



**ANEXO A
INFORMACIÓN DE LA DEMANDA PF**

1. ANALISIS DATOS DE DEMANDA

DEMANDA HISTÓRICA PREFORMA EN UNIDADES DICIEMBRE 2008 A ABRIL 2012

DATA EN UNIDADES														
PREFORMA	Demanda	Dic-08	Ene-09	Feb-09	Mar-09	Abr-09	May-09	Jun-09	Jul-09	Ago-09	Sep-09	Oct-09	Nov-09	Dic-09
PREFORMA 18 GR	Venta Real	350.000	60.544	32.000	58.000	14.000	0	0	84.000	2.730.000	3.402.000	3.542.000	3.654.000	602.000
PREFORMA 22 GR	Venta Real	0	0	0	0	0	0	0	0	0	0	0	0	0
PREFORMA 23 GR	Venta Real	822.822	1.808.466	636.944	625.570	272.976	636.944	1.063.469	1.097.591	0	1.046.408	2.246.365	90.922	727.936
PREFORMA 25 GR	Venta Real	7.390.822	5.519.184	6.896.264	7.272.701	7.060.189	7.027.292	6.762.264	4.614.431	6.213.272	5.558.381	8.822.202	6.500.052	7.597.757
PREFORMA 27 GR	Venta Real	0	0	0	0	0	0	0	0	0	0	0	0	0
PREFORMA 28 GR	Venta Real	62.500	187.500	237.500	237.500	475.000	387.500	51.500	50.000	12.500	75.000	100.000	87.500	162.500
PREFORMA 30 GR	Venta Real	3.528.000	2.667.000	0	2.016.000	0	0	0	3.024.000	3.528.000	0	0	3.024.000	2.016.000
PREFORMA 30 GR Kerr	Venta Real	3.481.920	4.043.520	5.896.800	4.717.440	5.784.480	5.391.360	3.201.120	5.054.400	5.117.040	5.171.040	4.250.480	4.687.578	6.516.180
PREFORMA 30.5 GR	Venta Real	3.024.000	2.516.850	3.315.528	4.053.600	2.970.450	1.892.160	3.537.360	2.897.550	3.058.560	1.918.080	3.366.360	2.448.320	2.877.480
PREFORMA 44 GR	Venta Real	1.859.752	1.429.819	1.072.525	1.011.531	1.122.480	4.813.311	5.705.132	4.923.673	7.405.968	4.808.556	892.081	253.006	123.875
PREFORMA 47.5 GR	Venta Real	1.922.900	2.815.900	2.096.700	3.509.900	2.941.300	782.300	0	0	0	0	135.477	787.249	817.525
PREFORMA 52 GR	Venta Real	1.460.476	666.463	968.474	84.168	1.280.875	1.122.058	531.775	791.966	1.137.739	831.391	503.687	1.125.908	831.479
PREFORMA 54 GR	Venta Real	1.408.015	1.608.676	1.885.957	1.768.109	1.288.705	1.743.267	1.493.489	1.375.392	1.456.904	1.500.551	1.333.128	1.425.061	1.157.103
PREFORMA 60 GR	Venta Real	353.500	1.323.000	1.433.300	1.612.000	1.643.200	1.018.000	1.140.800	1.022.800	902.400	3.225.600	62.400	2.721.600	1.856.800
TOTALES	Total Venta	25.662.707	24.646.922	24.461.992	26.966.519	24.853.655	24.814.192	23.486.909	24.935.803	31.562.383	27.537.007	25.254.180	26.805.196	25.286.635

