	400	528	-	2800	10986

Tujuan/Sumber	Takalar												
Syech Yusuf	18084	13954	10257	17213	17578	12057	13125	18516	10572	17900	15555	15981	180792
Kima	6760	5644	5896	4523	3711	6499	3230	5760	4762	1885	840	6492	56002
Maros	505	715	500	400	438	450	400	750	750	510	510	450	6378
Pangkep	1004	1295	1475	1080	1310	1557	1085	1734	1803	1135	1213	1751	16442
Barru	1839	654	1455	2205	839	1413	2291	1521	1908	731	565	1124	16545
Pare-Pare	1159	1567	822	2920	1386	800	2920	1150	1300	1124	505	-	15653
Tujuan/Sumber	Permintaan												
Syech Yusuf	44084	42113	28187	43164	39588	32209	30630	38166	22437	35200	33060	29106	417944
Kima	16760	8343	21566	13409	14736	13334	7992	19433	9762	3153	9270	10757	148515
Maros	1738	1444	1620	850	438	1373	400	950	1278	510	510	1500	12611
Pangkep	1677	2951	2426	2086	2130	3316	1907	2654	3181	2025	3492	2346	30191
Barru	4314	1954	4430	4886	3754	3164	3358	2086	3686	1531	2644	2800	38607
Pare-Pare	6604	2454	5318	6581	3754	5049	3358	2086	4086	2059	2644	5600	49593

Distribusi Air Mineral Club 240/Box Tahun 2017

	1	2	3	4	5	6	7	8	9	10	11	12	
Tujuan/Sumber	Gowa												Total
Syech Yusuf	27506	26997	23243	22050	21568	16651	20000	19650	17300	19881	17603	22151	254600
Kima	11111	12372	15670	13673	15000	5000	1260	15431	1260	4265	3435	4265	102742
Maros	1050	818	-	500	1151	976	-	1000	450	313	-	200	6458
Pangkep	800	1855	723	-	877	851	595	1759	1378	890	1778	595	12101
Barru	2171	1768	2975	2538	2729	3000	1067	975	2279	1676	2079	2540	25797
Pare-Pare	2829	763	888	-	1805	-	1655	400	-	528	-	2800	11668
Tujuan/Sumber	Takalar												
Syech Yusuf	15750	15750	26650	18516	19371	27300	13125	10572	12557	13010	15510	10572	198683
Kima	5000	800	-	4133	4855	-	3230	750	762	1885	-	-	21415
Maros	510	450	-	763	510	2729	-	1378	2000	510	-	2800	11650
Pangkep	1380	1200	1475	1080	1231	1557	1085	1734	1803	1135	1213	2800	17693
Barru	2000	467	1476	2200	631	2912	1968	1521	731	731	565	1124	16326
Pare-Pare	1380	1200	1475	-	1231	1557	-	1300	1803	1124	1000	500	12570
Tujuan/Sumber	Permintaan												

Syech Yusuf	43256	42747	49893	40566	40939	43951	33125	30222	29857	32891	33113	32723	453283
Kima	16111	13172	15670	17806	19855	5000	4490	16181	2022	6150	3435	4265	124157
Maros	1560	1268	0	1263	1661	3705	0	2378	2450	823	0	3000	18108
Pangkep	2180	3055	2198	1080	2108	2408	1680	3493	3181	2025	2991	3395	29794
Barru	4171	2235	4451	4738	3360	5912	3035	2496	3010	2407	2644	3664	42123
Pare-Pare	7000	2998	5339	4738	5165	5912	4690	2896	3010	2935	2644	6464	53791

Lampiran Biaya Data Distribusi 2017-2019

Biaya distribusi per box pada 2017						
Gowa (Sumber)	Syech Yusuf	Kima	Maros	Pangkep	Barru	Pare-pare
	Rp 40,000	Rp 75,000	Rp 115,000	Rp 178,000	Rp 461,000	Rp 550,000
Jumlah Pengiriman Ke Tujuan	384	264	48	48	132	42
Biaya Pengiriman Setiap Bulan	Rp 15,360,000.00	Rp 19,800,000.00	Rp 5,520,000.00	Rp 8,544,000.00	Rp 60,852,000.00	Rp 23,100,000.00
Takalar (Sumber)	Syech Yusuf	Kima	Maros	Pangkep	Barru	Pare-pare
	Rp 63,000	Rp 95,000	Rp 135,000	Rp 236,000	Rp 570,000	Rp 882,000
Jumlah Pengiriman Ke Tujuan	300	200	108	111	148	44
Biaya Pengiriman Setiap Bulan	Rp 18,900,000	Rp 19,000,000	Rp 14,580,000	Rp 26,196,000	Rp 84,360,000	Rp 38,808,000
Total Biaya Pengiriman Selama Tahun 2017						Rp 337,001,911.00

