sebagainya agar dapat digunakan untuk evaluasi kinerja perusahaan kedepannya.

DAFTAR PUSTAKA

Agustin, R., 2020. *Analisis Pengendalian Persediaan Bahan Baku Sapu Ijuk dengan Metode Continuous Review System (Q) dan Periodic Review System (P) dalam Menunjang Kelancaran Proses Produksi pada UD "Brengos" Bondowoso,* Jember: Universitas Jember.

Ambarwati, R. & Supardi, 2020. *Manajemen Operasional dan Implementasi dalam Industri.* Sidoarjo: UMSIDA Press.

Aritonang, L., 2002. *Peramalan Bisnis.* Jakarta: Ghalia Indonesia.

Assauri, S., 2008. *Manajemen Produksi dan Operasi.* Jakarta: Lembaga Penerbit Fakultas Ekonomi Universitas Indonesia.

Bahagia, S. N., 2006. *Sistem Inventori.* Bandung: Penerbit ITB.

Baroto, T., 2002. *Perencanaan dan Pengendalian Produksi.* Jakarta: Ghalia Indonesia.

Fathurohman, 2016. Usulan Penerapan Metode Persediaan Probabilistik Untuk Menghitung Kebutuhan Bahan Baku di PT. Megayaku Kemasan Perdana Karawang. *Jurnal Buana Ilmu,* 1(1), pp. 21-29.

Gaspersz, V., 2005. *Production Planning and Inventory Control.* Jakarta: Gramedia Pustaka Umum.

Heizer, J. & Render, B., 2015. *Manajemen Operasi.* Jakarta: Salemba Empat.

Herjanto, E., 2015. *Manajemen Operasi.* Jakarta: Grasindo.

Kartikasari, V., 2021. Pendekatan Periodic Review System Suku Cadang Mesin PLTU. *Seminar Nasional Teknologi Fakultas Teknik,* pp. 73-83.

Misbah, A. & Pusakaningwati, A., 2017. Model Pengendalian dan Optimalisasi Safety Stock Bahan Baku Jamur Terhadap Fluktuasi Demand Menuju Mea Home Industri Pengolahan Jamur Kabupaten Pasuruan. *Journal Knowledge Industrial Engineering (JKIE),* 4(3), pp. 39-53.

Nafarin, M., 2004. *Penganggaran Perusahaan.* Jakarta: Salemba Empat.

Nuffus, N. Z., 2021. Perencanaan Persediaan Bahan Baku Kain Dengan Sistem Q (Continuous Review System) Dan Sistem P (Periodic Review System). *Jurnal Ilmiah Mahasiswa FEB,* 9(2), pp. 1-18.

Pulungan, D. S. & Fatma, E., 2018. Analisis Pengendalian Persediaan Menggunakan Metode Probabilistik dengan Kebijakan Backorder dan Lost Sales. *Jurnal Teknik Industri,* 19(1), pp. 38-48.

Rangkuti, F., 1996. *Manajemen Persediaan.* Jakarta: Raja Grafindo Persada.

Rangkuti, F., 2004. *Manajemen Persediaan (Aplikasi di Bidang Bisnis).* Jakarta: Raja Grafindo Persada.

Ristono, A., 2013. *Manajemen Operasi.* Yogyakarta: Graha Timur.

Saputro, A. & Purwanggono, B., 2016. Peramalan Perencanaan Produksi Semen dengan Metode Exponential Smoothing pada PT Semen Indonesia. *Industri Engineering Online Journal,* 5(4), pp. 1-7.

Seto, S., Nita, Y. & Triana, L., 2004. *Manajemen Farmasi: Apotek, Farmasi Rumah Sakit, Pedagang Besar Farmasi, Industri Farmasi.* Surabaya: Airlangga University Press.

Sitohang, R., 2011. *Pengendalian Persediaan Bahan Baku Model Persediaan Probabilistik Dengan Sistem Kuantitas Pemesanan Tetap Pada PT. Central Proteina Prima, Tbk Medan,* Medan: Universitas Sumatera Utara.

Sobandi, K. & Kosasih, S., 2014. *Manajemen Operasi.* Jakarta: Mitra Wacana Media.

Syukron, A., 2013. *Pengantar Teknik Industri.* Yogyakarta: Graha Ilmu.

Tampubolon, M., 2004. *Manajemen Operasional.* Jakarta: Ghalia Indonesia.

Yudaruddin, R., 2019. *Forecasting: untuk Kegiatan Ekonomi dan Bisnis.* Samarinda: RV Pustaka Horizon.

LAMPIRAN

Lampiran 1. Hasil Peramalan Produk Jilbab

a. *Single Moving Average* (SMA)

1) SMA 3 bulan

$$F_{Jan\ 21} = \frac{A_{t-1} + A_{t-2} + \cdots + A_{t-n}}{n} = \frac{313 + 220 + 141}{3} = \frac{674}{3} = 225$$

Periode	At	3 Bulan				
		Ft	At - Ft	[At – Ft]	[At – Ft]^2	100*[At – Ft]/At
Oct-20	141					
Nov-20	220					
Dec-20	313					
Jan-21	298	225	73	73	5329	24
Feb-21	219	277	-58	58	3364	26
Mar-21	230	277	-47	47	2209	20
Apr-21	307	249	58	58	3364	19
May-21	568	252	316	316	99856	56
Jun-21	371	368	3	3	9	1
Jul-21	384	415	-31	31	961	8
Aug-21	335	441	-106	106	11236	32
Sep-21	329	363	-34	34	1156	10
Oct-21	440	349	91	91	8281	21
Nov-21	289	368	-79	79	6241	27
Dec-21	141	353	-212	212	44944	150
Total	**4585**	**3937**	**-26**	**1108**	**186950**	**395**

