

**LAMPIRAN 1. Peramalan Permintaan Bulan September 2017 Metode Moving Average**

Peramalan Solution						
	Demand(y)	Forecast	Error	Error	Error <sup>2</sup>	Pct Error
September	280					
October	225	280	-55	55	3025	,24
November	239	225	14	14	196	,06
December	261	239	22	22	484	,08
January	222	261	-39	39	1521	,18
February	215	222	-7	7	49	,03
March	257	215	42	42	1764	,16
April	315	257	58	58	3364	,18
May	257	315	-58	58	3364	,23
June	339	257	82	82	6724	,24
July	250	339	-89	89	7921	,36
August	225	250	-25	25	625	,11
TOTALS	3085		-55	491	29037	1,88
AVERAGE	257,08		-5	44,64	2639,73	,17
Next period forecast		225	(Bias)	(MAD)	(MSE)	(MAPE)
				Std err	56,8	

Peramalan Summary	
Measure	Value
<b>Error Measures</b>	
Bias (Mean Error)	-5
MAD (Mean Absolute Deviation)	44,64
MSE (Mean Squared Error)	2639,73
Standard Error (denom=n-2=9)	56,8
MAPE (Mean Absolute Percent Error)	,17
<b>Forecast</b>	
next period	225

## LAMPIRAN 2. Peramalan Permintaan Bulan Oktober 2017 Metode *Moving*

### *Average*

forecasting solution						
	Demand(y)	Forecast	Error	Error	Error^2	Pct Error
October	225					
November	239	225	14	14	196	,06
December	261	239	22	22	484	,08
January	222	261	-39	39	1521	,18
February	215	222	-7	7	49	,03
March	257	215	42	42	1764	,16
April	315	257	58	58	3364	,18
May	257	315	-58	58	3364	,23
June	339	257	82	82	6724	,24
July	250	339	-89	89	7921	,36
August	225	250	-25	25	625	,11
September	239	225	14	14	196	,06
TOTALS	3044		14	450	26208	1,69
AVERAGE	253,67		1,27	40,91	2382,55	,15
Next period forecast		239	(Bias)	(MAD)	(MSE)	(MAPE)
				Std err	53,96	

forecasting summary	
Measure	Value
<b>Error Measures</b>	
Bias (Mean Error)	1,27
MAD (Mean Absolute Deviation)	40,91
MSE (Mean Squared Error)	2382,55
Standard Error (denom=n-2=9)	53,96
MAPE (Mean Absolute Percent Error)	,15
<b>Forecast</b>	
next period	239

**LAMPIRAN 3. Peramalan Permintaan Bulan September 2017 Metode *Single***

***Exponential Smoothing***

Peramalan Solution						
	Demand(y)	Forecast	Error	Error	Error^2	Pct Error
September	280					
October	225	280	-55	55	3025	,24
November	239	241,5	-2,5	2,5	6,25	,01
December	261	239,75	21,25	21,25	451,56	,08
January	222	254,63	-32,63	32,63	1064,39	,15
February	215	231,79	-16,79	16,79	281,82	,08
March	257	220,04	36,96	36,96	1366,32	,14
April	315	245,91	69,09	69,09	4773,31	,22
May	257	294,27	-37,27	37,27	1389,3	,15
June	339	268,18	70,82	70,82	5015,19	,21
July	250	317,75	-67,75	67,75	4590,68	,27
August	225	270,33	-45,33	45,33	2054,48	,2
TOTALS	3085		-59,15	455,39	24018,3	1,75
AVERAGE	257,08		-5,38	41,4	2183,48	,16
Next period forecast		238,6	(Bias)	(MAD)	(MSE)	(MAPE)
				Std err	51,66	

Peramalan Summary	
Measure	Value
<b>Error Measures</b>	
Bias (Mean Error)	-5,38
MAD (Mean Absolute Deviation)	41,4
MSE (Mean Squared Error)	2183,48
Standard Error (denom=n-2=9)	51,66
MAPE (Mean Absolute Percent Error)	,16
<b>Forecast</b>	
next period	238,6

