

DAFTAR PUSTAKA

- Arismawati, P., Ridwan, A. Y. & Santosa, B., 2015. Perencanaan Kebijakan Persediaan untuk Meminimasi Total Biaya Persediaan dengan Pendekatan Metode Periodic Review (R,s,S) pada Part Aksesoris. *e-Proceeding of Engineering*, II(2), pp. 4877-4885.
- Arnold, J. R. T., Chapman, S. N., Clive & M., L., 2008. *Introduction to Materials Management*. United States of America: Pearson Prentice Hall.
- Assauri, S., 1984. *Teknik dan Metode Peramalan*. 1st ed. Jakarta: Fakultas Ekonomi Universitas Indonesia.
- Baroto, T., 2002. *Perencanaan dan Pengendalian Produksi*. Jakarta: Ghalia Indonesia.
- Darajat, M. Y. & Komarudin, H. A., 2018. Inventory Simulation Model of Frozen-meat for Food-safety Program. *Communications in Science and Technology*, pp. 36-43.
- Djati, B. S. L., 2007. *Simulasi Teori dan Aplikasinya*. Yogyakarta: Andi Offset.
- Ekawati, R., Febianti, E., Wijaya & Surya, G., 2018. Planning and Controlling Inventory of Coal Using Model Probabilistic Q Backorder with Consider of Storage Capacity. *Journal of Engineering and Management*, VI(1), pp. 20-26.
- Fani, E., Widjajati, Agustini, F. & Soehardjoepri, 2017. Perbandingan Metode Winter Eksponensial Smoothing dan Metode Event Based untuk Menentukan Penjualan Produk Terbaik di Perusahaan X. *Jurnal Sains dan Seni ITS*, 6(1), pp. 2337-3520.
- Gaspersz, V., 2012. *All in One: Production and Inventory Management*. Bogor: Vichristo Publication.
- Hartono, A., 2012. Perbandingan Metode Single Exponential Smoothing dan Metode Exponential Smoothing Adjusted for Trend (Holt's Method) untuk Meramalkan Penjualan. Studi Kasus: Toko Onderdil Mobil "Prodi, Purwodadi". *Jurnal Eksis*, pp. 8-18.

