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LAMPIRAN

Lampiran 1

Lampiran 1 berisi tabel perhitungan *holding cost* PT Asia Citra Pratama.

Keterangan	Jumlah(Unit)	Harga(Rp)	Nilai Investasi(Rp)	Umur Ekonomis(thn)	B. Penyusutan Tahunan(Rp)	B.Bunga/Tahun 10%(Rp)
Pendirian Bangunan	1	2.340.000.000	2.340.000.000	20	117.000.000	122.850.000
Lampu	60	125.000	7.500.000	5	1.500.000	450.000
Rak Penyimpanan	15	39.000.000	585.000.000	10	58.500.000	32.175.000
Pallet	1.000	245.000	245.000.000	5	49.000.000	14.700.000
Hand Pallet	2	3.000.000	6.000.000	10	600.000	330.000
Forklift	1	252.000.000	252.000.000	10	25.200.000	13.860.000
Biaya Tetap					251.800.000	184.365.000
Keterangan	Jumlah					Biaya/Bulan(Rp)
Tenaga Kerja (orang)	6					28.789.872
Pemeliharaan Biaya Energi						2.000.000 15.000.000
Biaya Tidak Tetap/Bulan						45.789.872
Keterangan						Nilai(Rp)
Biaya Tetap Penyimpanan/Bulan						251.800.000
Biaya Tetap Bunga Modal/Bulan						20.983.333
Biaya Tidak Tetap/Bulan						5.363.750
Total Biaya						5.789.872
Biaya penyimpanan per-m ²						33

Keterangan :

Biaya bunga = 10%
 Waktu operasional = 12 Bulan
 Kapasitas terpakai = 2.500.000 m²

Lampiran 2

Lampiran 2 berisi tabel perhitungan kapasitas produksi dimana hasil wawancara kapasitas desain yang ditetapkan perusahaan dalam 1 bulan 2.000.000 m² oleh karena itu kapasitas efektif 1.900.000 m² dimana tingkat toleransi terhadap pekerja 5% dengan tenaga kerja tetap 66 orang dan jumlah hari kerja dalam satu tahun 300 hari.

Kapasitas Produksi (m²)	
Per-bulan	1.900.000
Per-tahun	22.800.000
Hari kerja	300
Tenaga kerja	66
1 hari/1 tenaga kerja	1.151,52

Lampiran 3

Lampiran 3 berisi tabel rekapitulasi hari kerja pada tahun 2021.

Hari Kerja tahun 2021					
Bulan	Jumlah Hari	Jumlah Hari Minggu	Jumlah Cuti	Kumulatif Non Hari kerja	Hari Kerja
Januari	31	5	1	6	25
Februari	28	4	1	5	23
Maret	31	4	1	5	26
April	30	4	1	5	25
Mei	31	5	4	9	22
Juni	30	4	1	5	25
Juli	31	4	1	5	26
Agustus	31	5	2	7	24
September	30	4	0	4	26
Oktober	30	5	1	6	24
November	30	4	0	4	26
Desember	31	4	2	6	25
Total Hari Kerja					297

Lampiran 4

Lampiran 4 berisi tabel perhitungan biaya produksi PT Asia Citra Pratama tahun 2020 berdasarkan variabel pada penelitian ini.

Periode	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
<i>Worker</i>	66	66	66	66	66	66	66	66	66	66	66	66	792
<i>Labour Cost (Rp)</i>	316.688.592	316.688.592	316.688.592	316.688.592	316.688.592	316.688.592	316.688.592	316.688.592	316.688.592	316.688.592	316.688.592	316.688.592	3.800.263,104
<i>Unit Produced (m²)</i>	1.534.282	1.476.172	1.246.160,50	1.019.287,25	554.082,25	1.431.077	2.235.654,75	1.873.581	1.791.034,57	1.801.082,55	1.927.913,66	1.582.649,17	18.472.976,70
<i>Demand (m²)</i>	1.566.334,50	1.593.529,50	1.367.225,75	894.258,25	582.368,75	1.302.637,75	2.253.871,50	2.026.451	1.779.975,75	2.060.842,25	1.957.855,50	2.010.595,25	19.395.945,75
<i>Net Inventory (m²)</i>	32.052,50	149.410	270.475,25	145.446,25	173.732,75	45.293,50	63.510,25	216.380,25	205.321,43	465.081,13	495.022,97	922.969,05	3.184.695,33
<i>Holding Cost (Rp)</i>	1.053.078	4.908.833	8.886.405	4.778.605	5.707.952	1.488.108	2.086.615	7.109.126	6.745.791	15.280.139	16.263.872	30.323.947	104.632.471
<i>Total Cost (Rp)</i>	317.741.670	321.597.425	325.574.997	321.467.197	322.396.544	318.176.700	318.775.207	323.797.718	323.434.383	331.968.731	332.952.464	347.012.539	3.904.895.575

Lampiran 5

Lampiran 5 berisi rekapitulasi perhitungan perencanaan agregat *level strategy*, *chase strategy* dan *mix strategy* pada tahun 2021.

Perencanaan Agregat *Level Strategy* :

1) *Resources* :

a) *Active Days*

Tahun 2021 memiliki 297 hari kerja pada lampiran 1.

b) *Unit/Worker*

Januari

$$\begin{aligned} \text{Kapasitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \underline{\quad 25 \quad} \times \\ \text{Unit/Worker} &= 28.787,88 \text{ m}^2 \end{aligned}$$

Februari

$$\begin{aligned} \text{Kapasitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \underline{\quad 26 \quad} \times \\ \text{Unit/Worker} &= 26.484,85 \text{ m}^2 \end{aligned}$$

Maret

$$\begin{aligned} \text{Kapasitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \underline{\quad 26 \quad} \times \\ \text{Unit/Worker} &= 29.939,39 \text{ m}^2 \end{aligned}$$

April

$$\begin{aligned} \text{Kapasitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \underline{\quad 25 \quad} \times \\ \text{Unit/Worker} &= 28.787,88 \text{ m}^2 \end{aligned}$$

Mei

$$\begin{aligned} \text{Kapasitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \underline{\quad 22 \quad} \times \\ \text{Unit/Worker} &= 25.333,33 \text{ m}^2 \end{aligned}$$

Juni

$$\begin{aligned} \text{Kapabilitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \frac{25}{\times} \\ \text{Unit/Worker} &= 28.787,88 \text{ m}^2 \end{aligned}$$

Juli

$$\begin{aligned} \text{Kapabilitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \frac{26}{\times} \\ \text{Unit/Worker} &= 29.939,39 \text{ m}^2 \end{aligned}$$

Agustus

$$\begin{aligned} \text{Kapabilitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \frac{24}{\times} \\ \text{Unit/Worker} &= 27.636,36 \text{ m}^2 \end{aligned}$$

September

$$\begin{aligned} \text{Kapabilitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \frac{26}{\times} \\ \text{Unit/Worker} &= 29.939,39 \text{ m}^2 \end{aligned}$$

Oktober

$$\begin{aligned} \text{Kapabilitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \frac{24}{\times} \\ \text{Unit/Worker} &= 27.636,36 \text{ m}^2 \end{aligned}$$

November

$$\begin{aligned} \text{Kapabilitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \frac{26}{\times} \\ \text{Unit/Worker} &= 29.939,39 \text{ m}^2 \end{aligned}$$

Desember

$$\begin{aligned} \text{Kapabilitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \frac{25}{\times} \\ \text{Unit/Worker} &= 28.787,88 \text{ m}^2 \end{aligned}$$

c) *Demand*

Permintaan berdasarkan hasil peramalan permintaan dari metode terbaik pada tabel 4.10.

d) *Worker Needed*

Januari s/d Desember *worker needed* sama

$$\begin{aligned} \text{Rata-rata } demand \text{ 2021} &= 1.538.187,667 \\ \text{Rata-rata } unit/worker \text{ 2021} &= \frac{28.500}{54} \times \\ \text{Worker needed} &= 54 \text{ Orang} \end{aligned}$$

e) *Worker hiring/lay off*

Worker Hiring :

Januari s/d Desember

Tidak terjadi penambahan tenaga kerja.