Ukuran akurasi kesalahan peramalan

$$\text{MAD} = \frac{\sum|A_t - F_t|}{n} = \frac{1108}{12} = 92$$

$$\text{MSE} = \frac{\sum(A_t - F_t)^2}{n} = \frac{186950}{12} = 15579$$

$$\text{MAPE} = \frac{\sum\frac{100|A_t - F_t|}{A_t}}{n} = \frac{395}{12} = 33$$

2) SMA 5 bulan

$$F_{Mar\,21} = \frac{A_{t-1} + A_{t-2} + \cdots + A_{t-n}}{n} = \frac{219 + 298 + 313 + 220 + 141}{5} = \frac{1191}{5} = 238$$

Periode	At	5 Bulan				
		Ft	At - Ft	[At – Ft]	[At – Ft]^2	100*[At – Ft]/At
Oct-20	141					
Nov-20	220					
Dec-20	313					
Jan-21	298					
Feb-21	219					
Mar-21	230	238	-8	8	64	3
Apr-21	307	256	51	51	2601	17
May-21	568	273	295	295	87025	52
Jun-21	371	324	47	47	2209	13
Jul-21	384	339	45	45	2025	12
Aug-21	335	372	-37	37	1369	11
Sep-21	329	393	-64	64	4096	19
Oct-21	440	397	43	43	1849	10
Nov-21	289	372	-83	83	6889	29
Dec-21	141	355	-214	214	45796	152
Total	**4585**	**3321**	**75**	**887**	**153923**	**317**

Ukuran akurasi kesalahan peramalan

$$\text{MAD} = \frac{\sum|A_t - F_t|}{n} = \frac{887}{10} = 89$$

$$\text{MSE} = \frac{\sum(A_t - F_t)^2}{n} = \frac{153923}{10} = 15392$$

$$\text{MAPE} = \frac{\sum \frac{100|A_t - F_t|}{A_t}}{n} = \frac{317}{10} = 32$$

b. *Weighted Moving Average* (WMA)

1) WMA 3 bulan

$$F_{Jan\,21} = W_1\,A_{t-1} + W_2\,A_{t-2} + \cdots + W_n\,A_{t-n}$$

$$= 0.5 \times 313 + 0.3 \times 220 + 0.2 \times 141 = 251$$

Periode	At	3 Bulan				
		Ft	At - Ft	[At – Ft]	$[At – Ft]^2$	100*[At – Ft]/At
Oct-20	141					
Nov-20	220					
Dec-20	313					
Jan-21	298	251	47	47	2209	16
Feb-21	219	287	-68	68	4624	31
Mar-21	230	262	-32	32	1024	14
Apr-21	307	240	67	67	4489	22
May-21	568	266	302	302	91204	53
Jun-21	371	422	-51	51	2601	14
Jul-21	384	417	-33	33	1089	9
Aug-21	335	417	-82	82	6724	24
Sep-21	329	357	-28	28	784	9
Oct-21	440	342	98	98	9604	22
Nov-21	289	386	-97	97	9409	34
Dec-21	141	342	-201	201	40401	143
Total	**4585**	**3989**	**-78**	**1106**	**174162**	**389**

Ukuran akurasi kesalahan peramalan

$$\text{MAD} = \frac{\sum|A_t - F_t|}{n} = \frac{1106}{12} = 92$$

$$\text{MSE} = \frac{\sum(A_t - F_t)^2}{n} = \frac{174162}{12} = 14514$$

$$\text{MAPE} = \frac{\sum \frac{100|A_t - F_t|}{A_t}}{n} = \frac{389}{12} = 32$$

2) WMA 5 bulan

$$F_{Mar\,21} = W_1\,A_{t-1} + W_2\,A_{t-2} + \cdots + W_n\,A_{t-n}$$

$$= 0.5 \times 219 + 0.2 \times 298 + 0.2 \times 313 + 0.2 \times 220 + 0.1 \times 141 = 246$$

Periode	At	5 Bulan				
		Ft	At - Ft	[At – Ft]	[At – Ft]^2	100*[At – Ft]/At
Oct-20	141					
Nov-20	220					
Dec-20	313					
Jan-21	298					
Feb-21	219					
Mar-21	230	246	-16	16	256	7
Apr-21	307	257	50	50	2500	16
May-21	568	273	295	295	87025	52
Jun-21	371	351	20	20	400	5
Jul-21	384	354	30	30	900	8
Aug-21	335	387	-52	52	2704	16
Sep-21	329	396	-67	67	4489	20
Oct-21	440	374	67	67	4489	15
Nov-21	289	379	-90	90	8100	31
Dec-21	141	346	-205	205	42025	145
Total	**4585**	**3363**	**32**	**892**	**152888**	**316**

Ukuran akurasi kesalahan peramalan

$$\text{MAD} = \frac{\sum|A_t - F_t|}{n} = \frac{892}{10} = 89$$

$$\text{MSE} = \frac{\sum(A_t - F_t)^2}{n} = \frac{152888}{10} = 15389$$

$$\text{MAPE} = \frac{\sum \frac{100|A_t - F_t|}{A_t}}{n} = \frac{316}{10} = 32$$

c. *Single Exponential Smoothing* (SES)

1) Konstanta 0.5

$$F_{Jan\,21} = \alpha\, A_{t-1} + (1-\alpha)F_{t-1} = (0.5 \times 313) + (0.5 \times 181) = 247$$

Periode	At	0.5				
		Ft	At - Ft	[At – Ft]	[At – Ft]^2	100*[At – Ft]/At
Oct-20	141	141				
Nov-20	220	141	79	79	6241	36
Dec-20	313	181	133	133	17689	42
Jan-21	298	247	51	51	2601	17
Feb-21	219	272	-53	53	2809	24
Mar-21	230	246	-16	16	256	7
Apr-21	307	238	69	69	4761	22
May-21	568	272	296	296	87616	52
Jun-21	371	420	-49	49	2401	13
Jul-21	384	396	-12	12	144	3
Aug-21	335	390	-55	55	3025	16
Sep-21	329	362	-33	33	1089	10
Oct-21	440	346	94	94	8836	21
Nov-21	289	393	-104	104	10816	36
Dec-21	141	341	-200	200	40000	142
Total	**4585**	**4385**	**200**	**1244**	**188284**	**443**