Biaya distribusi per box pada 2018						
Gowa (Sumber)	Syech Yusuf	Kima	Maros	Pangkep	Barru	Pare-pare
	Rp 40,000	Rp 75,000	Rp 115,000	Rp 178,000	Rp 461,000	Rp 550,000
Jumlah Pengiriman Ke Tujuan	384	264	48	48	148	46
Biaya Pengiriman Setiap Bulan	Rp 15,360,000	Rp 19,800,000	Rp 5,520,000	Rp 8,544,000	Rp 68,228,000	Rp 25,300,000
Takalar (Sumber)						
	Rp 63,000	Rp 95,000	Rp 135,000	Rp 236,000	Rp 570,000	Rp 882,000
Jumlah Pengiriman Ke Tujuan	450	200	46	48	132	72
Biaya Pengiriman Setiap Bulan	Rp 28,350,000	Rp 19,000,000	Rp 6,210,000	Rp 11,328,000	Rp 75,240,000	Rp 63,504,000
Total Biaya Pengiriman Setiap Bulan						Rp 348,365,948

Biaya distribusi per box pada 2019						
Gowa (Sumber)	Syech Yusuf	Kima	Maros	Pangkep	Barru	Pare-pare
	Rp 40,000	Rp 75,000	Rp 115,000	Rp 178,000	Rp 461,000	Rp 550,000
Jumlah Pengiriman Ke Tujuan	425	264	88	48	120	42
Biaya Pengiriman Setiap Bulan	Rp 17,000,000	Rp 19,800,000	Rp 10,120,000	Rp 8,544,000	Rp 55,320,000	Rp 23,100,000
Takalar (Sumber)						
	Rp 63,000	Rp 95,000	Rp 135,000	Rp 236,000	Rp 570,000	Rp 882,000
Jumlah Pengiriman Ke Tujuan	275	200	80	54	56	84
Biaya Pengiriman Setiap Bulan	Rp 17,325,000	Rp 19,000,000	Rp 10,800,000	Rp 12,744,000	Rp 31,920,000	Rp 74,088,000
Total Biaya Pengiriman Setiap Bulan						Rp 301,742,749

Biaya rata2 setiap kali pengiriman (dalamribuan Rp)padatahun 2019

SUMBER / TUJUAN	Syechyusuf	Kima	Maros	Pangkep	Barru	Pare-Pare	Kapasitas
Gowa	32163	11971	4761	4232	17464	19995	390567
Takalar	23729	9387	4706	38703	49208	48899	330689
Sumber 3	0	0	0	0	0	0	0
Sumber 4	0	0	0	0	0	0	0
Sumber 5	0	0	0	0	0	0	0
Sumber 6	0	0	0	0	0	0	0
Permintaan	453283	124157	18108	29794	42123	53791	721256

Lampiran Pengolahan Data di POM QM

a) North West Corner

POM for Windows - C:\Users\ACER\Documents\Data Olahlan ku tra - [Transportation Shipments]

Objective: Minimize

Starting method: Northwest Corner Method

(untitled) Solution

Optimal cost = \$152943900	Syech Yusuf	Kima	Maros	Pangkep	Barru	Pare-Pare
Gowa	122594	124157	18108	29794	42123	53791
Takalar	330689					
Sumber 3	0					
Sumber 4	0					
Sumber 5	0					
Sumber 6	0					

POM for Windows - C:\Users\ACER\Documents\Data Olahlan ku tra - [Marginal Costs]

Objective: Minimize

Starting method: Northwest Corner Method

(untitled) Solution

	Syech Yusuf	Kima	Maros	Pangkep	Barru	Pare-Pare
Gowa						
Takalar		59	84	430	402	375
Sumber 3		202	274	280	147	123
Sumber 4		202	274	280	147	123
Sumber 5		202	274	280	147	123
Sumber 6		202	274	280	147	123

POM for Windows - C:\Users\ACER\Documents\Data Olahlan ku tra - [Final Solution Table]