Worker Lay Off :

Januari

$$\begin{aligned} \text{Worker available} &= 66 \\ \text{Worker needed} &= \underline{54} - \\ \text{Wroker lay off} &= 12 \text{ Orang} \end{aligned}$$

f) *Unit produces*

Januari

$$\begin{aligned} \text{Unit/worker} &= 28.787,88 \\ \text{Worker used} &= \frac{54}{1} \times \\ \text{Unit produces} &= 1.554.545,45 \text{ m}^2 \end{aligned}$$

Februari

$$\begin{aligned} \text{Unit/worker} &= 26.484,85 \\ \text{Worker used} &= \frac{54}{1} \times \\ \text{Unit produces} &= 1.430.181,82 \text{ m}^2 \end{aligned}$$

Maret

$$\begin{aligned} \text{Unit/worker} &= 29.939,39 \\ \text{Worker used} &= \frac{54}{1} \times \\ \text{Unit produces} &= 1.616.727,27 \text{ m}^2 \end{aligned}$$

April

$$\begin{aligned} \text{Unit/worker} &= 28.787,88 \\ \text{Worker used} &= \frac{54}{1} \times \\ \text{Unit produces} &= 1.554.545,45 \text{ m}^2 \end{aligned}$$

Mei

$$\begin{aligned} \text{Unit/worker} &= 25.333,33 \\ \text{Worker used} &= \frac{54}{1} \times \\ \text{Unit produces} &= 1.368.000 \text{ m}^2 \end{aligned}$$

Juni

$$\begin{aligned} \text{Unit/worker} &= 28.787,88 \\ \text{Worker used} &= \frac{54}{1} \times \\ \text{Unit produces} &= 1.554.545,45 \text{ m}^2 \end{aligned}$$

Juli

$$\begin{aligned} \text{Unit/worker} &= 29.939,39 \\ \text{Worker used} &= \frac{54}{1} \times \\ \text{Unit produces} &= 1.616.727,27 \text{ m}^2 \end{aligned}$$

Agustus

$$\begin{aligned} \text{Unit/worker} &= 27.636,36 \\ \text{Worker used} &= \frac{54}{1} \times \\ \text{Unit produces} &= 1.492.363,64 \text{ m}^2 \end{aligned}$$

September

$$\begin{aligned} \text{Unit/worker} &= 29.939,39 \\ \text{Worker used} &= \frac{54}{1} \times \\ \text{Unit produces} &= 1.616.727,27 \text{ m}^2 \end{aligned}$$

Oktober

$$\begin{aligned} \text{Unit/worker} &= 27.636,36 \\ \text{Worker used} &= \frac{54}{1} \times \\ \text{Unit produces} &= 1.492.363,64 \text{ m}^2 \end{aligned}$$

November

$$\begin{aligned} \text{Unit/worker} &= 29.939,39 \\ \text{Worker used} &= \frac{54}{1} \times \\ \text{Unit produces} &= 1.616.727,27 \text{ m}^2 \end{aligned}$$

Desember

$$\begin{aligned} \text{Unit/worker} &= 28.787,88 \\ \text{Worker used} &= \frac{54}{1} \times \\ \text{Unit produces} &= 1.554.545,45 \text{ m}^2 \end{aligned}$$

g) *Net Inventory (end of month)*

Persediaan pada bulan Januari dan Februari 2021 berikut :

Januari

$$\begin{aligned} \text{Persediaan awal} &= 427.946,08 \\ \text{Unit Produces} &= \frac{1.554.545,45}{1} + \\ &= 1.982.491,53 \text{ m}^2 \\ \text{Demand} &= \frac{1.524.392}{1} - \\ \text{Persediaan} &= 458.099,53 \text{ m}^2 \end{aligned}$$

Februari

$$\begin{aligned} \text{Persediaan awal} &= 458.099,53 \\ \text{Unit Produces} &= \frac{1.430.181,82}{1} + \\ &= 1.888.281,35 \text{ m}^2 \\ \text{Demand} &= \frac{1.481.983}{1} - \\ \text{Persediaan} &= 406.298,35 \text{ m}^2 \end{aligned}$$

Maret

$$\begin{aligned} \text{Persediaan awal} &= 406.298,35 \\ \text{Unit Produces} &= \frac{1.616.727,27}{1} + \\ &= 2.023.025,63 \text{ m}^2 \\ \text{Demand} &= \frac{1.269.162}{1} - \\ \text{Persediaan} &= 753.863,63 \text{ m}^2 \end{aligned}$$

April

$$\begin{aligned} \text{Persediaan awal} &= 753.863,63 \\ \text{Unit Produces} &= \frac{1.554.545,45}{1} + \\ &= 2.308.409,08 \text{ m}^2 \\ \text{Demand} &= \frac{1.041.974}{1} - \\ \text{Persediaan} &= 1.266.435,08 \text{ m}^2 \end{aligned}$$

Mei

$$\begin{aligned} \text{Persediaan awal} &= 1.266.435,08 \\ \text{Unit Produces} &= \frac{1.368.000}{} + \\ &= 2.634.435,08 \text{ m}^2 \\ \text{Demand} &= \frac{600.603}{} - \\ \text{Persediaan} &= 2.033.832,08 \text{ m}^2 \end{aligned}$$

Juni

$$\begin{aligned} \text{Persediaan awal} &= 2.033.832,08 \\ \text{Unit Produces} &= \frac{1.554.545,45}{} + \\ &= 3.588.377,53 \text{ m}^2 \\ \text{Demand} &= \frac{1.343.378}{} - \\ \text{Persediaan} &= 2.244.999,53 \text{ m}^2 \end{aligned}$$

Juli

$$\begin{aligned} \text{Persediaan awal} &= 2.244.999,53 \\ \text{Unit Produces} &= \frac{1.616.727,27}{} + \\ &= 3.861.726,81 \text{ m}^2 \\ \text{Demand} &= \frac{2.155.197}{} - \\ \text{Persediaan} &= 1.706.529,81 \text{ m}^2 \end{aligned}$$

Agustus

$$\begin{aligned} \text{Persediaan awal} &= 1.706.529,81 \\ \text{Unit Produces} &= \frac{1.492.363,64}{} + \\ &= 3.198.893,44 \text{ m}^2 \\ \text{Demand} &= \frac{1.909.788}{} - \\ \text{Persediaan} &= 1.289.105,44 \text{ m}^2 \end{aligned}$$

September

$$\begin{aligned} \text{Persediaan awal} &= 1.289.105,44 \\ \text{Unit Produces} &= \frac{1.616.727,27}{} + \\ &= 2.905.832,72 \text{ m}^2 \\ \text{Demand} &= \frac{1.799.290}{} - \\ \text{Persediaan} &= 1.106.542,72 \text{ m}^2 \end{aligned}$$