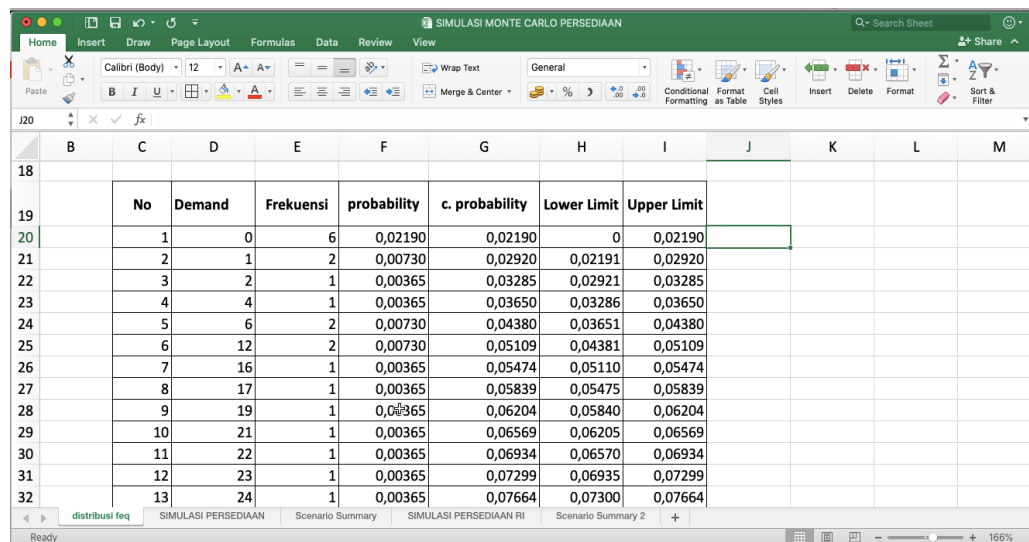
- Heizer, J. & Render, B., 2011. *Operations Mangement (10th ed)*. New Jersey, USA: Pearson.
- Iqbal, T., Aprizal, D. & Wali, M., 2017. Aplikasi Manajemen Persediaan Barang Berbasis Economic Order Quantity (EOQ). *Jurnal Teknologi Informasi dan Komunikasi*, I(1), pp. 48-60.
- Kumala, I., Sukania, I. W. & Christianto, S., 2016. Optimasi Persediaan Spare Part untuk Meningkatkan Total Penjualan dengan Menggunakan Simulasi Monte Carlo (Studi Kasus Di PT. ZXC). *Jurnal Ilmiah Teknik Industri*, IV(3), pp. 166-174.
- Kwak, Y. H. & Ingall, L., 2009. Exploring Monte Carlo Simulation Applications for Project Management. *IEE ENGINEERING MANAGEMENT REVIEW*, 37(2), pp. 83-91.
- Maricar, M. A., 2019. Analisa Pebandingan Nilai Akurasi Moving Average dan Exponential Smoothing untuk Sistem Peramalan Pendapatan pada Perusahaan XYZ. *Jurnal Sistem dan Informatika*, 13(2), pp. 36-45.
- Martina, 2018. Fungsi Manajemen Persediaan (Stock Management) Pada Perusahaan Dagang.
- Montolalu, C. E. J. C. & Langi, Y. A. R., 2018. Pengaruh Pelatihan Dasar Komputer dan Teknologi Informasi bagi Guru-Guru dengan Uji-T Berpasangan (Paired Sample T-Test). *Jurnal Matematika dan Aplikasi*, 7(1), pp. 44-46.
- Nasution, A. H., 1999. *Perencanaan dan Pengendalian Persediaan*. Surabaya: Teknik Industri-ITS.
- Nasution, A. H., 2003. *Perencanaan dan Pengendalian Produksi*. Surabaya: Guna Widya.
- Nurlifa, A. & Kusumadewi, S., 2017. Sistem Peramalan Jumlah Penjualan Menggunakan Metode Moving Average pada Rumah Jilbab Zaky. *Jurnal Inovtek Pobeng-Seri Informatika*, pp. 18-25.
- Nursubiyantoro, E. & Risal, W. K., 2018. Perencanaan Pemesanan Ekonomis Probabilistik untuk Meminimasi Biaya Persediaan. *Jurnal Optimasi Sistem Industri*, XI(2), pp. 161-167.

- Qur'ani & Mardiah, A., 2019. *Harga Opsi Tipe Eropa Menggunakan Simulasi Monte Carlo Standar dan Teknik Antithetic Variates*, Makassar: Universitas Islam Negeri Alauddin Makassar.
- Riyanto, G., Ratma, F., Permana & Eka, S., 2017. Sistem Prediksi Menggunakan Metode Weighted Moving Average untuk Penentuan Jumlah Order Barang. *Jurnal ICT : Information Communication & Technology*, 16(2), pp. 37-42.
- Sembiring, R. O. B., Andrawina, L. & Santosa, B., 2017. Kebijakan Pengendalian Persediaan Produk Kategori Sub Part Sepeda Motor dengan Menggunakan Metode Probabilistik Continuous Review (s,S) dan Continuous Review (s,Q) untuk Meminimasi Biaya Persediaan di PT XYZ Bandung. *e-Proceeding of Engineering : Vol.4*, pp. 2650-2657.
- Suli, N. E., 2010. *Pengendalian Persediaan Multi Produk Kesehatan Dengan Continuous Review Model Menggunakan Simulasi Monte Carlo Pada Distributor Farmasi*, Depok: Universitas Indonesia.
- Syamil, R. A., Ridwan, A. Y. & Santosa, B., 2018. Penentuan Kebijakan Persediaan Produk Kategori Food dan Non-Food dengan Menggunakan Metode Continuous Review (s,S) Syste, dan (s,Q) Syste, di PT. XYZ untuk Optimasi Biaya Persediaan. *Jurnal Integrasi Sistem Industri*, pp. 49-55.
- Tersine, R. J., 1994. *Principles of Inventory and Material Mangement*. 4th Edition ed. New Jersey: Prantice-Hall International, Inc..
- Wirdianto, E., Syaflinda, M. & Milana, 2019. Evaluasi Model Perencanaan Persediaan Obat dengan Pendekatan Simulasi. *Jurnal Inovasi Vokasional dan Teknologi*, 19(1), pp. 53-66.
- Yudrifil & Nugraha, W., 2013. Pengendalian Persediaan MRO dengan Continuous Review System Menggunakan Simulasi Monte Carlo pada Kontraktor Migas. *Fakultas Teknik Industri Universitas Indonesia*, pp. 1-11.