Objective: Minimize

Starting method: Northwest Corner Method

(untitled) Solution

	Syech Yusuf	Kima	Maros	Pangkep	Barru	Pare-Pare
Gowa	122594	124157	18108	29794	42123	53791
Takalar	330689	[59]	[84]	[430]	[402]	[375]
Sumber 3	0	[202]	[274]	[280]	[147]	[123]
Sumber 4	0	[202]	[274]	[280]	[147]	[123]
Sumber 5	0	[202]	[274]	[280]	[147]	[123]
Sumber 6	0	[202]	[274]	[280]	[147]	[123]

	Syech Yusuf	Kima	Maros	Pangkep	Barru	Pare-Pare
Iteration 1						
Gowa	390567	(-59)	(-84)	(-430)	(-402)	(-375)
Takalar	62716	124157	18108	29794	42123	53791
Sumber 3	(252)	(395)	(442)	(102)	(-3)	(0)
Sumber 4	(252)	(395)	(442)	(102)	(-3)	(0)
Sumber 5	(252)	(395)	(442)	(102)	(-3)	(0)
Sumber 6	(252)	(395)	(442)	(102)	(-3)	(0)

POM for Windows - C:\Users\ACER\Documents\Data Olahlan ku tra - [Iterations]

File Edit View Module Format Tools Window Help

Anal 18 80% 0.00 Dec 0.00

Objective: Maximize Minimize

Starting method: Northwest Corner Method

Instruction: Use these option buttons to set the objective.

(untitled) Solution

	Syech Yusuf	Kima	Maros	Pangkep	Barru	Pare-Pare
Iteration 2						
Gowa	360773	(-59)	(-84)	29794	(-402)	(-375)
Takalar	92510	124157	18108	(430)	42123	53791
Sumber 3	(252)	(395)	(442)	(532)	(-3)	(0)
Sumber 4	(252)	(395)	(442)	(532)	(-3)	(0)
Sumber 5	(252)	(395)	(442)	(532)	(-3)	(0)
Sumber 6	(252)	(395)	(442)	(532)	(-3)	(0)

POM for Windows - C:\Users\ACER\Documents\Data Olahlan ku tra - [Iterations]

File Edit View Module Format Tools Window Help

Anal 18 80% 0.00 Dec 0.00

Objective: Maximize Minimize

Starting method: Northwest Corner Method

Instruction: Use these option buttons to set the objective.

(untitled) Solution

	Syech Yusuf	Kima	Maros	Pangkep	Barru	Pare-Pare
Iteration 3						
Gowa	318650	(-59)	(-84)	29794	42123	(-375)
Takalar	134633	124157	18108	(430)	(402)	53791
Sumber 3	(252)	(395)	(442)	(532)	(399)	(0)
Sumber 4	(252)	(395)	(442)	(532)	(399)	(0)
Sumber 5	(252)	(395)	(442)	(532)	(399)	(0)
Sumber 6	(252)	(395)	(442)	(532)	(399)	(0)

POM for Windows - C:\Users\ACER\Documents\Data Olahlan ku tra - [Iterations]

File Edit View Module Format Tools Window Help

Anal 18 80% 0.00 Dec 0.00

Objective: Maximize Minimize

Starting method: Northwest Corner Method

Instruction: Use these option buttons to set the objective.

(untitled) Solution

	Syech Yusuf	Kima	Maros	Pangkep	Barru	Pare-Pare
Iteration 4						
Gowa	264859	(-59)	(-84)	29794	42123	53791
Takalar	188424	124157	18108	(430)	(402)	(375)
Sumber 3	(-123)	(20)	(67)	(157)	(24)	(0)
Sumber 4	(-123)	(20)	(67)	(157)	(24)	(0)
Sumber 5	(-123)	(20)	(67)	(157)	(24)	(0)
Sumber 6	(-123)	(20)	(67)	(157)	(24)	(0)

POM for Windows - C:\Users\ACER\Documents\Data Olah an ku tra - [Iterations]

File Edit View Module Format Tools Window Help

Anal 18 80% 0.00 0.00

Objective: Maximize Minimize Northwest Corner Method

Instruction: Use these option buttons to set the objective.