DATA EN UNIDADES														
PREFORMA	Demanda	Ene-10	Feb-10	Mar-10	Abr-10	May-10	Jun-10	Jul-10	Ago-10	Sep-10	Oct-10	Nov-10	Dic-10	Ene-11
PREFORMA 18 GR	Venta Real	294.000	840.000	4.270.000	1.126.000	1.184.000	1.168.000	1.182.000	1.156.000	1.170.000	1.320.000	1.224.000	1.114.000	1.196.000
PREFORMA 22 GR	Venta Real	0	0	0	0	0	0	0	0	0	0	0	0	3.407.616
PREFORMA 23 GR	Venta Real	1.091.904	1.000.912	1.091.904	0	0	556.820	511.830	791.936	914.928	636.944	90.992	909.920	1.000.912
PREFORMA 25 GR	Venta Real	7.531.918	6.031.929	11.201.639	9.456.747	9.611.053	11.814.488	11.418.677	12.515.535	11.002.313	14.593.348	11.976.061	8.741.008	11.008.798
PREFORMA 27 GR	Venta Real	0	0	0	0	0	0	0	3.136.320	847.968	0	888.624	2.979.504	4.204.992
PREFORMA 28 GR	Venta Real	87.500	87.500	12.500	37.500	162.500	321.500	212.500	87.500	325.000	112.500	262.500	50.000	87.500
PREFORMA 30 GR	Venta Real	0	1.008.000	2.016.000	2.016.000	2.016.000	2.520.000	3.024.000	886.578	421.344	1.685.376	842.688	0	803.187
PREFORMA 30 GR Kerr	Venta Real	7.750.080	5.930.280	5.321.160	5.447.520	6.518.880	2.575.440	3.830.400	4.760.640	7.599.240	7.517.160	7.626.600	4.480.200	4.910.039
PREFORMA 30.5 GR	Venta Real	3.142.800	2.851.200	3.214.080	4.406.400	3.006.720	1.286.280	4.769.280	1.503.360	2.093.040	1.571.400	1.801.440	881.280	651.240
PREFORMA 44 GR	Venta Real	2.120.486	3.198.812	6.809.352	3.731.879	121.651	5.125.578	8.141.709	4.753.168	4.900.802	270.198	1.391.470	5.408.239	6.428.705
PREFORMA 47.5 GR	Venta Real	1.075.262	1.167.421	852.504	1.211.109	882.300	709.726	788.082	1.103.879	1.117.252	452.829	499.150	941.359	1.582.981
PREFORMA 52 GR	Venta Real	1.095.994	837.008	227.021	1.509.187	82.484	331.034	716.356	638.059	856.621	795.971	213.466	241.574	1.341.728
PREFORMA 54 GR	Venta Real	1.615.520	1.502.511	2.462.763	1.642.514	1.169.091	1.723.470	1.209.517	1.528.913	1.743.328	2.953.093	2.365.387	1.558.629	2.724.008
PREFORMA 60 GR	Venta Real	1.216.800	1.603.600	1.990.000	2.128.800	961.200	1.944.400	728.000	1.923.600	2.256.400	902.000	333.600	1.344.800	3.143.600
TOTALES	Total Venta	27.022.264	26.059.173	39.468.923	32.713.656	25.715.879	30.076.736	36.532.351	34.785.488	35.248.236	32.810.819	29.515.978	28.650.513	42.491.306

DATA EN UNIDADES														
PREFORMA	Demanda	Feb-11	Mar-11	Abr-11	May-11	Jun-11	Jul-11	Ago-11	Sep-11	Oct-11	Nov-11	Dic-11	Ene-12	Feb-12
PREFORMA 18 GR	Venta Real	1.670.000	1.576.000	1.362.000	1.098.000	1.262.500	1.289.500	1.027.892	1.677.984	944.781	1.082.124	1.072.800	1.201.452	1.304.564
PREFORMA 22 GR	Venta Real	5.787.736	5.763.307	6.166.325	6.330.399	7.186.824	8.485.169	9.657.733	12.761.833	10.357.513	11.565.419	10.365.303	8.443.084	9.956.547
PREFORMA 23 GR	Venta Real	454.960	454.960	727.936	1.636.944	1.119.074	1.295.624	1.113.387	1.705.847	2.985.227	3.454.354	2.189.242	2.267.432	2.306.423
PREFORMA 25 GR	Venta Real	12.430.792	11.469.461	4.288.988	5.542.472	5.136.129	6.020.422	4.955.038	5.720.956	7.613.105	6.390.152	6.319.211	6.004.881	5.848.461
PREFORMA 27 GR	Venta Real	2.973.696	5.761.536	371.712	3.252.480	3.836.352	4.996.312	1.605.920	1.698.848	2.698.432	1.302.752	1.955.008	1.912.576	1.141.280
PREFORMA 28 GR	Venta Real	1.835.000	1.636.500	1.851.500	1.225.000	1.525.000	1.485.000	1.336.000	1.760.000	1.388.000	1.032.000	1.364.000	1.165.000	1.289.777
PREFORMA 30 GR	Venta Real	912.912	2.561.792	2.702.240	1.334.256	2.983.968	2.510.964	2.519.168	2.208.864	2.755.152	2.279.088	2.217.072	2.349.312	2.310.096
PREFORMA 30 GR Kerr	Venta Real	6.580.080	5.013.720	4.596.480	4.856.400	5.472.000	6.949.440	7.770.240	5.745.600	5.745.600	8.262.720	5.796.900	6.511.680	5.472.000
PREFORMA 30.5 GR	Venta Real	165.800	4.777.600	2.524.880	2.864.720	5.481.280	3.567.360	6.028.992	4.172.256	4.798.278	4.674.096	4.448.464	4.860.768	3.062.880
PREFORMA 44 GR	Venta Real	3.964.587	3.770.648	2.548.634	286.316	4.950.000	4.580.000	2.625.770	5.145.331	4.457.800	4.651.888	4.289.344	4.123.890	3.896.000
PREFORMA 47.5 GR	Venta Real	946.099	1.105.617	958.495	779.687	719.172	716.702	756.723	728.923	825.600	967.455	825.000	890.000	725.678
PREFORMA 52 GR	Venta Real	1.295.853	1.275.461	1.477.843	1.483.184	1.346.770	2.093.724	1.076.554	2.409.043	3.438.759	2.474.731	2.168.717	2.636.725	2.165.442
PREFORMA 54 GR	Venta Real	1.868.284	1.770.445	2.000.936	1.782.311	1.868.284	2.200.936	2.248.000	2.186.204	2.258.432	2.145.700	2.223.556	2.008.741	2.124.568
PREFORMA 60 GR	Venta Real	776.000	238.400	1.456.000	1.239.200	1.844.214	839.412	2.347.052	1.391.732	1.143.930	1.161.658	1.057.443	981.008	935.839
TOTALES	Total Venta	41.661.799	47.175.447	33.033.969	33.711.369	44.731.567	47.030.565	45.068.469	49.313.421	51.410.609	51.444.137	46.292.060	45.356.549	42.539.555