Oktober

$$\begin{aligned} \text{Persediaan awal} &= 1.106.542,72 \\ \text{Unit Produces} &= \frac{1.492.363,64}{} + \\ &= 2.598.906,35 \text{ m}^2 \\ \text{Demand} &= \frac{1.800.078}{} - \\ \text{Persediaan} &= 798.828,35 \text{ m}^2 \end{aligned}$$

November

$$\begin{aligned} \text{Persediaan awal} &= 798.828,35 \\ \text{Unit Produces} &= \frac{1.616.727,27}{2.415.555,63} + \\ &= 2.415.555,63 \text{ m}^2 \\ \text{Demand} &= \frac{1.915.231}{500.324,63} - \\ \text{Persediaan} &= 500.324,63 \text{ m}^2 \end{aligned}$$

Desember

$$\begin{aligned} \text{Persediaan awal} &= 500.324,63 \\ \text{Unit Produces} &= \frac{1.554.545,45}{2.054.870,08} + \\ &= 2.054.870,08 \text{ m}^2 \\ \text{Demand} &= \frac{1.617.176}{437.694,08} - \\ \text{Persediaan} &= 437.694,08 \text{ m}^2 \end{aligned}$$

2) Cost :

a) Hiring Cost

Total *hiring cost* dalam 1 tahun yakni Rp -.

b) Lay off Cost

Januari

$$\begin{aligned} \text{Worker Layoff} &= 12 \text{ orang} \\ \text{Biaya Layoff} &= 12 \times \text{Rp. } 7.197.468 \\ &= \text{Rp. } 86.369.616 \end{aligned}$$

Dimana total *layoff cost* dalam 1 tahun yakni Rp 86.369.616.

c) Labour Cost

Jumlah tenaga kerja setiap bulannya tetap yakni 54 orang sehingga *labour cost* sebagai berikut :

Januari s/d Desember

$$\begin{aligned} \text{Upah tenaga kerja} &= \text{Rp } 4.798.312/\text{Bulan} \\ \text{Worker Used} &= 54 \text{ orang} \\ \text{Biaya tenaga kerja/bulan} &= \text{Rp } 4.798.312 \times 54 \\ &= \text{Rp. } 259.108.848/\text{Bulan} \end{aligned}$$

Total *labour cost* tahun 2021 Rp. 3.109.306.176.

d) *Holding Cost*

Biaya persediaan pada bulan Januari dan Februari 2021 berikut :

Januari

$$\begin{aligned} \text{Persediaan} &= 458.099,53 \text{ m}^2 \\ \text{Biaya simpan} &= \text{Rp. } 32,85/\text{m}^2 \\ \text{Holding Cost} &= \text{Net Inventory} \times \text{Biaya Inventory} \\ &= 458.099,53 \times 32,85 \\ &= \text{Rp } 15.050.760 \end{aligned}$$

Februari

$$\begin{aligned} \text{Persediaan} &= 406.298,35 \text{ m}^2 \\ \text{Biaya simpan} &= \text{Rp. } 32,85/\text{m}^2 \\ \text{Holding Cost} &= \text{Net Inventory} \times \text{Biaya Inventory} \\ &= 406.298,35 \times 32,85 \\ &= \text{Rp } 13.348.844 \end{aligned}$$

Maret

$$\begin{aligned} \text{Persediaan} &= 753.863,63 \text{ m}^2 \\ \text{Biaya simpan} &= \text{Rp. } 32,85/\text{m}^2 \\ \text{Holding Cost} &= \text{Net Inventory} \times \text{Biaya Inventory} \\ &= 753.863,63 \times 32,85 \\ &= \text{Rp } 24.768.025 \end{aligned}$$

April

$$\begin{aligned} \text{Persediaan} &= 1.266.435,08 \text{ m}^2 \\ \text{Biaya simpan} &= \text{Rp. } 32,85/\text{m}^2 \\ \text{Holding Cost} &= \text{Net Inventory} \times \text{Biaya Inventory} \\ &= 1.266.435,08 \times 32,85 \\ &= \text{Rp } 41.608.449 \end{aligned}$$

Mei

$$\begin{aligned} \text{Persediaan} &= 2.033.832,08 \text{ m}^2 \\ \text{Biaya simpan} &= \text{Rp. } 32,85/\text{m}^2 \\ \text{Holding Cost} &= \text{Net Inventory} \times \text{Biaya Inventory} \\ &= 2.033.832,08 \times 32,85 \\ &= \text{Rp } 66.821.110 \end{aligned}$$

Juni

$$\begin{aligned} \text{Persediaan} &= 2.244.999,53 \text{ m}^2 \\ \text{Biaya simpan} &= \text{Rp. } 32,85/\text{m}^2 \\ \text{Holding Cost} &= \text{Net Inventory} \times \text{Biaya Inventory} \\ &= 2.244.999,53 \times 32,85 \end{aligned}$$

= Rp 73.758.971

Juli

Persediaan = 1.706.529,81 m²

Biaya simpan = Rp. 32,85/m²

Holding Cost = *Net Inventory* × *Biaya Inventory*

= 1.706.529,81 x 32,85

= Rp 56.067.665

Agustus

Persediaan = 1.289.105,44 m²

Biaya simpan = Rp. 32,85/m²

Holding Cost = *Net Inventory* × *Biaya Inventory*

= 1.289.105,44 x 32,85

= Rp 42.353.278

September

Persediaan = 1.106.542,72 m²

Biaya simpan = Rp. 32,85/m²

Holding Cost = *Net Inventory* × *Biaya Inventory*

= 1.106.542,72 x 32,85

= Rp 36.355.220

Oktober

Persediaan = 798.828,35 m²

Biaya simpan = Rp. 32,85/m²

Holding Cost = *Net Inventory* × *Biaya Inventory*

= 798.828,35 x 32,85

= Rp 26.245.331

November

Persediaan = 500.324,63 m²

Biaya simpan = Rp. 32,85/m²

Holding Cost = *Net Inventory* × *Biaya Inventory*

= 500.324,63 x 32,85

= Rp 16.438.057

Desember

Persediaan = 437.694,08 m²

Biaya simpan = Rp. 32,85/m²

Holding Cost = *Net Inventory* × *Biaya Inventory*

= 437.694,08 x 32,85

= Rp 14.380.344

Dimana total *holding cost* dalam 1 tahun yakni Rp 427.196.054.

e) *Total Cost*

$$\begin{aligned} \text{Total Cost} &= \text{Hiring Cost} + \text{Layoff Cost} + \text{Labour Cost} + \text{Holding Cost} \\ &= 0 + 86.369.616 + 3.109.306.176 + 427.196.054 \\ &= \text{Rp. } 3.622.871.846 \end{aligned}$$

Perencanaan Agregat Chase Strategy :

1) *Resources :*

a) *Active Days*

Tahun 2021 memiliki 297 hari kerja pada lampiran 1.

b) *Unit/Worker*

Januari

$$\begin{aligned} \text{Kapasitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \underline{\quad 25 \quad} \times \\ \text{Unit/Worker} &= 28.787,88 \text{ m}^2 \end{aligned}$$

Februari

$$\begin{aligned} \text{Kapasitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \underline{\quad 26 \quad} \times \\ \text{Unit/Worker} &= 26.484,85 \text{ m}^2 \end{aligned}$$

Maret

$$\begin{aligned} \text{Kapasitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \underline{\quad 26 \quad} \times \\ \text{Unit/Worker} &= 29.939,39 \text{ m}^2 \end{aligned}$$

April

$$\begin{aligned} \text{Kapasitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \underline{\quad 25 \quad} \times \\ \text{Unit/Worker} &= 28.787,88 \text{ m}^2 \end{aligned}$$