## LAMPIRAN 4. Peramalan Permintaan Bulan Oktober 2017 Metode *Single*

### *Exponential Smoothing*

forecasting solution						
	Demand(y)	Forecast	Error	Error	Error^2	Pct Error
October	225					
November	239	225	14	14	196	,06
December	261	234,8	26,2	26,2	686,44	,1
January	222	253,14	-31,14	31,14	969,7	,14
February	215	231,34	-16,34	16,34	267,06	,08
March	257	219,9	37,1	37,1	1376,22	,14
April	315	245,87	69,13	69,13	4778,85	,22
May	257	294,26	-37,26	37,26	1388,4	,14
June	339	268,18	70,82	70,82	5015,7	,21
July	250	317,75	-67,75	67,75	4590,54	,27
August	225	270,33	-45,33	45,33	2054,45	,2
September	239	238,6	,4	,4	,16	,0
<b>TOTALS</b>	<b>3044</b>		<b>19,83</b>	<b>415,47</b>	<b>21323,52</b>	<b>1,57</b>
<b>AVERAGE</b>	<b>253,67</b>		<b>1,8</b>	<b>37,77</b>	<b>1938,5</b>	<b>,14</b>
Next period forecast		<b>238,88</b>	(Bias)	(MAD)	(MSE)	(MAPE)
				Std err	48,68	

forecasting summary	
Measure	Value
<b>Error Measures</b>	
Bias (Mean Error)	1,8
MAD (Mean Absolute Deviation)	37,77
MSE (Mean Squared Error)	1938,5
Standard Error (denom=n-2=9)	48,68
MAPE (Mean Absolute Percent Error)	,14
<b>Forecast</b>	
next period	238,88

## LAMPIRAN 5. Penghitungan *Economic Order Quantity* (EOQ)

### Kebutuhan Tahunan Setiap Bahan Baku

No.	Bulan	Jumlah Produksi (unit)	Kain Dri-Fit	Poliflek	Benang Obras	Benang Jahit	Plastik	Label
1	September	280	420	56	6	8	280	280
2	Oktober	225	338	45	5	7	225	225
3	November	239	359	48	5	7	239	239
4	Desember	261	392	52	5	8	261	261
5	Januari	222	333	44	4	7	222	222
6	Februari	215	323	43	4	6	215	215
7	Maret	257	386	51	5	8	257	257
8	April	315	473	63	6	9	315	315
9	Mei	257	386	51	5	8	257	257
10	Juni	339	509	68	7	10	339	339
11	Juli	250	375	50	5	8	250	250
12	Agustus	225	338	45	5	7	225	225
Total			4628	617	62	93	3085	3085
Rata-rata			386	51	5	8	257	257
Biaya Pesan			61500	6500	3000	3000	6000	4000
Biaya Simpan per Unit			187	120	1,2	2,7	7	2,5

1. *Economic Order Quantity* (EOQ) untuk Kain Dri-Fit

$$D = 386$$

$$S = \text{Rp } 61.500$$

$$H = \text{Rp } 187$$

$$\begin{aligned} Q^* &= \sqrt{\frac{2DS}{H}} \\ &= \sqrt{\frac{2(386)(61.500)}{187}} \\ &= 503 \text{ meter} \end{aligned}$$

2. *Economic Order Quantity* (EOQ) untuk Poliflek

$$D = 51$$

$$S = \text{Rp } 6.500$$

$$H = \text{Rp } 120$$

$$\begin{aligned} Q^* &= \sqrt{\frac{2DS}{H}} \\ &= \sqrt{\frac{2(51)(6.500)}{120}} \\ &= 74 \text{ meter} \end{aligned}$$

3. *Economic Order Quantity* (EOQ) untuk Benang Obras

$$D = 5$$

$$S = \text{Rp } 3.000$$

$$H = \text{Rp } 1,2$$

$$\begin{aligned} Q^* &= \sqrt{\frac{2DS}{H}} \\ &= \sqrt{\frac{2(5)(3.000)}{1,2}} \\ &= 158 \text{ gulung} \end{aligned}$$

4. *Economic Order Quantity* (EOQ) untuk Benang Jahit

$$D = 8$$

$$S = \text{Rp } 3.000$$

$$H = \text{Rp } 2,7$$

$$\begin{aligned}
 Q^* &= \sqrt{\frac{2DS}{H}} \\
 &= \sqrt{\frac{2(8)(3.000)}{7}} \\
 &= 133 \text{ gulung}
 \end{aligned}$$