DATA EN UNIDADES			
PREFORMA	Demanda	Mar-12	Abr-12
PREFORMA 18 GR	Venta Real	5.535.904	4.293.717
PREFORMA 22 GR	Venta Real	13.952.876	11.526.006
PREFORMA 23 GR	Venta Real	2.309.898	3.087.810
PREFORMA 25 GR	Venta Real	6.814.000	5.202.624
PREFORMA 27 GR	Venta Real	1.878.876	1.960.368
PREFORMA 28 GR	Venta Real	963.500	867.000
PREFORMA 30 GR	Venta Real	1.883.907	2.802.192
PREFORMA 30 GR Kerr	Venta Real	6.549.300	6.019.200
PREFORMA 30.5 GR	Venta Real	4.632.528	4.298.746
PREFORMA 44 GR	Venta Real	4.697.725	3.581.098
PREFORMA 47.5 GR	Venta Real	912.000	780.145
PREFORMA 52 GR	Venta Real	2.667.253	1.965.291
PREFORMA 54 GR	Venta Real	1.892.000	2.186.700
PREFORMA 60 GR	Venta Real	2.546.241	1.345.926
TOTALES	Total Venta	57.236.008	49.916.823

DEMANDA HISTÓRICA RESINA EN KILOS DICIEMBRE 2008 A ABRIL 2012

DATA EN KILOS														
CONSUMO DE RESINA	Demanda	Dic-08	Ene-09	Feb-09	Mar-09	Abr-09	May-09	Jun-09	Jul-09	Ago-09	Sep-09	Oct-09	Nov-09	Dic-09
Resina PET	Demanda Real	860.521	861.566	856.775	937.340	884.357	883.142	826.656	867.708	1.075.301	969.370	716.577	886.159	827.212

DATA EN KILOS														
CONSUMO DE RESINA	Demanda	Ene-10	Feb-10	Mar-10	Abr-10	May-10	Jun-10	Jul-10	Ago-10	Sep-10	Oct-10	Nov-10	Dic-10	Ene-11
Resina PET	Demanda Real	911.126	903.575	1.304.809	1.132.669	786.244	1.016.472	1.217.474	1.147.041	1.196.384	1.018.773	907.673	962.730	1.465.518