LAMPIRAN

Tahapan pembangunan simulasi menggunakan *software Microsoft Excel*.

1. Membuat distribusi *demand* Indihome



No	Demand	Frekuensi	probability	c. probability	Lower Limit	Upper Limit
1	0	6	0,02190	0,02190	0	0,02190
2	1	2	0,00730	0,02920	0,02191	0,02920
3	2	1	0,00365	0,03285	0,02921	0,03285
4	4	1	0,00365	0,03650	0,03286	0,03650
5	6	2	0,00730	0,04380	0,03651	0,04380
6	12	2	0,00730	0,05109	0,04381	0,05109
7	16	1	0,00365	0,05474	0,05110	0,05474
8	17	1	0,00365	0,05839	0,05475	0,05839
9	19	1	0,00365	0,06204	0,05840	0,06204
10	21	1	0,00365	0,06569	0,06205	0,06569
11	22	1	0,00365	0,06934	0,06570	0,06934
12	23	1	0,00365	0,07299	0,06935	0,07299
13	24	1	0,00365	0,07664	0,07300	0,07664

Gambar 1. Tabel Distribusi *Demand*

Keterangan:

Demand = nilai-nilai *demand* yang muncul selama 9 bulan, diurut dari yang terbesar ke terkecil

Frekuensi = frekuensi munculnya nilai *demand* selama 9 bulan

Probability = probabilitas munculnya suatu nilai *demand*. Frekuensi dibagi dengan total hari pengamatan

C. probability = kumulatif probabilitas. *Probability* nilai *demand* ditambah dengan *c. probability* nilai *demand* sebelumnya.

Lower Limit = batas bawah untuk *random number*. Dimulai dari 0, untuk *demand* berikutnya dimulai dari *upper limit demand* sebelumnya.

Upper Limit probability = batas atas untuk *random number*. Sama dengan Nilai *c. probability*.

2. Membuat *worksheet* baru untuk simulasi *scenario* 1. Membuat tabel-tabel untuk simulasi seperti dibawah ini.

Gambar 2. Tabel simulasi persediaan dan tabel disrtibusi *demand*

Gambar 3. Tabel *input* data dan tabel *output* simulasi

U18:W27 = Tabel *input* data *Order Quantity(Q)* dan *Reorder Point(R)*, *Lead Time*, *Holding Cost*, *Stock Out Cost*, *Ordering Cost*

U5:AA115 = Tabel distribusi *demand* yang nantinya akan diinput untuk kolom *demand*

U130:AC132 = Tabel *output* simulasi, yaitu rata-rata dari parameter performansi yang telah disimulasikan

C5:S279 = Tabel simulasi persediaan

- Membangun simulasi monte carlo persediaan dengan formula-fomula sebagai berikut

Periode = periode pengamatan, 9 bulan, 274 hari

Begin Inventory = jumlah persediaan periode pertama diambil dari jumlah *order quantity*, untuk periode kedua dan seterusnya *begin inventory* sama dengan *end inventory* pada periode sebelumnya.