Ukuran akurasi kesalahan peramalan

$$\text{MAD} = \frac{\sum|A_t - F_t|}{n} = \frac{1244}{14} = 90$$

$$\text{MSE} = \frac{\sum(A_t - F_t)^2}{n} = \frac{188284}{14} = 13449$$

$$\text{MAPE} = \frac{\sum \frac{100|A_t - F_t|}{A_t}}{n} = \frac{443}{14} = 32$$

2) Konstanta 0.9

$$F_{Jan\,21} = \alpha\, A_{t-1} + (1-\alpha)F_{t-1} = (0.9 \times 313) + (0.1 \times 212) = 303$$

Periode	At	0.9				
		Ft	At - Ft	[At – Ft]	$[At – Ft]^2$	100*[At – Ft]/At
Oct-20	141	141				
Nov-20	220	141	79	79	6241	36
Dec-20	313	212	101	101	10201	32
Jan-21	298	303	-5	5	25	2
Feb-21	219	298	-79	79	6241	36
Mar-21	230	227	3	3	9	1
Apr-21	307	230	77	77	5929	25
May-21	568	299	269	269	72361	47
Jun-21	371	541	-170	170	28900	46
Jul-21	384	388	-4	4	16	1
Aug-21	335	384	-49	49	2401	15
Sep-21	329	340	-11	11	121	3
Oct-21	440	330	110	110	12100	25
Nov-21	289	429	-140	140	19600	48
Dec-21	141	303	-162	162	26244	115
Total	**4585**	**4567**	**19**	**1259**	**190389**	**433**

Ukuran akurasi kesalahan peramalan

$$\text{MAD} = \frac{\sum|A_t - F_t|}{n} = \frac{1259}{14} = 90$$

$$\text{MSE} = \frac{\sum(A_t - F_t)^2}{n} = \frac{190389}{14} = 13599$$

$$\text{MAPE} = \frac{\sum \frac{100|A_t - F_t|}{A_t}}{n} = \frac{433}{14} = 31$$

Lampiran 2. Hasil Peramalan Produk Jubah

a. *Single Moving Average* (SMA)

1) SMA 3 bulan

$$F_{Jan\ 21} = \frac{A_{t-1} + A_{t-2} + \cdots + A_{t-n}}{n} = \frac{161 + 139 + 71}{3} = \frac{371}{3} = 124$$

Periode	At	3 Bulan				
		Ft	At - Ft	[At – Ft]	[At – Ft]^2	100*[At – Ft]/At
Oct-20	71					
Nov-20	139					
Dec-20	161					
Jan-21	113	124	-11	11	121	10
Feb-21	67	138	-71	71	5041	106
Mar-21	106	114	-8	8	64	8
Apr-21	117	95	22	22	484	19
May-21	217	97	120	120	14400	55
Jun-21	228	147	81	81	6561	36
Jul-21	206	187	19	19	361	9
Aug-21	162	217	-55	55	3025	34
Sep-21	160	199	-39	39	1521	24
Oct-21	157	176	-19	19	361	12
Nov-21	114	160	-46	46	2116	40
Dec-21	70	144	-74	74	5476	106
Total	**2088**	**1796**	**-81**	**565**	**39531**	**459**

Ukuran akurasi kesalahan peramalan

$$\text{MAD} = \frac{\sum|A_t - F_t|}{n} = \frac{565}{12} = 47$$

$$\text{MSE} = \frac{\sum(A_t - F_t)^2}{n} = \frac{39532}{12} = 3294$$

$$\text{MAPE} = \frac{\sum \frac{100|A_t - F_t|}{A_t}}{n} = \frac{459}{12} = 38$$

2) SMA 5 bulan

$$F_{Mar\ 21} = \frac{A_{t-1} + A_{t-2} + \cdots + A_{t-n}}{n} = \frac{67 + 113 + 161 + 139 + 71}{5} = \frac{551}{5} = 110$$

Periode	At	5 Bulan				
		Ft	At - Ft	[At – Ft]	$[At – Ft]^2$	100*[At – Ft]/At
Oct-20	71					
Nov-20	139					
Dec-20	161					
Jan-21	113					
Feb-21	67					
Mar-21	106	110	-4	4	16	4
Apr-21	117	117	0	0	0	0
May-21	217	113	104	104	10816	48
Jun-21	228	124	104	104	10816	46
Jul-21	206	147	59	59	3481	29
Aug-21	162	175	-13	13	169	8
Sep-21	160	186	-26	26	676	16
Oct-21	157	195	-38	38	1444	24
Nov-21	114	183	-69	69	4761	61
Dec-21	70	160	-90	90	8100	129
Total	**2088**	**1509**	**27**	**507**	**40279**	**364**

Ukuran akurasi kesalahan peramalan

$$\text{MAD} = \frac{\sum|A_t - F_t|}{n} = \frac{507}{10} = 51$$

$$\text{MSE} = \frac{\sum(A_t - F_t)^2}{n} = \frac{40279}{10} = 4028$$

$$\text{MAPE} = \frac{\sum \frac{100|A_t - F_t|}{A_t}}{n} = \frac{364}{10} = 36$$

b. *Weighted Moving Average* (WMA)

1) WMA 3 bulan

$$F_{Jan\,21} = W_1\,A_{t-1} + W_2\,A_{t-2} + \cdots + W_n\,A_{t-n}$$

$$= 0.5 \times 161 + 0.3 \times 139 + 0.2 \times 71 = 136$$

Periode	At	3 Bulan				
		Ft	At - Ft	[At – Ft]	$[At – Ft]^2$	100*[At – Ft]/At
Oct-20	71					
Nov-20	139					
Dec-20	161					
Jan-21	113	136	-23	23	529	20
Feb-21	67	133	-66	66	4356	99
Mar-21	106	100	6	6	36	6
Apr-21	117	96	21	21	441	18
May-21	217	104	113	113	12769	52
Jun-21	228	165	63	63	3969	28
Jul-21	206	203	4	4	16	2
Aug-21	162	215	-53	53	2809	33
Sep-21	160	188	-28	28	784	18
Oct-21	157	170	-13	13	169	8
Nov-21	114	159	-45	45	2025	39
Dec-21	70	136	-66	66	4356	94
Total	**2088**	**1803**	**-87**	**501**	**32259**	**416**