(untitled) Solution

	Syech Yusuf	Kima	Maros	Pangkep	Barru	Pare-Pare
Iteration 5						
Gowa	264859	(-59)	(-84)	29794	42123	53791
Takalar	188424	124157	18108	(430)	(402)	(375)
Sumber 3	(0)	(143)	(190)	(280)	(147)	(123)
Sumber 4	(-123)	(20)	(67)	(157)	(24)	(0)
Sumber 5	(-123)	(20)	(67)	(157)	(24)	(0)
Sumber 6	(-123)	(20)	(67)	(157)	(24)	(0)

POM for Windows - C:\Users\ACER\Documents\Data Olah an ku tra - [Iterations]

File Edit View Module Format Tools Window Help

Anal 18 80% 0.00 0.00

Objective: Maximize Minimize Northwest Corner Method

Instruction: Use these option buttons to set the objective.

(untitled) Solution

	Syech Yusuf	Kima	Maros	Pangkep	Barru	Pare-Pare
Iteration 6						
Gowa	264859	(-59)	(-84)	29794	42123	53791
Takalar	188424	124157	18108	(430)	(402)	(375)
Sumber 3	(0)	(143)	(190)	(280)	(147)	(123)
Sumber 4	(0)	(143)	(190)	(280)	(147)	(123)
Sumber 5	(-123)	(20)	(67)	(157)	(24)	(0)
Sumber 6	(-123)	(20)	(67)	(157)	(24)	(0)

POM for Windows - C:\Users\ACER\Documents\Data Olah an ku tra - [Iterations]

File Edit View Module Format Tools Window Help

Anal 18 80% 0.00 0.00

Objective: Maximize Minimize Northwest Corner Method

Instruction: Use these option buttons to set the objective.

(untitled) Solution

	Syech Yusuf	Kima	Maros	Pangkep	Barru	Pare-Pare
Iteration 7						
Gowa	264859	(-59)	(-84)	29794	42123	53791
Takalar	188424	124157	18108	(430)	(402)	(375)
Sumber 3	(0)	(143)	(190)	(280)	(147)	(123)
Sumber 4	(0)	(143)	(190)	(280)	(147)	(123)
Sumber 5	(0)	(143)	(190)	(280)	(147)	(123)
Sumber 6	(-123)	(20)	(67)	(157)	(24)	(0)

POM for Windows - C:\Users\ACER\Documents\Data Olahan ku.tr.a - [Iterations]

File Edit View Module Format Tools Window Help

Anal 18 80% Edit Data

Objective: Maximize Minimize Stating method: Northwest Corner Method Instruction: Use these option buttons to set the objective.

(untitled) Solution

	Syech Yusuf	Kima	Maros	Pangkep	Barru	Pare-Pare
Iteration 8						
Gowa	264859	(-59)	(-84)	29794	42123	53791
Takalar	188424	124157	18108	(430)	(402)	(375)
Sumber 3	(0)	(143)	(190)	(280)	(147)	(123)
Sumber 4	(0)	(143)	(190)	(280)	(147)	(123)
Sumber 5	(0)	(143)	(190)	(280)	(147)	(123)
Sumber 6	(0)	(143)	(190)	(280)	(147)	(123)

POM for Windows - C:\Users\ACER\Documents\Data Olahan ku.tr.a - [Iterations]

File Edit View Module Format Tools Window Help

Anal 18 80% Edit Data

Objective: Maximize Minimize Stating method: Northwest Corner Method Instruction: Use these option buttons to set the objective.

(untitled) Solution

	Syech Yusuf	Kima	Maros	Pangkep	Barru	Pare-Pare
Iteration 9						
Gowa	246751	(-59)	18108	29794	42123	53791
Takalar	206532	124157	(84)	(430)	(402)	(375)
Sumber 3	(0)	(143)	(274)	(280)	(147)	(123)
Sumber 4	(0)	(143)	(274)	(280)	(147)	(123)
Sumber 5	(0)	(143)	(274)	(280)	(147)	(123)
Sumber 6	(0)	(143)	(274)	(280)	(147)	(123)
Iteration 10						
Gowa	122594	124157	18108	29794	42123	53791
Takalar	330689	(59)	(84)	(430)	(402)	(375)
Sumber 3	(0)	(202)	(274)	(280)	(147)	(123)
Sumber 4	(0)	(202)	(274)	(280)	(147)	(123)
Sumber 5	(0)	(202)	(274)	(280)	(147)	(123)
Sumber 6	(0)	(202)	(274)	(280)	(147)	(123)

Transportation Solution Screen Heizer/Render's Operations Management Textbook

POM for Windows - C:\Users\ACER\Documents\Data Olahan ku.tr.a - [Shipments with costs]

File Edit View Module Format Tools Window Help

Anal 18 80% Edit Data

Objective: Maximize Minimize Stating method: Northwest Corner Method Instruction: Use these option buttons to set the objective.