D7 = I6; D8 = I7; dst.

Unit Received = untuk periode pertama sama dengan 0, untuk periode selanjutnya menggunakan formula apabila terdapat pemesanan di periode sebelumnya, maka akan disesuaikan kedatangan produk dengan *lead time*. Berikut ini adalah formula yang digunakan.

E7 = COUNTIF(N\$6:N6;C7)*W\$118

Available Inventory = jumlah dari *Begin Inventory* dengan *Unit Received*.

F6 = D6+E6; F7 = D7+E7; dst

Demand = untuk mengisi demand digunakan tabel distribusi *demand* untuk membangun nilai *demand* secara *random*. Rumusnya sebagai berikut.

G6=LOOKUP(RAND();Z\$6:Z\$115;V\$6:V\$115)

Demand Filled = nilai permintaan yang terpenuhi sehingga formula yang digunakan yaitu nilai terkecil antara demand dan *available inventory*.

H6 = MIN(F6;G6)

End Inventory = selisih dari *available inventory* dengan *demand filled*.

I6 = F6-H6

Stock Out = elemen ini kekurangan dari persediaan, didapatkan dari selisih demand dengan *demand filled*

J6 = G6-H6

End Inventory+Order = tabel ini berfungsi agar tidak terjadi pemesanan secara terus-menerus apabila *End Inventory* berada dibawah nilai *Reorder Point* (R) selama *lead time*. maka dari itu, untuk periode pertama masih mengikuti nilai *end inventory* (K6 = I6) dan untuk periode selanjutnya mengikuti rumus berikut.

K7 = K6-H7+L6*W\$118

Place Order = kebijakan pemesanan, apabila *End Inventory* lebih kecil atau sama dengan R maka dilakukan pemesanan sehingga *Place Order* bernilai 1, jika *End Inventory* lebih besar dari R maka tidak dilakukan pemesanan sehingga *Place Order* bernilai 0. Rumus yang digunakan adalah sebagai berikut.

$$L6 = \text{IF}(K6 \leq W\$119; 1; 0)$$

Lead Time = informasi nilai lead time yakni 8 hari.

Arrive on day = hari dimana pemesanan diterima, apabila pada periode tersebut dilakukan pemesanan, maka *Arrive on day* akan berisi hari nilai bulan tersebut ditambah dengan lead time.

$$N6 = \text{IF}(L6=1; M6+C6+1; 0)$$

Holding Cost End Inventory = biaya penyimpanan untuk produk yang tersedia di

$$O6 = I6 * W\$123$$

Stock Out Cost = biaya akibat dari kekurangan persediaan

$$P6 = J6 * W\$125$$

Ordering Cost = biaya pemesanan yang ditinjau dari adanya pemesanan pada bulan tersebut atau tidak

$$Q6 = L6 * W\$127$$

Total Cost = total nilai *holding costs*, *stock out cost*, dan *ordering cost*.

$$R6 = \text{SUM}(O6:Q6)$$

Service Level = dihitung dari banyaknya *demand* yang terpenuhi (*demand filled*), apabila nilai *demand* sama dengan *demand filled* maka *service level* nya 100%. Namun apabila *demand* lebih besar daripada *demand filled* maka nilai *service level* akan dibawah 100%. Rumus yang digunakan penulis yaitu sebagai berikut.

$$S6 = \text{IFERROR}((H6/G6)*100; 100)$$

4. Menghitung total dari keseluruhan *cost* dan rata-rata dari *service level*

The screenshot shows a Microsoft Excel spreadsheet titled "SIMULASI MONTE CARLO PERSEDIAAN". The spreadsheet displays a large table of simulation results. The columns are labeled A through V, and the rows are numbered 247 to 282. The table contains numerical data representing costs and service levels. At the bottom, there is a summary row with totals for various categories.