Ukuran akurasi kesalahan peramalan

$$\text{MAD} = \frac{\sum|A_t - F_t|}{n} = \frac{501}{12} = 42$$

$$\text{MSE} = \frac{\sum(A_t - F_t)^2}{n} = \frac{32259}{12} = 2688$$

$$\text{MAPE} = \frac{\sum \frac{100|A_t - F_t|}{A_t}}{n} = \frac{416}{12} = 35$$

2) WMA 5 bulan

$$F_{Mar\,21} = W_1\,A_{t-1} + W_2\,A_{t-2} + \cdots + W_n\,A_{t-n}$$

$$= 0.5 \times 67 + 0.2 \times 113 + 0.2 \times 161 + 0.2 \times 139 + 0.1 \times 71 = 110$$

Periode	At	5 Bulan				
		Ft	At - Ft	[At – Ft]	[At – Ft]^2	100*[At – Ft]/At
Oct-20	71					
Nov-20	139					
Dec-20	161					
Jan-21	113					
Feb-21	67					
Mar-21	106	110	-4	4	16	4
Apr-21	117	114	3	3	9	3
May-21	217	108	109	109	11881	50
Jun-21	228	134	94	94	8836	41
Jul-21	206	163	43	43	1849	21
Aug-21	162	185	-23	23	529	14
Sep-21	160	191	-31	31	961	19
Oct-21	157	189	-32	32	1024	20
Nov-21	114	176	-62	62	3844	54
Dec-21	70	151	-81	81	6561	116
Total	**2088**	**1520**	**16**	**482**	**35510**	**343**

Ukuran akurasi kesalahan peramalan

$$\text{MAD} = \frac{\sum|A_t - F_t|}{n} = \frac{482}{10} = 48$$

$$\text{MSE} = \frac{\sum(A_t - F_t)^2}{n} = \frac{35510}{10} = 3551$$

$$\text{MAPE} = \frac{\sum \frac{100|A_t - F_t|}{A_t}}{n} = \frac{343}{10} = 34$$

c. *Single Exponential Smoothing* (SES)

1) Konstanta 0.5

$$F_{Jan\,21} = \alpha\, A_{t-1} + (1-\alpha)F_{t-1} = (0.5 \times 161) + (0.5 \times 105) = 133$$

Periode	At	0.5				
		Ft	At - Ft	[At – Ft]	$[At – Ft]^2$	100*[At – Ft]/At
Oct-20	71	71				
Nov-20	139	71	68	68	4624	49
Dec-20	161	105	56	56	3136	35
Jan-21	113	133	-20	20	400	18
Feb-21	67	123	-56	56	3136	84
Mar-21	106	95	11	11	121	10
Apr-21	117	101	17	17	289	15
May-21	217	109	108	108	11664	50
Jun-21	228	163	65	65	4225	29
Jul-21	206	195	11	11	121	5
Aug-21	162	201	-39	39	1521	24
Sep-21	160	181	-21	21	441	13
Oct-21	157	171	-14	14	196	9
Nov-21	114	164	-50	50	2500	44
Dec-21	70	139	-69	69	4761	99
Total	**2088**	**2021**	**67**	**605**	**37135**	**482**

Ukuran akurasi kesalahan peramalan

$$\text{MAD} = \frac{\sum|A_t - F_t|}{n} = \frac{605}{14} = 43$$

$$\text{MSE} = \frac{\sum(A_t - F_t)^2}{n} = \frac{37135}{14} = 2653$$

$$\text{MAPE} = \frac{\sum \frac{100|A_t - F_t|}{A_t}}{n} = \frac{482}{14} = 34$$

2) Konstanta 0.9

$$F_{Jan\,21} = \alpha\, A_{t-1} + (1-\alpha)F_{t-1} = (0.9 \times 161) + (0.1 \times 132) = 158$$

Periode	At	0.9				
		Ft	At - Ft	[At – Ft]	$[At – Ft]^2$	100*[At – Ft]/At
Oct-20	71	71				
Nov-20	139	71	68	68	4624	49
Dec-20	161	132	29	29	841	18
Jan-21	113	158	-45	45	2025	40
Feb-21	67	118	-51	51	2601	76
Mar-21	106	72	34	34	1156	32
Apr-21	117	103	14	14	196	12
May-21	217	116	101	101	10201	47
Jun-21	228	207	21	21	441	9
Jul-21	206	226	-20	20	400	10
Aug-21	162	208	-46	46	2116	28
Sep-21	160	167	-7	7	49	4
Oct-21	157	161	-4	4	16	3
Nov-21	114	157	-43	43	1849	38
Dec-21	70	118	-48	48	2304	69
Total	**2088**	**2084**	**3**	**531**	**28819**	**434**

Ukuran akurasi kesalahan peramalan

$$\text{MAD} = \frac{\sum|A_t - F_t|}{n} = \frac{531}{14} = 38$$

$$\text{MSE} = \frac{\sum(A_t - F_t)^2}{n} = \frac{28819}{14} = 2059$$

$$\text{MAPE} = \frac{\sum \frac{100|A_t - F_t|}{A_t}}{n} = \frac{434}{14} = 31$$

Lampiran 3. Hasil Peramalan Produk Kain

a. *Single Moving Average* (SMA)

1) SMA 3 bulan

$$F_{Jan\ 21} = \frac{A_{t-1} + A_{t-2} + \cdots + A_{t-n}}{n} = \frac{7 + 14 + 3}{3} = \frac{24}{3} = 8$$