Mei

$$\begin{aligned} \text{Kapasitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \underline{\quad 22 \quad} \times \end{aligned}$$

$$\text{Unit/Worker} = 25.333,33 \text{ m}^2$$

Juni

$$\begin{aligned} \text{Kapasitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \frac{25}{\text{Unit/Worker}} \times \\ &= 28.787,88 \text{ m}^2 \end{aligned}$$

Juli

$$\begin{aligned} \text{Kapasitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \frac{26}{\text{Unit/Worker}} \times \\ &= 29.939,39 \text{ m}^2 \end{aligned}$$

Agustus

$$\begin{aligned} \text{Kapasitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \frac{24}{\text{Unit/Worker}} \times \\ &= 27.636,36 \text{ m}^2 \end{aligned}$$

September

$$\begin{aligned} \text{Kapasitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \frac{26}{\text{Unit/Worker}} \times \\ &= 29.939,39 \text{ m}^2 \end{aligned}$$

Oktober

$$\begin{aligned} \text{Kapasitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \frac{24}{\text{Unit/Worker}} \times \\ &= 27.636,36 \text{ m}^2 \end{aligned}$$

November

$$\begin{aligned} \text{Kapasitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \frac{26}{\text{Unit/Worker}} \times \\ &= 29.939,39 \text{ m}^2 \end{aligned}$$

Desember

$$\begin{aligned} \text{Kapasitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \frac{25}{\text{Unit/Worker}} \times \\ &= 28.787,88 \text{ m}^2 \end{aligned}$$

c) *Demand*

Permintaan berdasarkan hasil peramalan permintaan dari metode terbaik pada tabel 4.10.

d) *Worker Needed*

Januari

$$\begin{aligned} \text{Demand} &= 1.524.392 \\ \text{Unit/worker} &= \frac{28.787,88}{53} \times \\ \text{Worker needed} &= 53 \text{ Orang} \end{aligned}$$

Februari

$$\begin{aligned} \text{Demand} &= 1.481.983 \\ \text{Unit/worker} &= \frac{26.484,85}{56} \times \\ \text{Worker needed} &= 56 \text{ Orang} \end{aligned}$$

Maret

$$\begin{aligned} \text{Demand} &= 1.269.162 \\ \text{Unit/worker} &= \frac{29.939,39}{43} \times \\ \text{Worker needed} &= 43 \text{ Orang} \end{aligned}$$

April

$$\begin{aligned} \text{Demand} &= 1.041.974 \\ \text{Unit/worker} &= \frac{28.787,88}{37} \times \\ \text{Worker needed} &= 37 \text{ Orang} \end{aligned}$$

Mei

$$\begin{aligned} \text{Demand} &= 600.603 \\ \text{Unit/worker} &= \frac{25.333,33}{24} \times \\ \text{Worker needed} &= 24 \text{ Orang} \end{aligned}$$

Juni

$$\begin{aligned} \text{Demand} &= 1.343.378 \\ \text{Unit/worker} &= \frac{28.787,88}{47} \times \\ \text{Worker needed} &= 47 \text{ Orang} \end{aligned}$$

Juli

$$\begin{aligned} \text{Demand} &= 2.155.197 \\ \text{Unit/worker} &= \frac{29.939,39}{72} \times \\ \text{Worker needed} &= 72 \text{ Orang} \end{aligned}$$

Agustus

$$\begin{aligned} \text{Demand} &= 1.909.788 \\ \text{Unit/worker} &= \frac{27.636,36}{70} \times \\ \text{Worker needed} &= 70 \text{ Orang} \end{aligned}$$

September

$$\begin{aligned} \text{Demand} &= 1.799.290 \\ \text{Unit/worker} &= \frac{29.939,39}{61} \times \\ \text{Worker needed} &= 61 \text{ Orang} \end{aligned}$$

Oktober

$$\begin{aligned} \text{Demand} &= 1.800.078 \\ \text{Unit/worker} &= \frac{27.636,36}{66} \times \\ \text{Worker needed} &= 66 \text{ Orang} \end{aligned}$$

November

$$\begin{aligned} \text{Demand} &= 1.915.231 \\ \text{Unit/worker} &= \frac{29.939,39}{64} \times \\ \text{Worker needed} &= 64 \text{ Orang} \end{aligned}$$

Desember

$$\begin{aligned} \text{Demand} &= 1.617.176 \\ \text{Unit/worker} &= \frac{28.787,88}{57} \times \\ \text{Worker needed} &= 57 \text{ Orang} \end{aligned}$$

e) *Worker hiring/lay off*

Worker Hiring :

Februari

$$\begin{aligned} \text{Worker needed} &= 56 \\ \text{Worker available} &= \underline{53} - \\ \text{Worker hiring} &= 3 \text{ Orang} \end{aligned}$$

Juni

Worker needed = 47
Worker available = 24 –
Worker hiring = 23 Orang

Juli

Worker needed = 72
Worker available = 47 –
Worker hiring = 25 Orang

Oktober

Worker needed = 66
Worker available = 61 –
Worker hiring = 5 Orang

Worker Lay Off :

Januari

Worker available = 66
Worker needed = 53 –
Worker lay off = 13 Orang

Maret

Worker available = 56
Worker needed = 43 –
Worker lay off = 13 Orang

April

Worker available = 43
Worker needed = 37 –
Worker lay off = 6 Orang

Mei

Worker available = 37
Worker needed = 24 –
Worker lay off = 13 Orang

Agustus

$$\begin{aligned} \text{Worker available} &= 72 \\ \text{Worker needed} &= \underline{70} - \\ \text{Worker lay off} &= 2 \text{ Orang} \end{aligned}$$

September

$$\begin{aligned} \text{Worker available} &= 70 \\ \text{Worker needed} &= \underline{61} - \\ \text{Worker lay off} &= 9 \text{ Orang} \end{aligned}$$

November

$$\begin{aligned} \text{Worker available} &= 66 \\ \text{Worker needed} &= \underline{64} - \\ \text{Worker lay off} &= 2 \text{ Orang} \end{aligned}$$

Desember

$$\begin{aligned} \text{Worker available} &= 64 \\ \text{Worker needed} &= \underline{57} - \\ \text{Worker lay off} &= 7 \text{ Orang} \end{aligned}$$

f) *Unit produces*

Januari

$$\begin{aligned} \text{Unit/worker} &= 28.787,88 \\ \text{Worker used} &= \underline{\hspace{2cm}53} \times \\ \text{Unit produces} &= 1.524.392 \text{ m}^2 \end{aligned}$$

Februari

$$\begin{aligned} \text{Unit/worker} &= 26.484,85 \\ \text{Worker used} &= \underline{\hspace{2cm}56} \times \\ \text{Unit produces} &= 1.481.983 \text{ m}^2 \end{aligned}$$

Maret

$$\begin{aligned} \text{Unit/worker} &= 29.939,39 \\ \text{Worker used} &= \underline{\hspace{2cm}43} \times \\ \text{Unit produces} &= 1.269.162 \text{ m}^2 \end{aligned}$$

April

$$\begin{aligned} \text{Unit/worker} &= 28.787,88 \\ \text{Worker used} &= \frac{37}{1} \times \\ \text{Unit produces} &= 1.041.974 \text{ m}^2 \end{aligned}$$

Mei

$$\begin{aligned} \text{Unit/worker} &= 25.333,33 \\ \text{Worker used} &= \frac{24}{1} \times \\ \text{Unit produces} &= 600.603 \text{ m}^2 \end{aligned}$$