Gambar 4. Total dari setiap *cost* dan rata-rata *service level*

Total keseluruhan *cost* dihitung dengan cara menjumlahkan setiap elemen *cost* dari periode awal hingga ke periode terakhir. Sedangkan untuk *service level* dicari rata-ratanya dari periode awal hingga ke periode terakhir.

5. Mereplikasi simulasi sebanyak 200 kali
Membuat tabel replikasi sebanyak 200 kali seperti pada tabel AF5:AK205.

The screenshot shows a Microsoft Excel spreadsheet titled "SIMULASI MONTE CARLO PERSEDIAAN". The spreadsheet displays a table with columns labeled AC through AO and rows numbered 3 to 23. The table contains numerical data representing costs and service levels. At the bottom, there is a summary row with totals for various categories.

Gambar 5. Tabel Replikasi

Untuk membuat replikasi, baris pertama diisi dengan menduplikat nilai yang ada pada O280, P280, Q280, R280, dan S280.

Setelah itu, untuk melakukan 200 replikasi, blok semua tabel dari angka 1-200.

No	Demand	Probabilitas	cumulative prob distribution	Lower Limit	Upper Limit
1	0	0.00190	0.00190	0	0.00190
2	1	0.00730	0.00920	0.00190	0.00920
3	2	0.00965	0.01885	0.00920	0.01885
4	3	0.00965	0.02850	0.01885	0.02850
5	4	0.00730	0.03580	0.02850	0.03580
6	5	0.00730	0.04310	0.03580	0.04310
7	6	0.00965	0.05275	0.04310	0.05275
8	7	0.00965	0.06240	0.05275	0.06240
9	8	0.00965	0.07205	0.06240	0.07205
10	9	0.00965	0.08170	0.07205	0.08170
11	10	0.00965	0.09135	0.08170	0.09135
12	11	0.00965	0.10100	0.09135	0.10100
13	12	0.00730	0.10830	0.10100	0.10830
14	13	0.00730	0.11560	0.10830	0.11560
15	14	0.00965	0.12525	0.11560	0.12525
16	15	0.00965	0.13490	0.12525	0.13490
17	16	0.00965	0.14455	0.13490	0.14455
18	17	0.00965	0.15420	0.14455	0.15420
19	18	0.00965	0.16385	0.15420	0.16385
20	19	0.00965	0.17350	0.16385	0.17350
21	20	0.00965	0.18315	0.17350	0.18315
22	21	0.00965	0.19280	0.18315	0.19280
23	22	0.00965	0.20245	0.19280	0.20245
24	23	0.00965	0.21210	0.20245	0.21210
25	24	0.00965	0.22175	0.21210	0.22175
26	25	0.00965	0.23140	0.22175	0.23140
27	26	0.00965	0.24105	0.23140	0.24105
28	27	0.00965	0.25070	0.24105	0.25070
29	28	0.00965	0.26035	0.25070	0.26035
30	29	0.00965	0.27000	0.26035	0.27000
31	30	0.00965	0.27965	0.27000	0.27965
32	31	0.00965	0.28930	0.27965	0.28930
33	32	0.00965	0.29895	0.28930	0.29895
34	33	0.00965	0.30860	0.29895	0.30860
35	34	0.00965	0.31825	0.30860	0.31825
36	35	0.00965	0.32790	0.31825	0.32790
37	36	0.00965	0.33755	0.32790	0.33755
38	37	0.00965	0.34720	0.33755	0.34720