Periode	At	3 Bulan				
		Ft	At - Ft	[At – Ft]	$[At – Ft]^2$	100*[At – Ft]/At
Oct-20	3					
Nov-20	14					
Dec-20	7					
Jan-21	9	8	1	1	1	11
Feb-21	10	10	0	0	0	0
Mar-21	20	9	11	11	121	55
Apr-21	23	13	10	10	100	43
May-21	18	18	0	0	0	0
Jun-21	9	20	-11	11	121	122
Jul-21	8	17	-9	9	81	113
Aug-21	10	12	-2	2	4	20
Sep-21	4	9	-5	5	25	125
Oct-21	7	7	0	0	0	0
Nov-21	4	7	-3	3	9	75
Dec-21	2	5	-3	3	9	150
Total	**148**	**134**	**-11**	**55**	**471**	**714**

Ukuran akurasi kesalahan peramalan

$$\text{MAD} = \frac{\sum|A_t - F_t|}{n} = \frac{55}{12} = 5$$

$$\text{MSE} = \frac{\sum(A_t - F_t)^2}{n} = \frac{471}{12} = 39$$

$$\text{MAPE} = \frac{\sum\frac{100|A_t - F_t|}{A_t}}{n} = \frac{714}{12} = 60$$

2) SMA 5 bulan

$$F_{Mar\ 21} = \frac{A_{t-1} + A_{t-2} + \cdots + A_{t-n}}{n} = \frac{10 + 9 + 7 + 14 + 3}{5} = \frac{43}{5} = 9$$

Periode	At	5 Bulan				
		Ft	At - Ft	[At – Ft]	$[At – Ft]^2$	100*[At – Ft]/At
Oct-20	3					
Nov-20	14					
Dec-20	7					
Jan-21	9					
Feb-21	10					
Mar-21	20	9	11	11	121	55
Apr-21	23	12	11	11	121	48
May-21	18	14	4	4	16	22
Jun-21	9	16	-7	7	49	78
Jul-21	8	16	-8	8	64	100
Aug-21	10	16	-6	6	36	60
Sep-21	4	14	-10	10	100	250
Oct-21	7	10	-3	3	9	43
Nov-21	4	8	-4	4	16	100
Dec-21	2	7	-5	5	25	250
Total	**148**	**120**	**-17**	**69**	**557**	**1006**

Ukuran akurasi kesalahan peramalan

$$\text{MAD} = \frac{\sum|A_t - F_t|}{n} = \frac{69}{10} = 7$$

$$\text{MSE} = \frac{\sum(A_t - F_t)^2}{n} = \frac{557}{10} = 56$$

$$\text{MAPE} = \frac{\sum \frac{100|A_t - F_t|}{A_t}}{n} = \frac{1006}{10} = 101$$

b. *Weighted Moving Average* (WMA)

1) WMA 3 bulan

$$F_{Jan\,21} = W_1\,A_{t-1} + W_2\,A_{t-2} + \cdots + W_n\,A_{t-n}$$

$$= 0.5 \times 7 + 0.3 \times 14 + 0.2 \times 3 = 8$$

Periode	At	3 Bulan				
		Ft	At - Ft	[At – Ft]	$[At – Ft]^2$	100*[At – Ft]/At
Oct-20	3					
Nov-20	14					
Dec-20	7					
Jan-21	9	8	1	1	1	11
Feb-21	10	9	1	1	1	10
Mar-21	20	9	11	11	121	55
Apr-21	23	15	8	8	64	35
May-21	18	20	-2	2	4	11
Jun-21	9	20	-11	11	121	122
Jul-21	8	15	-7	7	49	88
Aug-21	10	10	0	0	0	0
Sep-21	4	9	-5	5	25	125
Oct-21	7	7	0	0	0	0
Nov-21	4	7	-3	3	9	75
Dec-21	2	5	-3	3	9	150
Total	**148**	**133**	**-10**	**52**	**404**	**682**

Ukuran akurasi kesalahan peramalan

$$\text{MAD} = \frac{\sum|A_t - F_t|}{n} = \frac{52}{12} = 4$$

$$\text{MSE} = \frac{\sum(A_t - F_t)^2}{n} = \frac{404}{12} = 34$$

$$\text{MAPE} = \frac{\sum \frac{100|A_t - F_t|}{A_t}}{n} = \frac{682}{12} = 57$$

2) WMA 5 bulan

$$F_{Mar\,21} = W_1\,A_{t-1} + W_2\,A_{t-2} + \cdots + W_n\,A_{t-n}$$

$$= 0.5 \times 10 + 0.2 \times 9 + 0.2 \times 7 + 0.2 \times 14 + 0.1 \times 3 = 9$$

Periode	At	5 Bulan				
		Ft	At - Ft	[At – Ft]	[At – Ft]^2	100*[At – Ft]/At
Oct-20	3					
Nov-20	14					
Dec-20	7					
Jan-21	9					
Feb-21	10					
Mar-21	20	9	11	11	121	55
Apr-21	23	13	10	10	100	43
May-21	18	15	3	3	9	17
Jun-21	9	17	-8	8	64	89
Jul-21	8	16	-8	8	64	100
Aug-21	10	14	-4	4	16	40
Sep-21	4	12	-8	8	64	200
Oct-21	7	8	-1	1	1	14
Nov-21	4	7	-3	3	9	75
Dec-21	2	6	-4	4	16	200
Total	**148**	**119**	**-12**	**60**	**464**	**833**

Ukuran akurasi kesalahan peramalan

$$\text{MAD} = \frac{\sum|A_t - F_t|}{n} = \frac{60}{10} = 6$$

$$\text{MSE} = \frac{\sum(A_t - F_t)^2}{n} = \frac{464}{10} = 46$$

$$\text{MAPE} = \frac{\sum \frac{100|A_t - F_t|}{A_t}}{n} = \frac{833}{10} = 83$$

c. *Single Exponential Smoothing* (SES)