Juni

$$\begin{aligned} \text{Unit/worker} &= 28.787,88 \\ \text{Worker used} &= \frac{47}{1} \times \\ \text{Unit produces} &= 1.343.378 \text{ m}^2 \end{aligned}$$

Juli

$$\begin{aligned} \text{Unit/worker} &= 29.939,39 \\ \text{Worker used} &= \frac{72}{1} \times \\ \text{Unit produces} &= 2.155.197 \text{ m}^2 \end{aligned}$$

Agustus

$$\begin{aligned} \text{Unit/worker} &= 27.636,36 \\ \text{Worker used} &= \frac{70}{1} \times \\ \text{Unit produces} &= 1.909.788 \text{ m}^2 \end{aligned}$$

September

$$\begin{aligned} \text{Unit/worker} &= 29.939,39 \\ \text{Worker used} &= \frac{61}{1} \times \\ \text{Unit produces} &= 1.799.290 \text{ m}^2 \end{aligned}$$

Oktober

$$\begin{aligned} \text{Unit/worker} &= 27.636,36 \\ \text{Worker used} &= \frac{66}{1} \times \\ \text{Unit produces} &= 1.800.078 \text{ m}^2 \end{aligned}$$

November

$$\begin{aligned} \text{Unit/worker} &= 29.939,39 \\ \text{Worker used} &= \frac{64}{1} \times \\ \text{Unit produces} &= 1.915.231 \text{ m}^2 \end{aligned}$$

Desember

$$\begin{aligned} \text{Unit/worker} &= 28.787,88 \\ \text{Worker used} &= \frac{57}{1} \times \\ \text{Unit produces} &= 1.617.176 \text{ m}^2 \end{aligned}$$

g) *Net Inventory (end of month)*

Persediaan pada 2021 berikut :

Januari

$$\begin{aligned} \text{Persediaan awal} &= 427.946,08 \\ \text{Unit Produces} &= \frac{1.524.392}{1} + \\ &= 1.952.338,08 \text{ m}^2 \\ \text{Demand} &= \frac{1.524.392}{1} - \\ \text{Persediaan} &= 427.946,08 \text{ m}^2 \end{aligned}$$

Februari

$$\begin{aligned} \text{Persediaan awal} &= 427.946,08 \\ \text{Unit Produces} &= \frac{1.481.983}{1} + \\ &= 1.909.929,08 \text{ m}^2 \\ \text{Demand} &= \frac{1.481.983}{1} - \\ \text{Persediaan} &= 427.946,08 \text{ m}^2 \end{aligned}$$

Maret

$$\begin{aligned} \text{Persediaan awal} &= 427.946,08 \\ \text{Unit Produces} &= \frac{1.269.162}{1} + \\ &= 1.697.108,08 \text{ m}^2 \\ \text{Demand} &= \frac{1.269.162}{1} - \\ \text{Persediaan} &= 427.946,08 \text{ m}^2 \end{aligned}$$

April

$$\begin{aligned} \text{Persediaan awal} &= 427.946,08 \\ \text{Unit Produces} &= \frac{1.041.974}{1} + \\ &= 1.469.920,08 \text{ m}^2 \\ \text{Demand} &= \frac{1.041.974}{1} - \\ \text{Persediaan} &= 427.946,08 \text{ m}^2 \end{aligned}$$

Mei

$$\begin{aligned} \text{Persediaan awal} &= 427.946,08 \\ \text{Unit Produces} &= \frac{600.603}{1} + \\ &= 1.028.549,08 \text{ m}^2 \end{aligned}$$

$$\begin{array}{r} \text{Demand} \quad = \underline{600.603} \quad - \\ \text{Persediaan} \quad = 427.946,08 \text{ m}^2 \end{array}$$

Juni

$$\begin{array}{r} \text{Persediaan awal} = 427.946,08 \\ \text{Unit Produces} \quad = \underline{1.343.378} \quad + \\ \quad \quad \quad = 1.771.324,08 \text{ m}^2 \\ \text{Demand} \quad \quad \quad = \underline{1.343.378} \quad - \\ \text{Persediaan} \quad \quad = 427.946,08 \text{ m}^2 \end{array}$$

Juli

$$\begin{array}{r} \text{Persediaan awal} = 427.946,08 \\ \text{Unit Produces} \quad = \underline{2.155.197} \quad + \\ \quad \quad \quad = 2.583.143,08 \text{ m}^2 \\ \text{Demand} \quad \quad \quad = \underline{2.155.197} \quad - \\ \text{Persediaan} \quad \quad = 427.946,08 \text{ m}^2 \end{array}$$

Agustus

$$\begin{array}{r} \text{Persediaan awal} = 427.946,08 \\ \text{Unit Produces} \quad = \underline{1.909.788} \quad + \\ \quad \quad \quad = 2.337.734,08 \text{ m}^2 \\ \text{Demand} \quad \quad \quad = \underline{1.909.788} \quad - \\ \text{Persediaan} \quad \quad = 427.946,08 \text{ m}^2 \end{array}$$

September

$$\begin{array}{r} \text{Persediaan awal} = 427.946,08 \\ \text{Unit Produces} \quad = \underline{1.799.290} \quad + \\ \quad \quad \quad = 2.227.236,08 \text{ m}^2 \\ \text{Demand} \quad \quad \quad = \underline{1.799.290} \quad - \\ \text{Persediaan} \quad \quad = 427.946,08 \text{ m}^2 \end{array}$$

Oktober

$$\begin{array}{r} \text{Persediaan awal} = 427.946,08 \\ \text{Unit Produces} \quad = \underline{1.800.078} \quad + \\ \quad \quad \quad = 2.228.024,08 \text{ m}^2 \\ \text{Demand} \quad \quad \quad = \underline{1.800.078} \quad - \\ \text{Persediaan} \quad \quad = 427.946,08 \text{ m}^2 \end{array}$$

November

$$\begin{array}{r} \text{Persediaan awal} = 427.946,08 \\ \text{Unit Produces} \quad = \underline{1.915.231} \quad + \end{array}$$

$$\begin{aligned}
 &= 2.343.177,08 \text{ m}^2 \\
 \text{Demand} &= \frac{1.915.231}{-} \\
 \text{Persediaan} &= \frac{427.946,08 \text{ m}^2}{-}
 \end{aligned}$$

Desember

$$\begin{aligned}
 \text{Persediaan awal} &= 427.946,08 \\
 \text{Unit Produces} &= \frac{1.617.176}{+} \\
 &= 2.045.122,08 \text{ m}^2 \\
 \text{Demand} &= \frac{1.617.176}{-} \\
 \text{Persediaan} &= \frac{427.946,08 \text{ m}^2}{-}
 \end{aligned}$$

2) Cost :

a) Hiring Cost

Februari

$$\begin{aligned}
 \text{Worker hiring} &= 3 \text{ orang} \\
 \text{Biaya hiring} &= 3 \times \text{Rp. } 400.000 \\
 &= \text{Rp. } 1.200.000
 \end{aligned}$$

Juni

$$\begin{aligned}
 \text{Worker hiring} &= 23 \text{ orang} \\
 \text{Biaya hiring} &= 23 \times \text{Rp. } 400.000 \\
 &= \text{Rp. } 9.200.000
 \end{aligned}$$

Juli

$$\begin{aligned}
 \text{Worker hiring} &= 25 \text{ orang} \\
 \text{Biaya hiring} &= 25 \times \text{Rp. } 400.000 \\
 &= \text{Rp. } 10.000.000
 \end{aligned}$$