5. *Economic Order Quantity* (EOQ) untuk Plastik

$$D = 257$$

$$S = \text{Rp } 6.000$$

$$H = \text{Rp } 7$$

$$\begin{aligned}
 Q^* &= \sqrt{\frac{2DS}{H}} \\
 &= \sqrt{\frac{2(257)(6.000)}{7}} \\
 &= 664 \text{ buah}
 \end{aligned}$$

6. *Economic Order Quantity* (EOQ) untuk Label

$$D = 257$$

$$S = \text{Rp } 4.000$$

$$H = \text{Rp } 2,5$$

$$\begin{aligned}
 Q^* &= \sqrt{\frac{2DS}{H}} \\
 &= \sqrt{\frac{2(257)(4.000)}{2,5}} \\
 &= 907 \text{ buah}
 \end{aligned}$$

## LAMPIRAN 6. Lotting Kain Dri-Fit dengan Teknik Lot for Lot

Method						
Lot for lot						<b>Note</b> This may not be optimal. Use Wagner/Whitin for opti
Lot						
Period	Demand	Order receipt	Order release	Inventory	Holding Cost \$5610,00	Setup Cost \$61500,00
Initial Inventory				240		
Period 1	0			240	1346400	
Period 2	0		119	240	1346400	
Period 3	359	119		0		61500
Period 4	0			0		
Period 5	0		359	0		
Period 6	359	359		0		61500
Period 7	0			0		
Totals	718	478	478	480	2692800	123000
Average demand	102,57					
Total cost =	2815800					



## LAMPIRAN 7. Lotting Poliflek dengan Teknik *Lot for Lot*

Lot Sizing Results						
Lot Sizing Solution						
Period	Demand	Order receipt	Order release	Inventory	Holding Cost \$3600,00	Setup Cost \$6500,00
Initial Inventory				50		
Period 1	0			50	180000	
Period 2	0			50	180000	
Period 3	48			2	7200	
Period 4	0			2	7200	
Period 5	0		46	2	7200	
Period 6	48	46		0		6500
Period 7	0			0		
Totals	96	46	46	106	381600	6500
Average demand	13,71					
Total cost =	388100					

### LAMPIRAN 8. Lotting Benang Obras dengan Teknik Lot for Lot

Lot Sizing Results						
Lot Sizing Solution						
Period	Demand	Order receipt	Order release	Inventory	Holding Cost \$36,00	Setup Cost \$3000,00
Initial Inventory				5		
Period 1	0			5	180	
Period 2	5			0		
Period 3	0			0		
Period 4	0		5	0		
Period 5	5	5		0		3000
Period 6	0			0		
Period 7	0			0		
Totals	10	5	5	5	180	3000
Average demand	1,43					
Total cost =	3180					

### LAMPIRAN 9. Lotting Benang Jahit dengan Teknik Lot for Lot

Lot Sizing Results						
Lot Sizing Solution						
Period	Demand	Order receipt	Order release	Inventory	Holding Cost \$81,00	Setup Cost \$3000,00
Initial Inventory				7		
Period 1	0		1	7	567	
Period 2	8	1		0		3000
Period 3	0			0		
Period 4	0		8	0		
Period 5	8	8		0		3000
Period 6	0			0		
Period 7	0			0		
Totals	16	9	9	7	567	6000
Average demand	2,29					
Total cost =	6567					

**LAMPIRAN 10. Lotting Plastik dengan Teknik Lot for Lot**

Lot Sizing Results						
Lot Sizing Solution						
Period	Demand	Order receipt	Order release	Inventory	Holding Cost \$210,00	Setup Cost \$6000,00
Initial Inventory				200		
Period 1	0		39	200	42000	
Period 2	239	39		0		6000
Period 3	0			0		
Period 4	0		239	0		
Period 5	239	239		0		6000
Period 6	0			0		
Period 7	0			0		
Totals	478	278	278	200	42000	12000
Average demand	68,29					
Total cost =	54000					