1) Konstanta 0.5

$$F_{Jan\,21} = \alpha\, A_{t-1} + (1-\alpha)F_{t-1} = (0.5 \times 7) + (0.5 \times 9) = 8$$

Periode	At	0.5				
		Ft	At - Ft	[At – Ft]	[At – Ft]^2	100*[At – Ft]/At
Oct-20	3	3				
Nov-20	14	3	11	11	121	79
Dec-20	7	9	-2	2	4	29
Jan-21	9	8	1	1	1	11
Feb-21	10	8	2	2	4	20
Mar-21	20	9	11	11	121	55
Apr-21	23	15	8	8	64	35
May-21	18	19	-1	1	1	6
Jun-21	9	18	-9	9	81	100
Jul-21	8	14	-6	6	36	75
Aug-21	10	11	-1	1	1	10
Sep-21	4	10	-6	6	36	150
Oct-21	7	7	0	0	0	0
Nov-21	4	7	-3	3	9	75
Dec-21	2	6	-4	4	16	200
Total	**148**	**146**	**1**	**65**	**495**	**844**

Ukuran akurasi kesalahan peramalan

$$\text{MAD} = \frac{\sum|A_t - F_t|}{n} = \frac{65}{14} = 5$$

$$\text{MSE} = \frac{\sum(A_t - F_t)^2}{n} = \frac{495}{14} = 35$$

$$\text{MAPE} = \frac{\sum \frac{100|A_t - F_t|}{A_t}}{n} = \frac{844}{14} = 60$$

2) Konstanta 0.9

$$F_{Jan\,21} = \alpha\, A_{t-1} + (1-\alpha)F_{t-1} = (0.9 \times 7) + (0.1 \times 13) = 8$$

Periode	At	0.9				
		Ft	At - Ft	[At – Ft]	$[At – Ft]^2$	100*[At – Ft]/At
Oct-20	3	3				
Nov-20	14	3	11	11	121	79
Dec-20	7	13	-6	6	36	86
Jan-21	9	8	1	1	1	11
Feb-21	10	9	1	1	1	10
Mar-21	20	10	10	10	100	50
Apr-21	23	19	4	4	16	17
May-21	18	23	-5	5	25	28
Jun-21	9	18	-9	9	81	100
Jul-21	8	10	-2	2	4	25
Aug-21	10	8	2	2	4	20
Sep-21	4	10	-6	6	36	150
Oct-21	7	5	2	2	4	29
Nov-21	4	7	-3	3	9	75
Dec-21	2	4	-2	2	4	100
Total	**148**	**149**	**-2**	**64**	**442**	**779**

Ukuran akurasi kesalahan peramalan

$$\text{MAD} = \frac{\sum|A_t - F_t|}{n} = \frac{64}{14} = 5$$

$$\text{MSE} = \frac{\sum(A_t - F_t)^2}{n} = \frac{442}{14} = 32$$

$$\text{MAPE} = \frac{\sum \frac{100|A_t - F_t|}{A_t}}{n} = \frac{779}{14} = 56$$

Lampiran 4. Tabel Distribusi Normal

z	0	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
-3.5	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
-3.4	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0002
-3.3	0.0005	0.0005	0.0005	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0003
-3.2	0.0007	0.0007	0.0006	0.0006	0.0006	0.0006	0.0006	0.0005	0.0005	0.0005
-3.1	0.0010	0.0009	0.0009	0.0009	0.0008	0.0008	0.0008	0.0008	0.0007	0.0007
-3.0	0.0013	0.0013	0.0013	0.0012	0.0012	0.0011	0.0011	0.0011	0.0010	0.0010
-2.9	0.0019	0.0018	0.0018	0.0017	0.0016	0.0016	0.0015	0.0015	0.0014	0.0014
-2.8	0.0026	0.0025	0.0024	0.0023	0.0023	0.0022	0.0021	0.0021	0.0020	0.0019
-2.7	0.0035	0.0034	0.0033	0.0032	0.0031	0.0030	0.0029	0.0028	0.0027	0.0026
-2.6	0.0047	0.0045	0.0044	0.0043	0.0041	0.0040	0.0039	0.0038	0.0037	0.0036
-2.5	0.0062	0.0060	0.0059	0.0057	0.0055	0.0054	0.0052	0.0051	0.0049	0.0048
-2.4	0.0082	0.0080	0.0078	0.0075	0.0073	0.0071	0.0069	0.0068	0.0066	0.0064
-2.3	0.0107	0.0104	0.0102	0.0099	0.0096	0.0094	0.0091	0.0089	0.0087	0.0084
-2.2	0.0139	0.0136	0.0132	0.0129	0.0125	0.0122	0.0119	0.0116	0.0113	0.0110
-2.1	0.0179	0.0174	0.0170	0.0166	0.0162	0.0158	0.0154	0.0150	0.0146	0.0143
-2.0	0.0228	0.0222	0.0217	0.0212	0.0207	0.0202	0.0197	0.0192	0.0188	0.0183
-1.9	0.0287	0.0281	0.0274	0.0268	0.0262	0.0256	0.0250	0.0244	0.0239	0.0233
-1.8	0.0359	0.0351	0.0344	0.0336	0.0329	0.0322	0.0314	0.0307	0.0301	0.0294
-1.7	0.0446	0.0436	0.0427	0.0418	0.0409	0.0401	0.0392	0.0384	0.0375	0.0367
-1.6	0.0548	0.0537	0.0526	0.0516	0.0505	0.0495	0.0485	0.0475	0.0465	0.0455
-1.5	0.0668	0.0655	0.0643	0.0630	0.0618	0.0606	0.0594	0.0582	0.0571	0.0559
-1.4	0.0808	0.0793	0.0778	0.0764	0.0749	0.0735	0.0721	0.0708	0.0694	0.0681
-1.3	0.0968	0.0951	0.0934	0.0918	0.0901	0.0885	0.0869	0.0853	0.0838	0.0823
-1.2	0.1151	0.1131	0.1112	0.1093	0.1075	0.1056	0.1038	0.1020	0.1003	0.0985
-1.1	0.1357	0.1335	0.1314	0.1292	0.1271	0.1251	0.1230	0.1210	0.1190	0.1170
-1.0	0.1587	0.1562	0.1539	0.1515	0.1492	0.1469	0.1446	0.1423	0.1401	0.1379
-0.9	0.1841	0.1814	0.1788	0.1762	0.1736	0.1711	0.1685	0.1660	0.1635	0.1611
-0.8	0.2119	0.2090	0.2061	0.2033	0.2005	0.1977	0.1949	0.1922	0.1894	0.1867
-0.7	0.2420	0.2389	0.2358	0.2327	0.2296	0.2266	0.2236	0.2206	0.2177	0.2148
-0.6	0.2743	0.2709	0.2676	0.2643	0.2611	0.2578	0.2546	0.2514	0.2483	0.2451
-0.5	0.3085	0.3050	0.3015	0.2981	0.2946	0.2912	0.2877	0.2843	0.2810	0.2776
-0.4	0.3446	0.3409	0.3372	0.3336	0.3300	0.3264	0.3228	0.3192	0.3156	0.3121
-0.3	0.3821	0.3783	0.3745	0.3707	0.3669	0.3632	0.3594	0.3557	0.3520	0.3483
-0.2	0.4207	0.4168	0.4129	0.4090	0.4052	0.4013	0.3974	0.3936	0.3897	0.3859
-0.1	0.4602	0.4562	0.4522	0.4483	0.4443	0.4404	0.4364	0.4325	0.4286	0.4247
-0.0	0.5000	0.4960	0.4920	0.4880	0.4840	0.4801	0.4761	0.4721	0.4681	0.4641