Oktober

$$\begin{aligned}
 \text{Worker hiring} &= 5 \text{ orang} \\
 \text{Biaya hiring} &= 5 \times \text{Rp. } 400.000 \\
 &= \text{Rp. } 2.000.000
 \end{aligned}$$

Dimana total *hiring cost* dalam 1 tahun yakni Rp 22.400.000.

b) Lay off Cost

Januari

$$\begin{aligned}
 \text{Worker layoff} &= 13 \text{ orang} \\
 \text{Biaya layoff} &= 13 \times \text{Rp. } 7.197.468
 \end{aligned}$$

	= Rp. 93.567.084
Maret	
<i>Worker layoff</i>	= 13 orang
<i>Biaya layoff</i>	= 13 x Rp. 7.197.468
	= Rp. 93.567.084
April	
<i>Worker layoff</i>	= 6 orang
<i>Biaya layoff</i>	= 6 x Rp. 7.197.468
	= Rp. 43.184.808
Mei	
<i>Worker layoff</i>	= 13 orang
<i>Biaya layoff</i>	= 13 x Rp. 7.197.468
	= Rp. 93.567.084
Agustus	
<i>Worker layoff</i>	= 2 orang
<i>Biaya layoff</i>	= 2 x Rp. 7.197.468
	= Rp. 14.394.936
September	
<i>Worker layoff</i>	= 9 orang
<i>Biaya layoff</i>	= 9 x Rp. 7.197.468
	= Rp. 64.777.212
November	
<i>Worker layoff</i>	= 2 orang
<i>Biaya layoff</i>	= 2 x Rp. 7.197.468
	= Rp. 14.394.936
Desember	
<i>Worker layoff</i>	= 7 orang
<i>Biaya layoff</i>	= 7 x Rp. 7.197.468
	= Rp. 50.382.276

Dimana total *layoff cost* dalam 1 tahun yakni Rp 467.835.420.

c) *Labour Cost*

Januari s/d Desember

Upah tenaga kerja = Rp 4.798.312/Bulan
 Total *Worker Used* 2021 = 650 orang

$$\begin{aligned} \text{Biaya tenaga kerja} &= \text{Rp } 4.798.312 \times 650 \\ &= \text{Rp. } 3.118.902.800 \end{aligned}$$

d) *Holding Cost*

Biaya persediaan pada bulan Januari dan Februari 2021 berikut :

Januari s/d Desember memiliki jumlah *net inventory* yang sama

$$\begin{aligned} \text{Persediaan} &= 458.099,53 \text{ m}^2 \\ \text{Biaya simpan} &= \text{Rp. } 32,85/\text{m}^2 \\ \text{Holding Cost} &= \text{Net Inventory} \times \text{Biaya Inventory} \\ &= 427.946,08 \times 32,85 \\ &= \text{Rp } 14.060.075 \end{aligned}$$

Dimana total *holding cost* dalam 1 tahun yakni Rp 168.720.903.

e) *Total Cost*

$$\begin{aligned} \text{Total Cost} &= \text{Hiring Cost} + \text{Layoff Cost} + \text{Labour Cost} + \text{Holding Cost} \\ &= 22.400.000 + 467.835.420 + 3.118.902.800 + 168.720.903 \\ &= \text{Rp. } 3.777.859.123 \end{aligned}$$

Perencanaan Agregat *Mix Strategy* :

1) *Resources* :

a) *Active Days*

Tahun 2021 memiliki 297 hari kerja pada lampiran 1.

b) *Unit/Worker*

Januari

$$\begin{aligned} \text{Kapasitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \frac{25}{\times} \\ \text{Unit/Worker} &= 28.787,88 \text{ m}^2 \end{aligned}$$

Februari

$$\begin{aligned} \text{Kapasitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \frac{26}{\times} \\ \text{Unit/Worker} &= 26.484,85 \text{ m}^2 \end{aligned}$$

Maret

$$\begin{aligned} \text{Kapasitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \underline{\quad 26 \quad} \times \\ \text{Unit/Worker} &= 29.939,39 \text{ m}^2 \end{aligned}$$

April

$$\begin{aligned} \text{Kapasitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \underline{\quad 25 \quad} \times \\ \text{Unit/Worker} &= 28.787,88 \text{ m}^2 \end{aligned}$$

Mei

$$\begin{aligned} \text{Kapasitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \underline{\quad 22 \quad} \times \\ \text{Unit/Worker} &= 25.333,33 \text{ m}^2 \end{aligned}$$

Juni

$$\begin{aligned} \text{Kapasitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \underline{\quad 25 \quad} \times \\ \text{Unit/Worker} &= 28.787,88 \text{ m}^2 \end{aligned}$$

Juli

$$\begin{aligned} \text{Kapasitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \underline{\quad 26 \quad} \times \\ \text{Unit/Worker} &= 29.939,39 \text{ m}^2 \end{aligned}$$

Agustus

$$\begin{aligned} \text{Kapasitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \underline{\quad 24 \quad} \times \\ \text{Unit/Worker} &= 27.636,36 \text{ m}^2 \end{aligned}$$

September

$$\begin{aligned} \text{Kapasitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \underline{\quad 26 \quad} \times \\ \text{Unit/Worker} &= 29.939,39 \text{ m}^2 \end{aligned}$$

Oktober

$$\begin{aligned} \text{Kapasitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \underline{\quad 24 \quad} \times \\ \text{Unit/Worker} &= 27.636,36 \text{ m}^2 \end{aligned}$$

November

$$\begin{aligned} \text{Kapasitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \underline{\quad 26 \quad} \times \\ \text{Unit/Worker} &= 29.939,39 \text{ m}^2 \end{aligned}$$

Desember

$$\begin{aligned} \text{Kapasitas Produksi TK/hari} &= 1.151,52 \\ \text{Jumlah Hari} &= \underline{\quad 25 \quad} \times \\ \text{Unit/Worker} &= 28.787,88 \text{ m}^2 \end{aligned}$$

c) *Demand*

Permintaan berdasarkan hasil peramalan permintaan dari metode terbaik pada tabel 4.10.

d) *Worker Needed*

Januari s/d Juni

$$\begin{aligned} \text{Rata-rata Demand Januari s/d Juni} &= 1.210.248,67 \\ \text{Rata-rata Unit/worker Januari s/d Juni} &= \underline{28.020,20} \div \\ \text{Worker needed} &= 44 \text{ Orang} \end{aligned}$$

Juli s/d Desember

$$\begin{aligned} \text{Rata-rata Demand Juli s/d Desember} &= 1.866.126,67 \\ \text{Rata-rata Unit/worker Juli s/d Desember} &= \underline{28.979,79} \div \\ \text{Worker needed} &= 65 \text{ Orang} \end{aligned}$$

e) *Worker hiring/lay off*

Worker Hiring :

Juli

$$\begin{aligned} \text{Worker needed} &= 65 \\ \text{Worker available} &= \underline{44} - \\ \text{Worker hiring} &= 21 \text{ Orang} \end{aligned}$$

Worker Lay Off :

Januari

$$\begin{aligned} \text{Worker available} &= 66 \\ \text{Worker needed} &= \underline{44} - \\ \text{Worker lay off} &= 22 \text{ Orang} \end{aligned}$$

f) *Unit produces*

Januari

$$\begin{aligned} \text{Unit/worker} &= 28.787,88 \\ \text{Worker used} &= \underline{44} \times \\ \text{Unit produces} &= 1.266.666,67 \text{ m}^2 \end{aligned}$$