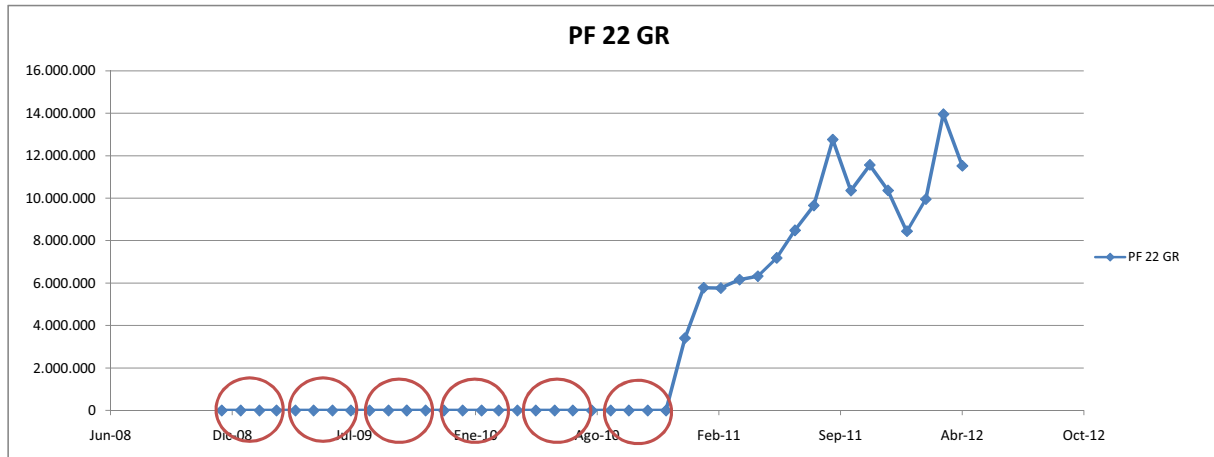
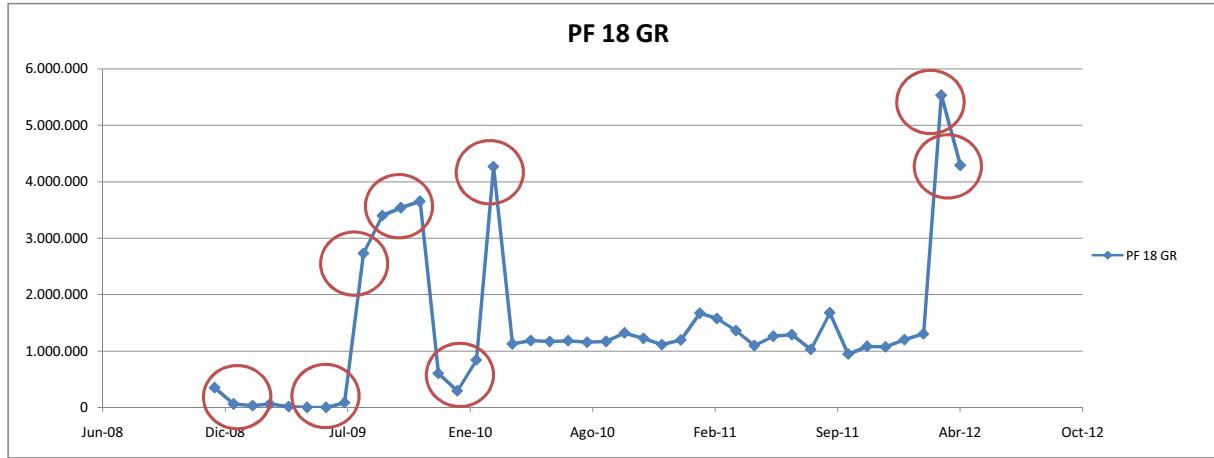
DATA EN KILOS														
CONSUMO DE RESINA	Demanda	Feb-11	Mar-11	Abr-11	May-11	Jun-11	Jul-11	Ago-11	Sep-11	Oct-11	Nov-11	Dic-11	Ene-12	Feb-12
Resina PET	Demanda Real	1.274.354	1.421.384	1.071.918	1.027.810	1.435.650	1.472.944	1.423.465	1.542.107	1.621.717	1.600.896	1.446.965	1.436.158	1.324.968