(untitled) Solution

	Syech	Kima	Maros	Pangkep	Barru	Pare-Pare
Gowa	4/\$39475270	7/\$14898840	108/\$869184	94/\$1251348	23/\$7371525	1/\$10704410
Takalar	9/\$78373300					
Sumber 3	0/\$0					
Sumber 4	0/\$0					
Sumber 5	0/\$0					
Sumber 6	0/\$0					

POM for Windows - C:\Users\ACER\Documents\Data Olahhan ku.tra - [Shipping list]

File Edit View Module Format Tools Window Help

Anal 18 100%

Objective: Maximize Minimize

Starting method: Northwest Corner Method

Instruction: Use these option buttons to set the objective.

(untitled) Solution

From	To	Shipment	Cost per unit	Shipment cost
Gowa	Syech Yusuf	122594	322	39475270
Gowa	Kima	124157	120	14898840
Gowa	Maros	18108	48	869184
Gowa	Pangkep	29794	42	1251348
Gowa	Barru	42123	175	7371525
Gowa	Pare-Pare	53791	199	10704410
Takalar	Syech Yusuf	330689	237	78373300
Sumber 3	Syech Yusuf	0	0	0
Sumber 4	Syech Yusuf	0	0	0
Sumber 5	Syech Yusuf	0	0	0
Sumber 6	Syech Yusuf	0	0	0

b) Least Cost

POM for Windows - C:\Users\ACER\Documents\Data Olahhan ku.tra - [Transportation Shipments]

File Edit View Module Format Tools Window Help

Anal 18 84%

Objective: Maximize Minimize

Starting method: Intuitive Lowest-Cost Method

Instruction: There are more results available in additional windows. These may be opened by using the WINDOW option in the Main Menu.

(untitled) Solution

Optimal cost = \$152943900	Syech Yusuf	Kima	Maros	Pangkep	Barru	Pare-Pare
Gowa	122594	124157	18108	29794	42123	53791
Takalar	330689					
Sumber 3	0					
Sumber 4	0					
Sumber 5	0					
Sumber 6	0					

POM for Windows - C:\Users\ACER\Documents\Data Olahhan ku.tra - [Marginal Costs]

File Edit View Module Format Tools Window Help

Anal 18 80%

Objective: Maximize Minimize

Starting method: Intuitive Lowest-Cost Method

Instruction: Use these option buttons to set the objective.

(untitled) Solution

	Syech Yusuf	Kima	Maros	Pangkep	Barru	Pare-Pare
Gowa						
Takalar		59	84	430	402	375
Sumber 3		202	274	280	147	123
Sumber 4		202	274	280	147	123
Sumber 5		202	274	280	147	123
Sumber 6		202	274	280	147	123

POM for Windows - C:\Users\ACER\Documents\Data Olahhan ku.tra - [Final Solution Table]

File Edit View Module Format Tools Window Help

Anal 18 80%

Objective: Maximize Minimize

Starting method: Intuitive Lowest-Cost Method

Instruction: Use these option buttons to set the objective.

(untitled) Solution

	Syech Yusuf	Kima	Maros	Pangkep	Barru	Pare-Pare
Gowa	122594	124157	18108	29794	42123	53791
Takalar	330689	[59]	[84]	[430]	[402]	[375]
Sumber 3	0	[202]	[274]	[280]	[147]	[123]
Sumber 4	0	[202]	[274]	[280]	[147]	[123]
Sumber 5	0	[202]	[274]	[280]	[147]	[123]
Sumber 6	0	[202]	[274]	[280]	[147]	[123]

POM for Windows - C:\Users\ACER\Documents\Data Olahhan ku.tra - [Iterations]

File Edit View Module Format Tools Window Help

Anal 18 100%

Objective: Maximize Minimize

Starting method: Intuitive Lowest-Cost Method

Instruction: Use these option buttons to set the objective.