Februari

$$\begin{aligned} \text{Unit/worker} &= 26.484,85 \\ \text{Worker used} &= \underline{44} \times \\ \text{Unit produces} &= 1.317.333,33 \text{ m}^2 \end{aligned}$$

Maret

$$\begin{aligned} \text{Unit/worker} &= 29.939,39 \\ \text{Worker used} &= \underline{44} \times \\ \text{Unit produces} &= 1.317.333,33 \text{ m}^2 \end{aligned}$$

April

$$\begin{aligned} \text{Unit/worker} &= 28.787,88 \\ \text{Worker used} &= \underline{44} \times \\ \text{Unit produces} &= 1.266.666,67 \text{ m}^2 \end{aligned}$$

Mei

$$\begin{aligned} \text{Unit/worker} &= 25.333,33 \\ \text{Worker used} &= \underline{44} \times \\ \text{Unit produces} &= 1.114.666,67 \text{ m}^2 \end{aligned}$$

Juni

$$\begin{aligned} \text{Unit/worker} &= 28.787,88 \\ \text{Worker used} &= \underline{44} \times \\ \text{Unit produces} &= 1.266.666,67 \text{ m}^2 \end{aligned}$$

Juli

$$\begin{aligned} \text{Unit/worker} &= 29.939,39 \\ \text{Worker used} &= \frac{65}{1.946.060,61} \times \\ \text{Unit produces} &= 1.946.060,61 \text{ m}^2 \end{aligned}$$

Agustus

$$\begin{aligned} \text{Unit/worker} &= 27.636,36 \\ \text{Worker used} &= \frac{65}{1.796.363,64} \times \\ \text{Unit produces} &= 1.796.363,64 \text{ m}^2 \end{aligned}$$

September

$$\begin{aligned} \text{Unit/worker} &= 29.939,39 \\ \text{Worker used} &= \frac{65}{1.946.060,61} \times \\ \text{Unit produces} &= 1.946.060,61 \text{ m}^2 \end{aligned}$$

Oktober

$$\begin{aligned} \text{Unit/worker} &= 27.636,36 \\ \text{Worker used} &= \frac{65}{1.796.363,64} \times \\ \text{Unit produces} &= 1.796.363,64 \text{ m}^2 \end{aligned}$$

November

$$\begin{aligned} \text{Unit/worker} &= 29.939,39 \\ \text{Worker used} &= \frac{65}{1.946.060,61} \times \\ \text{Unit produces} &= 1.946.060,61 \text{ m}^2 \end{aligned}$$

Desember

$$\begin{aligned} \text{Unit/worker} &= 28.787,88 \\ \text{Worker used} &= \frac{65}{1.871.212,12} \times \\ \text{Unit produces} &= 1.871.212,12 \text{ m}^2 \end{aligned}$$

g) *Overtime*

Februari

$$\begin{aligned} \text{Kekurangan Produk} &= 146.429 \text{ m}^2 \\ \text{Worker Used} &= 44 \text{ Orang} \\ \text{Waktu Overtime/ Tenaga Kerja} &= 21 \text{ Jam} \end{aligned}$$

h) *Net Inventory (end of month)*

Persediaan pada 2021 berikut :

Januari

$$\begin{aligned} \text{Persediaan awal} &= 427.946,08 \\ \text{Unit Produces} &= \frac{1.266.666,67}{+} \\ &= 1.694.612,75 \text{ m}^2 \\ \text{Demand} &= \frac{1.524.392}{-} \\ \text{Persediaan} &= \frac{170.220,75 \text{m}^2}{} \end{aligned}$$

Februari

$$\begin{aligned} \text{Persediaan awal} &= 170.220,75 \\ \text{Unit Produces} &= \frac{1.317.333,33}{+} \\ &= 1.487.554,08 \text{ m}^2 \\ \text{Demand} &= \frac{1.481.983}{-} \\ \text{Persediaan} &= \frac{5.571,08 \text{m}^2}{} \end{aligned}$$

Maret

$$\begin{aligned} \text{Persediaan awal} &= 5.571,08 \\ \text{Unit Produces} &= \frac{1.317.333,33}{+} \\ &= 1.322.904,41 \text{ m}^2 \\ \text{Demand} &= \frac{1.269.162}{-} \\ \text{Persediaan} &= \frac{53.742,41 \text{ m}^2}{} \end{aligned}$$

April

$$\begin{aligned} \text{Persediaan awal} &= 53.742,41 \\ \text{Unit Produces} &= \frac{1.266.666,67}{+} \\ &= 1.320.409,08 \text{ m}^2 \\ \text{Demand} &= \frac{1.041.974}{-} \\ \text{Persediaan} &= \frac{278.435,08 \text{ m}^2}{} \end{aligned}$$

Mei

$$\begin{aligned} \text{Persediaan awal} &= 278.435,08 \\ \text{Unit Produces} &= \frac{1.114.666,67}{+} \\ &= 1.393.101,75 \text{ m}^2 \\ \text{Demand} &= \frac{600.603}{-} \\ \text{Persediaan} &= \frac{792.498,75 \text{ m}^2}{} \end{aligned}$$

Juni

$$\begin{aligned} \text{Persediaan awal} &= 792.498,75 \\ \text{Unit Produces} &= \frac{1.266.666,67}{+} \\ &= 2.059.165,41 \text{ m}^2 \\ \text{Demand} &= \frac{1.343.378}{-} \\ \text{Persediaan} &= \frac{715.787,41}{\text{m}^2} \end{aligned}$$

Juli

$$\begin{aligned} \text{Persediaan awal} &= 715.787,41 \\ \text{Unit Produces} &= \frac{1.946.060,61}{+} \\ &= 2.661.848,02 \text{ m}^2 \\ \text{Demand} &= \frac{2.155.197}{-} \\ \text{Persediaan} &= \frac{506.651,02}{\text{m}^2} \end{aligned}$$

Agustus

$$\begin{aligned} \text{Persediaan awal} &= 506.651,02 \\ \text{Unit Produces} &= \frac{1.796.363,64}{+} \\ &= 2.303.014,66 \text{ m}^2 \\ \text{Demand} &= \frac{1.909.788}{-} \\ \text{Persediaan} &= \frac{393.226,66}{\text{m}^2} \end{aligned}$$

September

$$\begin{aligned} \text{Persediaan awal} &= 393.226,66 \\ \text{Unit Produces} &= \frac{1.946.060,61}{+} \\ &= 2.339.287,26 \text{ m}^2 \\ \text{Demand} &= \frac{1.799.290}{-} \\ \text{Persediaan} &= \frac{539.997,26}{\text{m}^2} \end{aligned}$$

Oktober

$$\begin{aligned} \text{Persediaan awal} &= 539.997,26 \\ \text{Unit Produces} &= \frac{1.796.363,64}{+} \\ &= 2.336.360,90 \text{ m}^2 \\ \text{Demand} &= \frac{1.800.078}{-} \\ \text{Persediaan} &= \frac{536.282,90}{\text{m}^2} \end{aligned}$$

November

$$\begin{aligned} \text{Persediaan awal} &= 536.282,90 \\ \text{Unit Produces} &= \frac{1.946.060,61}{+} \\ &= 2.482.343,50 \text{ m}^2 \\ \text{Demand} &= \frac{1.915.231}{-} \\ \text{Persediaan} &= \frac{567.112,50}{\text{m}^2} \end{aligned}$$