0.0	0.5000	0.5040	0.5080	0.5120	0.5160	0.5199	0.5239	0.5279	0.5319	0.5359
0.1	0.5398	0.5438	0.5478	0.5517	0.5557	0.5596	0.5636	0.5675	0.5714	0.5753
0.2	0.5793	0.5832	0.5871	0.5910	0.5948	0.5987	0.6026	0.6064	0.6103	0.6141
0.3	0.6179	0.6217	0.6255	0.6293	0.6331	0.6368	0.6406	0.6443	0.6480	0.6517
0.4	0.6554	0.6591	0.6628	0.6664	0.6700	0.6736	0.6772	0.6808	0.6844	0.6879
0.5	0.6915	0.6950	0.6985	0.7019	0.7054	0.7088	0.7123	0.7157	0.7190	0.7224
0.6	0.7257	0.7291	0.7324	0.7357	0.7389	0.7422	0.7454	0.7486	0.7517	0.7549
0.7	0.7580	0.7611	0.7642	0.7673	0.7704	0.7734	0.7764	0.7794	0.7823	0.7852
0.8	0.7881	0.7910	0.7939	0.7967	0.7995	0.8023	0.8051	0.8078	0.8106	0.8133
0.9	0.8159	0.8186	0.8212	0.8238	0.8264	0.8289	0.8315	0.8340	0.8365	0.8389
1.0	0.8413	0.8438	0.8461	0.8485	0.8508	0.8531	0.8554	0.8577	0.8599	0.8621
1.1	0.8643	0.8665	0.8686	0.8708	0.8729	0.8749	0.8770	0.8790	0.8810	0.8830
1.2	0.8849	0.8869	0.8888	0.8907	0.8925	0.8944	0.8962	0.8980	0.8997	0.9015
1.3	0.9032	0.9049	0.9066	0.9082	0.9099	0.9115	0.9131	0.9147	0.9162	0.9177
1.4	0.9192	0.9207	0.9222	0.9236	0.9251	0.9265	0.9279	0.9292	0.9306	0.9319
1.5	0.9332	0.9345	0.9357	0.9370	0.9382	0.9394	0.9406	0.9418	0.9429	0.9441
1.6	0.9452	0.9463	0.9474	0.9484	0.9495	0.9505	0.9515	0.9525	0.9535	0.9545
1.7	0.9554	0.9564	0.9573	0.9582	0.9591	0.9599	0.9608	0.9616	0.9625	0.9633
1.8	0.9641	0.9649	0.9656	0.9664	0.9671	0.9678	0.9686	0.9693	0.9699	0.9706
1.9	0.9713	0.9719	0.9726	0.9732	0.9738	0.9744	0.9750	0.9756	0.9761	0.9767
2.0	0.9772	0.9778	0.9783	0.9788	0.9793	0.9798	0.9803	0.9808	0.9812	0.9817
2.1	0.9821	0.9826	0.9830	0.9834	0.9838	0.9842	0.9846	0.9850	0.9854	0.9857
2.2	0.9861	0.9864	0.9868	0.9871	0.9875	0.9878	0.9881	0.9884	0.9887	0.9890
2.3	0.9893	0.9896	0.9898	0.9901	0.9904	0.9906	0.9909	0.9911	0.9913	0.9916
2.4	0.9918	0.9920	0.9922	0.9925	0.9927	0.9929	0.9931	0.9932	0.9934	0.9936
2.5	0.9938	0.9940	0.9941	0.9943	0.9945	0.9946	0.9948	0.9949	0.9951	0.9952
2.6	0.9953	0.9955	0.9956	0.9957	0.9959	0.9960	0.9961	0.9962	0.9963	0.9964
2.7	0.9965	0.9966	0.9967	0.9968	0.9969	0.9970	0.9971	0.9972	0.9973	0.9974
2.8	0.9974	0.9975	0.9976	0.9977	0.9977	0.9978	0.9979	0.9979	0.9980	0.9981
2.9	0.9981	0.9982	0.9982	0.9983	0.9984	0.9984	0.9985	0.9985	0.9986	0.9986
3.0	0.9987	0.9987	0.9987	0.9988	0.9988	0.9989	0.9989	0.9989	0.9990	0.9990
3.1	0.9990	0.9991	0.9991	0.9991	0.9992	0.9992	0.9992	0.9992	0.9993	0.9993
3.2	0.9993	0.9993	0.9994	0.9994	0.9994	0.9994	0.9994	0.9995	0.9995	0.9995
3.3	0.9995	0.9995	0.9995	0.9996	0.9996	0.9996	0.9996	0.9996	0.9996	0.9997
3.4	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9998
3.5	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998