(untitled) Solution

	Syech Yusuf	Kima	Maros	Pangkep	Barru	Pare-Pare
Iteration 1						
Gowa	264859	(-59)	(-84)	29794	42123	53791
Takalar	188424	124157	18108	(430)	(402)	(375)
Sumber 3	(0)	(143)	(190)	(280)	(147)	(123)
Sumber 4	(0)	(143)	(190)	(280)	(147)	(123)
Sumber 5	(0)	(143)	(190)	(280)	(147)	(123)
Sumber 6	(0)	(143)	(190)	(280)	(147)	(123)

POM for Windows - C:\Users\ACER\Documents\Data Olahhan ku.tra - [Iterations]

File Edit View Module Format Tools Window Help

Anal 18 100%

Objective: Maximize Minimize

Starting method: Intuitive Lowest-Cost Method

Instruction: Use these option buttons to set the objective.

(untitled) Solution

	Syech Yusuf	Kima	Maros	Pangkep	Barru	Pare-Pare
Iteration 2						
Gowa	246751	(-59)	18108	29794	42123	53791
Takalar	206532	124157	(84)	(430)	(402)	(375)
Sumber 3	(0)	(143)	(274)	(280)	(147)	(123)
Sumber 4	(0)	(143)	(274)	(280)	(147)	(123)
Sumber 5	(0)	(143)	(274)	(280)	(147)	(123)
Sumber 6	(0)	(143)	(274)	(280)	(147)	(123)

Iteration 3						
Gowa	122594	124157	18108	29794	42123	53791
Takalar	330689	(59)	(84)	(430)	(402)	(375)
Sumber 3	(0)	(202)	(274)	(280)	(147)	(123)
Sumber 4	(0)	(202)	(274)	(280)	(147)	(123)
Sumber 5	(0)	(202)	(274)	(280)	(147)	(123)
Sumber 6	(0)	(202)	(274)	(280)	(147)	(123)

Transportation Solution Screen Heizer/Render's Operations Management Textbook

Module Print Screen Previous file Next file Save as Excel file Save as HTML

POM for Windows - C:\Users\ACER\Documents\Data Olahan ku.tra - [Shipments with costs]

File Edit View Module Format Tools Window Help

Anal 18 B I U 00 0.0 0.0

Objective: Maximize Minimize

Starting method: Intuitive Lowest-Cost Method

Instruction: Use these option buttons to set the objective.

(untitled) Solution

	Syech	Kima	Maros	Pangkep	Barru	Pare-Pare
Gowa	4/\$39475270	7/\$14898840	108/\$869184	94/\$1251348	23/\$7371525	1/\$10704410
Takalar	9/\$78373300					
Sumber 3	0/\$0					
Sumber 4	0/\$0					
Sumber 5	0/\$0					
Sumber 6	0/\$0					

POM for Windows - C:\Users\ACER\Documents\Data Olahan ku.tra - [Shipping list]

File Edit View Module Format Tools Window Help

Anal 18 B I U 00 0.0 0.0

Objective: Maximize Minimize

Starting method: Intuitive Lowest-Cost Method

Instruction: Use these option buttons to set the objective.

(untitled) Solution

From	To	Shipment	Cost per unit	Shipment cost
Gowa	Syech Yusuf	122594	322	39475270
Gowa	Kima	124157	120	14898840
Gowa	Maros	18108	48	869184
Gowa	Pangkep	29794	42	1251348
Gowa	Barru	42123	175	7371525
Gowa	Pare-Pare	53791	199	10704410
Takalar	Syech Yusuf	330689	237	78373300
Sumber 3	Syech Yusuf	0	0	0
Sumber 4	Syech Yusuf	0	0	0
Sumber 5	Syech Yusuf	0	0	0
Sumber 6	Syech Yusuf	0	0	0

c) Vogels Appromation Methode

POM for Windows - C:\Users\ACER\Documents\Data Olahan ku.tra - [Transportation Shipments]

File Edit View Module Format Tools Window Help

Anal 18 B I U 00 0.0 0.0

Objective: Maximize Minimize

Starting method: Vogel's Approximation Method

Instruction: There are more results available in additional windows. These may be opened by using the WINDOW option in the Main Menu.

(untitled) Solution

Optimal cost = \$152943900	Syech Yusuf	Kima	Maros	Pangkep	Barru	Pare-Pare
Gowa	122594	124157	18108	29794	42123	53791
Takalar	330689					
Sumber 3	0					
Sumber 4	0					
Sumber 5	0					
Sumber 6	0					

POM for Windows - C:\Users\ACER\Documents\Data Olahahan ku.tra - [Marginal Costs]

File Edit View Module Format Tools Window Help

Starting method: Vogel's Approximation Method

Instruction: Use these option buttons to set the objective.