Desember

$$\begin{aligned} \text{Persediaan awal} &= 567.112,50 \\ \text{Unit Produces} &= \frac{1.871.212,12}{+} \\ &= 2.438.324,63 \text{ m}^2 \\ \text{Demand} &= \frac{1.617.176}{-} \\ \text{Persediaan} &= \frac{821.148,63}{\text{m}^2} \end{aligned}$$

2) Cost :

a) Hiring Cost

Juli

$$\begin{aligned} \text{Worker hiring} &= 21 \text{ orang} \\ \text{Biaya hiring} &= 21 \times \text{Rp. } 400.000 \\ &= \text{Rp. } 8.400.000 \end{aligned}$$

Dimana total *hiring cost* dalam 1 tahun yakni Rp 8.400.000.

b) Lay off Cost

Januari

$$\begin{aligned} \text{Worker layoff} &= 22 \text{ orang} \\ \text{Biaya layoff} &= 22 \times \text{Rp. } 7.197.468 \\ &= \text{Rp. } 158.344.296 \end{aligned}$$

Dimana total *layoff cost* dalam 1 tahun yakni Rp 158.344.296.

c) Labour Cost

Januari s/d Desember

$$\begin{aligned} \text{Upah tenaga kerja} &= \text{Rp } 4.798.312/\text{Bulan} \\ \text{Total Worker Used } 2021 &= 654 \text{ orang} \\ \text{Biaya tenaga kerja} &= \text{Rp } 4.798.312 \times 650 \\ &= \text{Rp. } 3.138.096.048 \end{aligned}$$

d) Holding Cost

Biaya persediaan pada bulan Januari dan Februari 2021 berikut :

Januari

$$\begin{aligned} \text{Persediaan} &= 170.220,75 \text{ m}^2 \\ \text{Biaya simpan} &= \text{Rp. } 32,85/\text{m}^2 \end{aligned}$$

$$\begin{aligned}
 \text{Holding Cost} &= \text{Net Inventory} \times \text{Biaya Inventory} \\
 &= 170.220,75 \times 32,85 \\
 &= \text{Rp } 5.592.566
 \end{aligned}$$

Februari

$$\begin{aligned}
 \text{Persediaan} &= 5.571,08 \text{ m}^2 \\
 \text{Biaya simpan} &= \text{Rp. } 32,85/\text{m}^2 \\
 \text{Holding Cost} &= \text{Net Inventory} \times \text{Biaya Inventory} \\
 &= 5.571,08 \times 32,85 \\
 &= \text{Rp } 183.037
 \end{aligned}$$

Maret

$$\begin{aligned}
 \text{Persediaan} &= 53.742,41 \text{ m}^2 \\
 \text{Biaya simpan} &= \text{Rp. } 32,85/\text{m}^2 \\
 \text{Holding Cost} &= \text{Net Inventory} \times \text{Biaya Inventory} \\
 &= 53.742,41 \times 32,85 \\
 &= \text{Rp } 1.765.695
 \end{aligned}$$

April

$$\begin{aligned}
 \text{Persediaan} &= 278.435,08 \text{ m}^2 \\
 \text{Biaya simpan} &= \text{Rp. } 32,85/\text{m}^2 \\
 \text{Holding Cost} &= \text{Net Inventory} \times \text{Biaya Inventory} \\
 &= 278.435,08 \times 32,85 \\
 &= \text{Rp } 9.147.924
 \end{aligned}$$

Mei

$$\begin{aligned}
 \text{Persediaan} &= 792.498,75 \text{ m}^2 \\
 \text{Biaya simpan} &= \text{Rp. } 32,85/\text{m}^2 \\
 \text{Holding Cost} &= \text{Net Inventory} \times \text{Biaya Inventory} \\
 &= 792.498,75 \times 32,85 \\
 &= \text{Rp } 26.037.374
 \end{aligned}$$

Juni

$$\begin{aligned}
 \text{Persediaan} &= 715.787,41 \text{ m}^2 \\
 \text{Biaya simpan} &= \text{Rp. } 32,85/\text{m}^2 \\
 \text{Holding Cost} &= \text{Net Inventory} \times \text{Biaya Inventory} \\
 &= 715.787,41 \times 32,85 \\
 &= \text{Rp } 23.517.040
 \end{aligned}$$

Juli

$$\begin{aligned}
 \text{Persediaan} &= 506.651,02 \text{ m}^2 \\
 \text{Biaya simpan} &= \text{Rp. } 32,85/\text{m}^2 \\
 \text{Holding Cost} &= \text{Net Inventory} \times \text{Biaya Inventory} \\
 &= 506.651,02 \times 32,85 \\
 &= \text{Rp } 16.645.909
 \end{aligned}$$

Agustus

$$\begin{aligned}\text{Persediaan} &= 393.226,66 \text{ m}^2 \\ \text{Biaya simpan} &= \text{Rp. } 32,85/\text{m}^2 \\ \text{Holding Cost} &= \text{Net Inventory} \times \text{Biaya Inventory} \\ &= 393.226,66 \times 32,85 \\ &= \text{Rp } 12.919.376\end{aligned}$$

September

$$\begin{aligned}\text{Persediaan} &= 539.997,26 \text{ m}^2 \\ \text{Biaya simpan} &= \text{Rp. } 32,85/\text{m}^2 \\ \text{Holding Cost} &= \text{Net Inventory} \times \text{Biaya Inventory} \\ &= 539.997,26 \times 32,85 \\ &= \text{Rp } 17.741.492\end{aligned}$$

Oktober

$$\begin{aligned}\text{Persediaan} &= 536.282,90 \text{ m}^2 \\ \text{Biaya simpan} &= \text{Rp. } 32,85/\text{m}^2 \\ \text{Holding Cost} &= \text{Net Inventory} \times \text{Biaya Inventory} \\ &= 536.282,90 \times 32,85 \\ &= \text{Rp } 17.619.458\end{aligned}$$

November

$$\begin{aligned}\text{Persediaan} &= 567.112,50 \text{ m}^2 \\ \text{Biaya simpan} &= \text{Rp. } 32,85/\text{m}^2 \\ \text{Holding Cost} &= \text{Net Inventory} \times \text{Biaya Inventory} \\ &= 567.112,50 \times 32,85 \\ &= \text{Rp } 18.632.358\end{aligned}$$

Desember

$$\begin{aligned}\text{Persediaan} &= 821.148,63 \text{ m}^2 \\ \text{Biaya simpan} &= \text{Rp. } 32,85/\text{m}^2 \\ \text{Holding Cost} &= \text{Net Inventory} \times \text{Biaya Inventory} \\ &= 821.148,63 \times 32,85 \\ &= \text{Rp } 26.978.659\end{aligned}$$

Dimana total *holding cost* dalam 1 tahun yakni Rp 176.780.887.

e) *Overtime Cost*

Februari

$$\begin{aligned}\text{Waktu Overtime/ Tenaga Kerja} &= 21 \text{ Jam} \\ \text{Biaya Overtime/Jam} &= \text{Rp. } 55.472 \\ \text{Worker Used} &= 44 \text{ Orang} \\ \text{Holding Cost} &= 21 \times 55.472 \times 44 \\ &= \text{Rp. } 51.255.957\end{aligned}$$

f) *Total Cost*

$$\begin{aligned} \textit{Total Cost} &= \textit{Hiring Cost} + \textit{Layoff Cost} + \textit{Labour Cost} + \textit{Holding Cost} \\ &= 8.200.000 + 158.344.296 + 3.138.096.048 + 176.780.887 \\ &\quad + 51.255.957 \\ &= \text{Rp. } 3.532.877.188 \end{aligned}$$