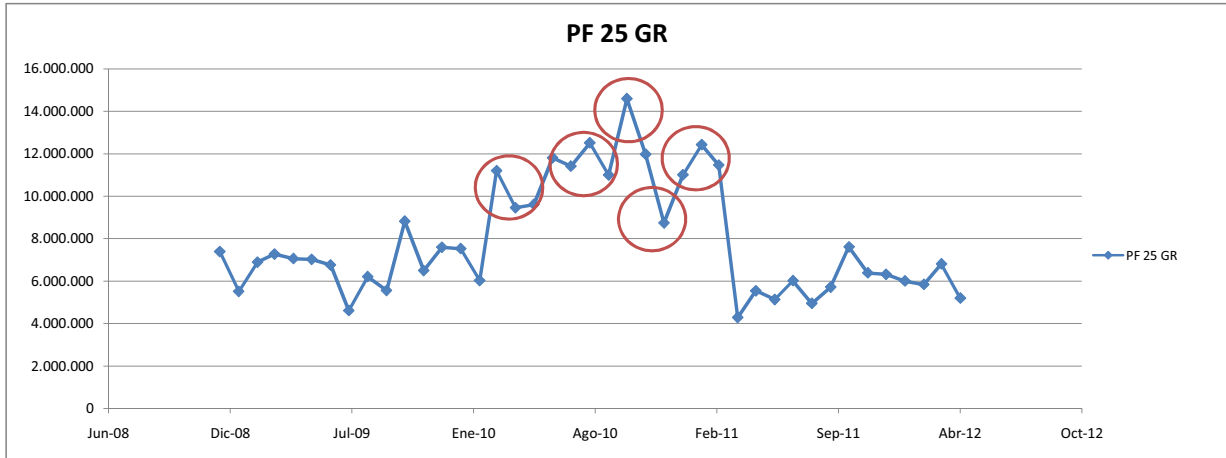
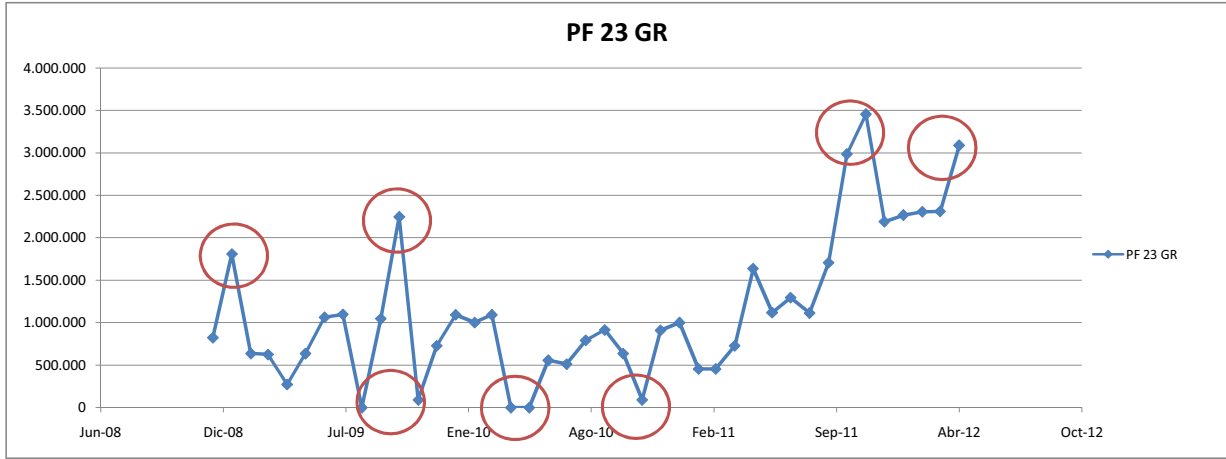
DATA EN KILOS			
CONSUMO DE RESINA	Demanda	Mar-12	Abr-12
Resina PET	Demanda Real	1.745.743	1.500.561