Lampiran 5. Tabel Fungsi Densitas Distribusi Normal

Deviasi Normal Standar Zα	Prob. Kekurangan α	Ordinat f(z)	Ekspektasi Parsial ∈(z)
.00	.5000	.3989	.3989
.05	.4801	.3984	.3744
.10	.4602	.3969	.3509
.15	.4404	.3945	.3284
.20	.4207	.3910	.3069
.25	.4013	.3867	.2863
.30	.3821	.3814	.2668
.35	.3632	.3752	.2481
.40	.3446	.3683	.2304
.45	.3264	.3605	.2137
.50	.3086	.3521	.1978
.55	.2912	.3429	.1828
.60	.2743	.3332	.1687
.65	.2579	.3229	.1554
.70	.2420	.3123	.1429
.75	.2267	.3011	.1312
.80	.2119	.2897	.1202
.85	.1977	.2780	.1100
.90	.1841	.2661	.1004
.95	.1711	.2541	.0916
1.00	.1587	.2420	.0833
1.05	.1469	.2300	.0757
1.10	.1357	.2179	.0686
1.15	.1251	.2059	.0621
1.20	.1151	.1942	.0561
1.25	.1057	.1826	.0506
1.30	.0968	.1714	.0455
1.35	.0886	.1604	.0409
1.40	.0808	.1497	.0367
1.45	.0736	.1394	.0328
1.50	.0669	.1295	.0293
1.55	.0606	.1200	.0261
1.60	.0548	.1109	.0232
1.65	.0495	.1023	.0206

Deviasi Normal Standar Zα	Prob. Kekurangan α	Ordinat f(z)	Ekspektasi Parsial ∈(z)
1.70	.0446	.0940	.0183
1.75	.0401	.0863	.0162
1.80	.0360	.0790	.0143
1.85	.0322	.0721	.0126
1.90	.0288	.0656	.0111
1.95	.0256	.0596	.0097
2.00	.0228	.0540	.0085
2.05	.0202	.0488	.0074
2.10	.0179	.0440	.0065
2.15	.0158	.0396	.0056
2.20	.0140	.0355	.0049
2.25	.0122	.0317	.0042
2.30	.0107	.0283	.0037
2.35	.0094	.0252	.0032
2.40	.0082	.0224	.0027
2.45	.0071	.0198	.0023
2.50	.0062	.0175	.0020
2.55	.0054	.0154	.0017
2.60	.0047	.0136	.0015
2.65	.0040	.0119	.0012
2.70	.0035	.0104	.0011
2.75	.0030	.0091	.0009
2.80	.0026	.0079	.0008
2.85	.0022	.0069	.0006
2.90	.0019	.0059	.0005
2.95	.0016	.0051	.00045
3.00	.0015	.0044	.00038
3.10	.0010	.0033	.00027
3.20	.0007	.0024	.00018
3.30	.0005	.0017	.00013
3.40	.0004	.0012	.00009
3.50	.0003	.009	.00006
3.60	.0002	.006	.00004
3.80	.0001	.003	.00002
4.00	.00003	.0001	.00001

Lampiran 6. Tabel dari Grafik Persediaan Metode Q dan Metode P

Metode Q (Produk Jilbab)
Q = 967 *pcs*; r = 561 *pcs*; ss = 52 *pcs*

	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21
GR	303	298	227	230	299	541	388	384	340	330	429	303
OH=967	664	366	139	876	577	36	615	231	858	528	99	763
NR	303	0	0	91	0	0	352	0	109	0	0	204
POREC				967			967		967			967
POREL		967			967		967			967		

Metode Q (Produk Jubah)
Q = 524 *pcs*; r = 252 *pcs*; ss = 25 *pcs*

	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21
GR	158	118	72	103	116	207	226	208	167	161	157	118
OH=524	366	248	176	73	481	274	48	364	197	36	403	285
NR	158	0	0	0	43	0	0	160	0	0	121	0
POREC					524			524			524	
POREL			524			524			524			

Metode Q (Produk Kain)
Q = 71 *roll*; r = 13 *roll*; ss = 2 *roll*

	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21
GR	8	9	10	19	23	18	10	8	10	5	7	4
OH=71	63	54	44	25	2	55	45	37	27	22	15	11
NR	8	0	0	0	0	16	0	0	0	0	0	0
POREC						71						
POREL					71							

Metode P (Produk Jilbab)
T = 0.1138 tahun/42 hari; R = 975 *pcs*; ss = 131 *pcs*

	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21
GR	303	298	227	230	299	541	388	384	340	330	429	303
OH=975	672	374	450	821	1047	660	272	203	566	1008	988	685
NR	303	0	0	0	0	0	0	112	137	0	0	0
POREC			303	601	525	154	0	315	703	772	409	0
POREL	303	601	525	154	0	315	703	772	409	0	0	290

Metode P (Produk Jubah)
T = 0.1600 tahun/59 hari; R = 518 *pcs*; ss = 71 *pcs*

	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21
GR	158	118	72	103	116	207	226	208	167	161	157	118
OH=518	360	242	170	343	227	195	0	115	0	242	85	243
NR	158	0	0	0	0	0	31	208	52	161	0	33
POREC				276		175		323		403		276
POREL		276		175		323		403		276		275

Metode P (Produk Kain)

T = 0.3574 tahun/131 hari; R = 60 *roll*; ss = 8 *roll*

	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21
GR	8	9	10	19	23	18	10	8	10	5	7	4
OH=60	52	43	33	14	37	19	9	1	50	45	38	34
NR	8	0	0	0	9	0	0	0	9	0	0	0
POREC					46				59			
POREL				46				59				59