39	38	0.00965	0.35685	0.34720	0.35685
40	39	0.00965	0.36650	0.35685	0.36650
41	40	0.00965	0.37615	0.36650	0.37615
42	41	0.00965	0.38580	0.37615	0.38580
43	42	0.00965	0.39545	0.38580	0.39545
44	43	0.00965	0.40510	0.39545	0.40510
45	44	0.00965	0.41475	0.40510	0.41475
46	45	0.00965	0.42440	0.41475	0.42440
47	46	0.00965	0.43405	0.42440	0.43405
48	47	0.00965	0.44370	0.43405	0.44370
49	48	0.00965	0.45335	0.44370	0.45335
50	49	0.00965	0.46300	0.45335	0.46300
51	50	0.00965	0.47265	0.46300	0.47265
52	51	0.00965	0.48230	0.47265	0.48230
53	52	0.00965	0.49195	0.48230	0.49195
54	53	0.00965	0.50160	0.49195	0.50160
55	54	0.00965	0.51125	0.50160	0.51125
56	55	0.00965	0.52090	0.51125	0.52090
57	56	0.00965	0.53055	0.52090	0.53055
58	57	0.00965	0.54020	0.53055	0.54020
59	58	0.00965	0.54985	0.54020	0.54985
60	59	0.00965	0.55950	0.54985	0.55950
61	60	0.00965	0.56915	0.55950	0.56915
62	61	0.00965	0.57880	0.56915	0.57880
63	62	0.00965	0.58845	0.57880	0.58845
64	63	0.00965	0.59810	0.58845	0.59810
65	64	0.00965	0.60775	0.59810	0.60775
66	65	0.00965	0.61740	0.60775	0.61740
67	66	0.00965	0.62705	0.61740	0.62705
68	67	0.00965	0.63670	0.62705	0.63670
69	68	0.00965	0.64635	0.63670	0.64635
70	69	0.00965	0.65600	0.64635	0.65600
71	70	0.00965	0.66565	0.65600	0.66565
72	71	0.00965	0.67530	0.66565	0.67530
73	72	0.00965	0.68495	0.67530	0.68495
74	73	0.00965	0.69460	0.68495	0.69460
75	74	0.00965	0.70425	0.69460	0.70425
76	75	0.00965	0.71390	0.70425	0.71390
77	76	0.00965	0.72355	0.71390	0.72355
78	77	0.00965	0.73320	0.72355	0.73320
79	78	0.00965	0.74285	0.73320	0.74285
80	79	0.00965	0.75250	0.74285	0.75250
81	80	0.00965	0.76215	0.75250	0.76215
82	81	0.00965	0.77180	0.76215	0.77180
83	82	0.00965	0.78145	0.77180	0.78145
84	83	0.00965	0.79110	0.78145	0.79110
85	84	0.00965	0.80075	0.79110	0.80075
86	85	0.00965	0.81040	0.80075	0.81040
87	86	0.00965	0.82005	0.81040	0.82005
88	87	0.00965	0.82970	0.82005	0.82970
89	88	0.00965	0.83935	0.82970	0.83935
90	89	0.00965	0.84900	0.83935	0.84900
91	90	0.00965	0.85865	0.84900	0.85865
92	91	0.00965	0.86830	0.85865	0.86830
93	92	0.00965	0.87795	0.86830	0.87795
94	93	0.00965	0.88760	0.87795	0.88760
95	94	0.00965	0.89725	0.88760	0.89725
96	95	0.00965	0.90690	0.89725	0.90690
97	96	0.00965	0.91655	0.90690	0.91655
98	97	0.00965	0.92620	0.91655	0.92620
99	98	0.00965	0.93585	0.92620	0.93585
100	99	0.00965	0.94550	0.93585	0.94550

Gambar 6. Tahap kedua replikasi

Lalu klik pada menu *excel* Data > What-If Analysis > Data Table, kemudian akan muncul kolom seperti ini:

File

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

Filter

Advanced

Clear

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

From HTML

From Text

New Database Query

Refresh All

Formulas

Sort

Filter

Advanced

Text to Columns

Flash Fill

Remove Duplicates

Data Validation

Consolidate

What-If Analysis

Group

Ungroup Subtotal

Show Detail

Hide Detail

Home

Insert

Page Layout

Formulas

Data

Review

View

Connections

Properties

Edit Links

Sort

No	Pemberhentian	Frekuensi	probability	cumulative prob distribution	Lower Limit	Upper Limit
1	0	48	0,17518	0,17518	0,00000	0,17518
2	1	34	0,12409	0,29927	0,17519	0,29927
3	2	24	0,08759	0,38686	0,29928	0,38686
4	3	32	0,11679	0,50365	0,38687	0,50365
5	4	24	0,08759	0,59124	0,50366	0,59124
6	5	12	0,04380	0,63504	0,59125	0,63504
7	6	13	0,04745	0,68248	0,63505	0,68248
8	7	13	0,04745	0,72993	0,68249	0,72993
9	8	5	0,01825	0,74818	0,72994	0,74818
10	9	9	0,03285	0,78102	0,74819	0,78102
11	10	8	0,02920	0,81022	0,78103	0,81022
12	11	5	0,01825	0,82847	0,81023	0,82847
13	12	6	0,02190	0,85036	0,82848	0,85036
14	14	4	0,01460	0,86496	0,85037	0,86496
15	15	3	0,01095	0,87591	0,86497	0,87591
16	16	3	0,01095	0,88686	0,87592	0,88686
17	17	1	0,00365	0,89051	0,88687	0,89051
18	20	1	0,00365	0,89416	0,89052	0,89416
19	23	1	0,00365	0,89781	0,89417	0,89781

Gambar 8. Tabel distribusi pemberhentian berlangganan

8. Membangun simulasi persediaan *scenario 2* dengan formula-formula sebagai berikut.

Period	Begin Inventory	Unit Receive	Available Inventory	Demand	Demand Filled	Returned Product	Ready on day	Refurbished Item	End Inventory	Stock out	End Inventory + Order	Place Ord
1	2.000	0	2.000	23	23	313	15	0	1.977	0	1.977	
2	1.977	0	1.977	55	55	12	16	0	1.922	0	1.922	
3	1.922	0	1.922	66	66	9	17	0	1.856	0	1.856	
4	1.856	0	1.856	119	119	0	18	0	1.737	0	1.737	
5	1.737	0	1.737	35	35	4	19	0	1.702	0	1.702	
6	1.702	0	1.702	34	34	3	20	0	1.668	0	1.668	
7	1.668	0	1.668	116	116	2	21	0	1.552	0	1.552	
8	1.552	0	1.552	41	41	1	22	0	1.511	0	1.511	
9	1.511	0	1.511	17	17	2	23	0	1.494	0	1.494	
10	1.494	0	1.494	49	49	0	24	0	1.445	0	1.445	
11	1.445	0	1.445	71	71	3	25	0	1.374	0	1.374	
12	1.374	0	1.374	43	43	0	26	0	1.331	0	1.331	
13	1.331	0	1.331	66	66	1	27	0	1.265	0	1.265	
14	1.265	0	1.265	95	95	7	28	0	1.170	0	1.170	
15	1.170	313	1.483	108	108	1	29	313	1.375	0	1.062	
16	1.375	12	1.387	35	35	2	30	12	1.352	0	1.340	
17	1.352	9	1.361	91	91	5	31	9	1.270	0	1.261	

Gambar 9. Tabel simulasi *scenario 2*

Periode = periode pengamatan, 9 bulan, 274 hari

Begin Inventory = jumlah persediaan periode pertama diambil dari jumlah *order quantity*, untuk periode kedua dan seterusnya *begin inventory* sama dengan *end inventory* pada periode sebelumnya.

D7 = I6; D8 = I7; dst.