### LAMPIRAN 11. Lotting Label dengan Teknik Lot for Lot

Lot Sizing Results						
Lot Sizing Solution						
Period	Demand	Order receipt	Order release	Inventory	Holding Cost \$75,00	Setup Cost \$4000,00
Initial Inventory				600		
Period 1	0			600	45000	
Period 2	239			361	27075	
Period 3	0			361	27075	
Period 4	0			361	27075	
Period 5	239			122	9150	
Period 6	0			122	9150	
Period 7	0			122	9150	
Totals	478	0	0	2049	153675	0
Average demand	68,29					
Total cost =	153675					

## LAMPIRAN 12. Lotting Kain Dri-Fit dengan Teknik Part Period Balancing

Method						
Part Period Balancing						Note This may not be optimal. Use Wagner/Whitin for opti
Lot						
Period	Demand	Order receipt	Order release	Inventory	Holding Cost \$5610,00	Setup Cost \$61500,00
Initial Inventory				240		
Period 1	0			240	1346400	
Period 2	0		119	240	1346400	
Period 3	359	119		0		61500
Period 4	0			0		
Period 5	0		359	0		
Period 6	359	359		0		61500
Period 7	0			0		
Totals	718	478	478	480	2692800	123000
Average demand	102,57					
Total cost =	2815800					

### LAMPIRAN 13. Lotting Poliflek dengan Teknik *Part Period Balancing*

Method						
Part Period Balancing						
Lot Sizing Results						
Lot Sizing Solution						
Period	Demand	Order receipt	Order release	Inventory	Holding Cost \$3600,00	Setup Cost \$6500,00
Initial Inventory				50		
Period 1	0			50	180000	
Period 2	0			50	180000	
Period 3	48			2	7200	
Period 4	0			2	7200	
Period 5	0		46	2	7200	
Period 6	48	46		0		6500
Period 7	0			0		
Totals	96	46	46	106	381600	6500
Average demand	13,71					
Total cost =	388100					

**LAMPIRAN 14. Lotting Benang Obras dengan Teknik *Part Period Balancing***

Method						
Part Period Balancing						
Lot Sizing Results						
Lot Sizing Solution						
Period	Demand	Order receipt	Order release	Inventory	Holding Cost \$36,00	Setup Cost \$3000,00
Initial inventory				5		
Period 1	0			5	180	
Period 2	5			0		
Period 3	0			0		
Period 4	0		5	0		
Period 5	5	5		0		3000
Period 6	0			0		
Period 7	0			0		
Totals	10	5	5	5	180	3000
Average demand	1,43					
Total cost =	3180					



**LAMPIRAN 15. Lotting Benang Jahit dengan Teknik *Part Period Balancing***

Method						
Part Period Balancing						
Lot Sizing Results						
Lot Sizing Solution						
Period	Demand	Order receipt	Order release	Inventory	Holding Cost \$81,00	Setup Cost \$3000,00
Initial Inventory				7		
Period 1	0		9	7	567	
Period 2	8	9		8	648	3000
Period 3	0			8	648	
Period 4	0			8	648	
Period 5	8			0		
Period 6	0			0		
Period 7	0			0		
Totals	16	9	9	31	2511	3000
Average demand	2,29					
Total cost =	5511					

**LAMPIRAN 16. Lotting Plastik dengan Teknik Part Period Balancing**

Method						
Part Period Balancing						
Lot Sizing Results						
Lot Sizing Solution						
Period	Demand	Order receipt	Order release	Inventory	Holding Cost \$210,00	Setup Cost \$6000,00
Initial inventory				200		
Period 1	0		39	200	42000	
Period 2	239	39		0		6000
Period 3	0			0		
Period 4	0		239	0		
Period 5	239	239		0		6000
Period 6	0			0		
Period 7	0			0		
Totals	478	278	278	200	42000	12000
Average demand	68,29					
Total cost =	54000					

## LAMPIRAN 17. Lotting Label dengan Teknik Part Period Balancing

Method						
Part Period Balancing						
Lot Sizing Results						
Lot Sizing Solution						
Period	Demand	Order receipt	Order release	Inventory	Holding Cost \$75,00	Setup Cost \$4000,00
Initial Inventory				600		
Period 1	0			600	45000	
Period 2	239			361	27075	
Period 3	0			361	27075	
Period 4	0			361	27075	
Period 5	239			122	9150	
Period 6	0			122	9150	
Period 7	0			122	9150	
Totals	478	0	0	2049	153675	0
Average demand	68,29					
Total cost =	153675					