(untitled) Solution

	Syech Yusuf	Kima	Maros	Pangkep	Barru	Pare-Pare
Gowa						
Takalar		59	84	430	402	375
Sumber 3		202	274	280	147	123
Sumber 4		202	274	280	147	123
Sumber 5		202	274	280	147	123
Sumber 6		202	274	280	147	123

POM for Windows - C:\Users\ACER\Documents\Data Olahahan ku.tra - [Final Solution Table]

File Edit View Module Format Tools Window Help

Starting method: Vogel's Approximation Method

Instruction: Use these option buttons to set the objective.

(untitled) Solution

	Syech Yusuf	Kima	Maros	Pangkep	Barru	Pare-Pare
Gowa	122594	124157	18108	29794	42123	53791
Takalar	330689	[59]	[84]	[430]	[402]	[375]
Sumber 3	0	[202]	[274]	[280]	[147]	[123]
Sumber 4	0	[202]	[274]	[280]	[147]	[123]
Sumber 5	0	[202]	[274]	[280]	[147]	[123]
Sumber 6	0	[202]	[274]	[280]	[147]	[123]

POM for Windows - C:\Users\ACER\Documents\Data Olahahan ku.tra - [Iterations]

File Edit View Module Format Tools Window Help

Starting method: Vogel's Approximation Method

Instruction: Use these option buttons to set the objective.

(untitled) Solution

	Syech Yusuf	Kima	Maros	Pangkep	Barru	Pare-Pare
Iteration 1						
Gowa	264859	(-59)	(-84)	29794	42123	53791
Takalar	188424	124157	18108	(430)	(402)	(375)
Sumber 3	(0)	(143)	(190)	(280)	(147)	(123)
Sumber 4	(0)	(143)	(190)	(280)	(147)	(123)
Sumber 5	(0)	(143)	(190)	(280)	(147)	(123)
Sumber 6	(0)	(143)	(190)	(280)	(147)	(123)

POM for Windows - C:\Users\ACER\Documents\Data Olahan ku.tra - [Iterations]

File Edit View Module Format Tools Window Help

Starting method: Vogel's Approximation Method

Instruction: Use these option buttons to set the objective.

(untitled) Solution

	Syech Yusuf	Kima	Maros	Pangkep	Barru	Pare-Pare
Gowa	246751	(-59)	18108	29794	42123	53791
Takalar	206532	124157	(84)	(430)	(402)	(375)
Sumber 3	(0)	(143)	(274)	(280)	(147)	(123)
Sumber 4	(0)	(143)	(274)	(280)	(147)	(123)
Sumber 5	(0)	(143)	(274)	(280)	(147)	(123)
Sumber 6	(0)	(143)	(274)	(280)	(147)	(123)

Iteration 3

	Syech Yusuf	Kima	Maros	Pangkep	Barru	Pare-Pare
Gowa	122594	124157	18108	29794	42123	53791
Takalar	330689	(59)	(84)	(430)	(402)	(375)
Sumber 3	(0)	(202)	(274)	(280)	(147)	(123)
Sumber 4	(0)	(202)	(274)	(280)	(147)	(123)
Sumber 5	(0)	(202)	(274)	(280)	(147)	(123)
Sumber 6	(0)	(202)	(274)	(280)	(147)	(123)

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POM for Windows - C:\Users\ACER\Documents\Data Olahan ku.tra - [Shipments with costs]

File Edit View Module Format Tools Window Help

Starting method: Vogel's Approximation Method

Instruction: Use these option buttons to set the objective.

(untitled) Solution

	Syech Yusuf	Kima	Maros	Pangkep	Barru	Pare-Pare
Gowa	4/\$39475270	7/\$14898840	108/\$869184	94/\$1251348	23/\$7371525	1/\$10704410
Takalar	9/\$78373300					
Sumber 3	0/\$0					
Sumber 4	0/\$0					
Sumber 5	0/\$0					
Sumber 6	0/\$0					

POM for Windows - C:\Users\ACER\Documents\Data Olahan ku.tra - [Shipping list]

File Edit View Module Format Tools Window Help

Starting method: Vogel's Approximation Method

Instruction: Use these option buttons to set the objective.