Unit Received = untuk periode pertama sama dengan 0, untuk periode selanjutnya menggunakan formula apabila terdapat pemesanan di periode sebelumnya, maka akan disesuaikan kedatangan produk dengan *lead time*. Berikut ini adalah formula yang digunakan.

$$E7 = (\text{COUNTIF}(Q\$6:Q6;C7)*Z\$118)+K7$$

Available Inventory = jumlah dari *Begin Inventory* dengan *Unit Received*.

$$F6 = D6 + E6; F7 = D7 + E7; \text{ dst}$$

Demand = untuk mengisi *demand* digunakan tabel distribusi *demand* untuk membangun nilai *demand* secara *random*. Rumusnya sebagai berikut.

$$G6 = \text{LOOKUP}(\text{RAND}();AC\$6:AC\$115;Y\$6:Y\$115)$$

Demand Filled = nilai permintaan yang terpenuhi sehingga formula yang digunakan yaitu nilai terkecil antara *demand* dan *available inventory*.

$$H6 = \text{MIN}(F6;G6)$$

Returned Product = untuk mengisi *Returned Product* tabel distribusi pemberhentian berlangganan untuk membangun nilai *demand* secara *random*. Rumusnya sebagai berikut.

$$I6 = \text{LOOKUP}(\text{RAND}();AC\$136:AC\$182;Y\$136:Y\$182)$$

Ready on day = keterangan periode *Returned Product* siap digunakan, diasumsikan setiap *Returned Product* baru dapat digunakan setelah 2 minggu sehingga rumusnya yaitu $J6 = C6 + 14$; $J7 = C7 + 14$; dst

Refurbished Item = jumlah perangkat yang siap digunakan, formulanya adalah sebagai berikut.

$$K6 = \text{COUNTIF}(J\$6:J6;C6)$$

End Inventory = selisih dari *available inventory* dengan *demand filled*.

$$L6 = F6 - H6$$

Stock Out = elemen ini kekurangan dari persediaan, didapatkan dari selisih *demand* dengan *demand filled*

$$M6 = G6 - H6$$

End Inventory+Order = tabel ini berfungsi agar tidak terjadi pemesanan secara terus-menerus apabila *End Inventory* berada dibawah nilai *Reorder Point* (R) selama lead time. maka dari itu, untuk periode pertama masih mengikuti nilai *end inventory* ($K6 = I6$) dan untuk periode selanjutnya mengikuti rumus berikut.

$$N7 = K6 - H7 + K6 + O6 * Z\$118$$

Place Order = kebijakan pemesanan, apabila *End Inventory* lebih kecil atau sama dengan R maka dilakukan pemesanan sehingga *Place Order* bernilai 1, jika *End Inventory* lebih besar dari R maka tidak dilakukan pemesanan sehingga *Place Order* bernilai 0. Rumus yang digunakan adalah sebagai berikut.

$$O6 = IF(K6 \leq Z\$119; 1; 0)$$

Lead Time = informasi nilai lead time yakni 8 hari.

Arrive on day = hari dimana pemesanan diterima, apabila pada periode tersebut dilakukan pemesanan, maka *Arrive on day* akan berisi hari nilai bulan tersebut ditambah dengan lead time.

$$Q6 = IF(L6 = 1; M6 + C6 + 1; 0)$$

Holding Cost End Inventory = biaya penyimpanan untuk produk yang tersedia di

$$R6 = L6 * Z\$123$$

Stock Out Cost = biaya akibat dari kekurangan persediaan

$$S6 = M6 * Z\$125$$

Ordering Cost = biaya pemesanan yang ditinjau dari adanya pemesanan pada bulan tersebut atau tidak

$$T6 = O6 * Z\$127$$

Total Cost = total nilai *holding cots*, *stock out cost*, dan *ordering cost*.

$$U6 = SUM(R6:T6)$$

Service Level = dihitung dari banyaknya *demand* yang terpenuhi (*demand filled*), apabila nilai *demand* sama dengan *demand filled* maka *service level* nya 100%. Namun apabila *demand* lebih besar daripada *demand filled* maka nilai *service level* akan dibawah 100%. Rumus yang digunakan penulis yaitu sebagai berikut.

$$V6 = \text{IFERROR}((H6/G6)*100;100$$