## LAMPIRAN 18. Lotting Kain Dri-Fit dengan Teknik *Economic Order*

### *Quantity*

Method		Note				
Economic Order Quantity		This may not be optimal. Use Wagner/Whitin for opti				
						Lot
Period	Demand	Order receipt	Order release	Inventory	Holding Cost \$5610,00	Setup Cost \$61500,00
Initial inventory				240		
Period 1	0			240	1346400	
Period 2	0		141	240	1346400	
Period 3	359	141		22	123420	61500
Period 4	0			22	123420	
Period 5	0		376	22	123420	
Period 6	359	376		39	218790	61500
Period 7	0			39	218790	
Totals	718	517	517	624	3500640	123000
Average demand	102,57		EOQ =	47		
Total cost =	3623640					

### LAMPIRAN 19. Lotting Poliflek dengan Teknik *Economic Order Quantity*

Method						
Economic Order Quantity						
Lot Sizing Results						
Lot Sizing Solution						
Period	Demand	Order receipt	Order release	Inventory	Holding Cost \$3600,00	Setup Cost \$6500,00
Initial Inventory				50		
Period 1	0			50	180000	
Period 2	0			50	180000	
Period 3	48			2	7200	
Period 4	0			2	7200	
Period 5	0		49	2	7200	
Period 6	48	49		3	10800	6500
Period 7	0			3	10800	
Totals	96	49	49	112	403200	6500
Average demand	13,71		EOQ =	7		
Total cost =	409700					

## LAMPIRAN 20. *Lotting* Benang Obras dengan Teknik *Economic Order*

### *Quantity*

Lot Sizing Results						
Lot Sizing Solution						
Period	Demand	Order receipt	Order release	Inventory	Holding Cost \$36,00	Setup Cost \$3000,00
Initial Inventory				5		
Period 1	0			5	180	
Period 2	5			0		
Period 3	0			0		
Period 4	0		15	0		
Period 5	5	15		10	360	3000
Period 6	0			10	360	
Period 7	0			10	360	
Totals	10	15	15	35	1260	3000
Average demand	1,43		EOQ =	15		
Total cost =	4260					

## LAMPIRAN 21. *Lotting* Benang Jahit dengan Teknik *Economic Order*

### *Quantity*

Lot Sizing Results						
Lot Sizing Solution						
Period	Demand	Order receipt	Order release	Inventory	Holding Cost \$81,00	Setup Cost \$3000,00
Initial Inventory				7		
Period 1	0		13	7	567	
Period 2	8	13		12	972	3000
Period 3	0			12	972	
Period 4	0			12	972	
Period 5	8			4	324	
Period 6	0			4	324	
Period 7	0			4	324	
Totals	16	13	13	55	4455	3000
Average demand	2,29		EOQ =	13		
Total cost =	7455					

## LAMPIRAN 22. Lotting Plastik dengan Teknik *Economic Order Quantity*

Method						
Economic Order Quantity						
Lot Sizing Results						
Lot Sizing Solution						
Period	Demand	Order receipt	Order release	Inventory	Holding Cost \$210,00	Setup Cost \$6000,00
Initial Inventory				200		
Period 1	0		62	200	42000	
Period 2	239	62		23	4830	6000
Period 3	0			23	4830	
Period 4	0		248	23	4830	
Period 5	239	248		32	6720	6000
Period 6	0			32	6720	
Period 7	0			32	6720	
Totals	478	310	310	365	76650	12000
Average demand	68,29		EOQ =	62		
Total cost =	88650					



**LAMPIRAN 23. Lotting Label dengan Teknik *Economic Order Quantity***

Method						
Economic Order Quantity						
<b>Lot Sizing Results</b>						
Lot Sizing Solution						
Period	Demand	Order receipt	Order release	Inventory	Holding Cost \$75,00	Setup Cost \$4000,00
Initial Inventory				600		
Period 1	0			600	45000	
Period 2	239			361	27075	
Period 3	0			361	27075	
Period 4	0			361	27075	
Period 5	239			122	9150	
Period 6	0			122	9150	
Period 7	0			122	9150	
Totals	478	0	0	2049	153675	0
Average demand	68,29		EOQ =	85		
Total cost =	153675					