(untitled) Solution

From	To	Shipment	Cost per unit	Shipment cost
Gowa	Syech Yusuf	122594	322	39475270
Gowa	Kima	124157	120	14898840
Gowa	Maros	18108	48	869184
Gowa	Pangkep	29794	42	1251348
Gowa	Barru	42123	175	7371525
Gowa	Pare-Pare	53791	199	10704410
Takalar	Syech Yusuf	330689	237	78373300
Sumber 3	Syech Yusuf	0	0	0
Sumber 4	Syech Yusuf	0	0	0
Sumber 5	Syech Yusuf	0	0	0
Sumber 6	Syech Yusuf	0	0	0

Stepping Stone

Lingo 16.0 - [Solution Report - Lingo1]

Global optimal solution found.
 Objective value: 0.1529252E+09
 Infeasibilities: 0.000000
 Total solver iterations: 0
 Elapsed runtime seconds: 0.15

Model Class: LP

Total variables: 12
 Nonlinear variables: 0
 Integer variables: 0

Total constraints: 9
 Nonlinear constraints: 0

Total nonzeros: 36
 Nonlinear nonzeros: 0

Variable	Value	Reduced Cost
CAPACITY (W1)	390567.0	0.000000
CAPACITY (W2)	330689.0	0.000000
DEMAND (R1)	453283.0	0.000000
DEMAND (R2)	124157.0	0.000000
DEMAND (R3)	18018.00	0.000000
DEMAND (R4)	29794.00	0.000000
DEMAND (R5)	42123.00	0.000000

Lingo 16.0 Solver Status [Lingo1]

Solver Status: IP
 Model Class: LP
 State: Global Opt
 Objective: 1.52925e+008
 Infeasibility: 0
 Iterations: 0

Variables:
 Total: 12
 Nonlinear: 0
 Integers: 0

Constraints:
 Total: 9
 Nonlinear: 0

Nonzeros:
 Total: 36
 Nonlinear: 0

Generator Memory Used (K): 34

Elapsed Runtime (hh:mm:ss): 00:00:00

Extended Solver Status:
 Solver Type: . . .
 Best Obj: . . .
 Obj Bound: . . .
 Steps: . . .
 Active: . . .

Update Interval: 2 Interrupt Solver Close

Lingo 16.0 - [Solution Report - Lingo1]

DEMAND (R4)	29794.00	0.000000
DEMAND (R5)	42123.00	0.000000
DEMAND (R6)	53719.00	0.000000
COST (W1, R1)	322.0000	0.000000
COST (W1, R2)	120.0000	0.000000
COST (W1, R3)	48.00000	0.000000
COST (W1, R4)	42.00000	0.000000
COST (W1, R5)	175.0000	0.000000
COST (W1, R6)	199.0000	0.000000
COST (W2, R1)	237.0000	0.000000
COST (W2, R2)	94.00000	0.000000
COST (W2, R3)	47.00000	0.000000
COST (W2, R4)	387.0000	0.000000
COST (W2, R5)	492.0000	0.000000
COST (W2, R6)	489.0000	0.000000
VOLUME (W1, R1)	122594.0	0.000000
VOLUME (W1, R2)	124157.0	0.000000
VOLUME (W1, R3)	18018.00	0.000000
VOLUME (W1, R4)	29794.00	0.000000
VOLUME (W1, R5)	42123.00	0.000000
VOLUME (W1, R6)	53719.00	0.000000
VOLUME (W2, R1)	330689.0	0.000000
VOLUME (W2, R2)	0.000000	59.00000
VOLUME (W2, R3)	0.000000	84.00000
VOLUME (W2, R4)	0.000000	430.0000
VOLUME (W2, R5)	0.000000	402.0000
VOLUME (W2, R6)	0.000000	375.0000
Row	Slack or Surplus	Dual Price
OBJECTIVE	0.1529252E+09	-1.000000
DEMAND_ROW (R1)	0.000000	-322.0000
DEMAND_ROW (R2)	0.000000	-120.0000
DEMAND_ROW (R3)	0.000000	-48.00000
DEMAND_ROW (R4)	0.000000	-42.00000
DEMAND_ROW (R5)	0.000000	-175.0000
DEMAND_ROW (R6)	0.000000	-199.0000
CAPACITY_ROW (W1)	162.0000	0.000000
CAPACITY_ROW (W2)	0.000000	85.00000

press F1