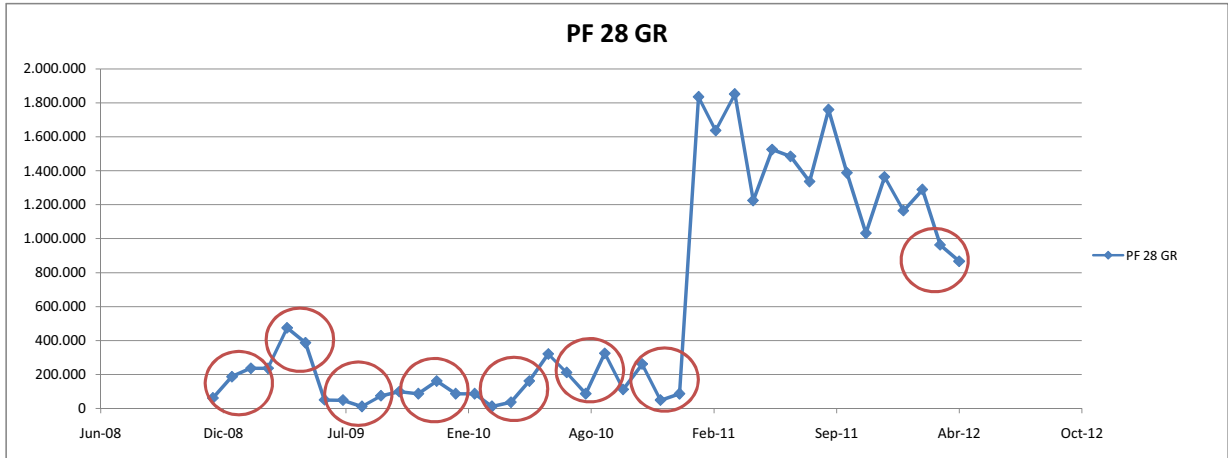
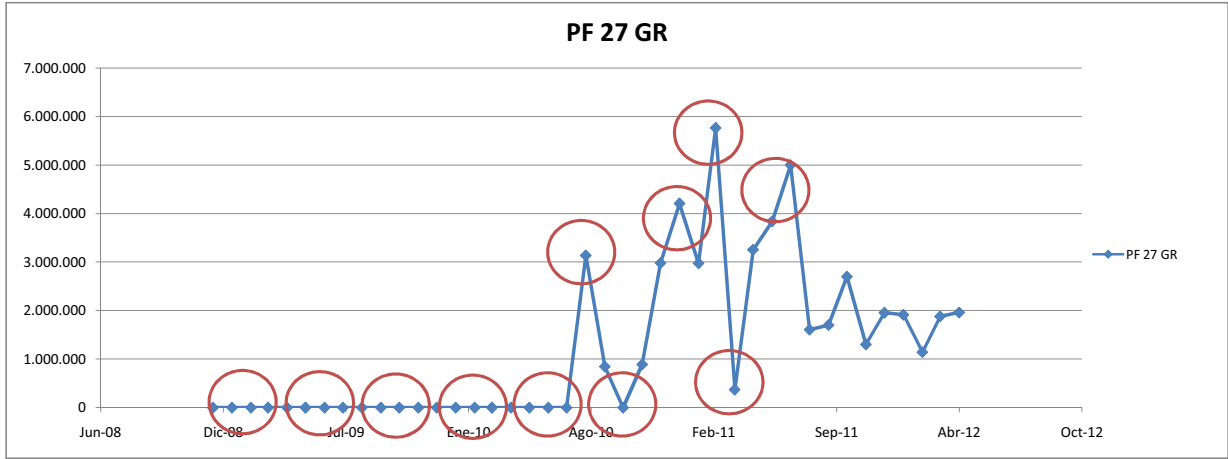
ANÁLISIS DE DATOS HISTÓRICOS (EN UNIDADES)

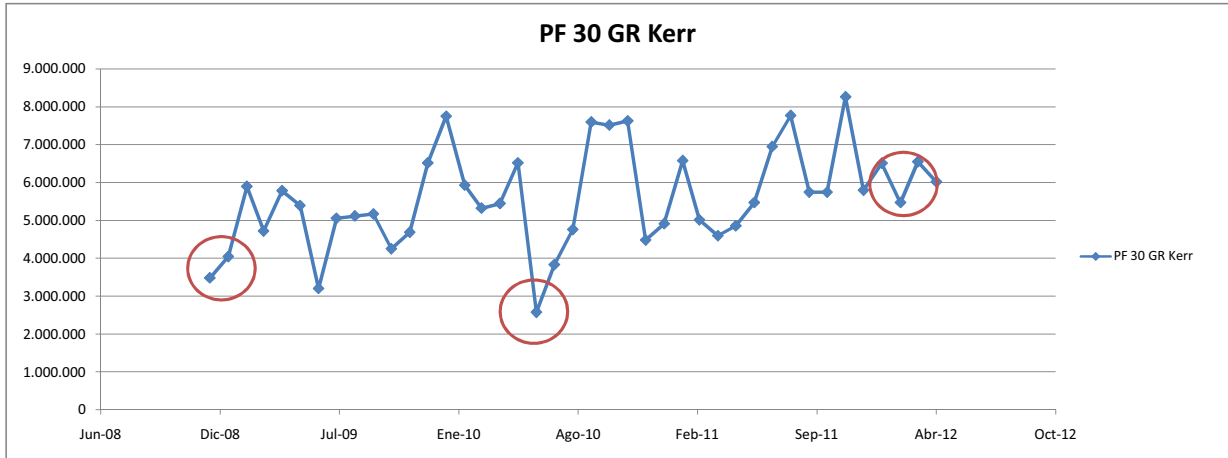
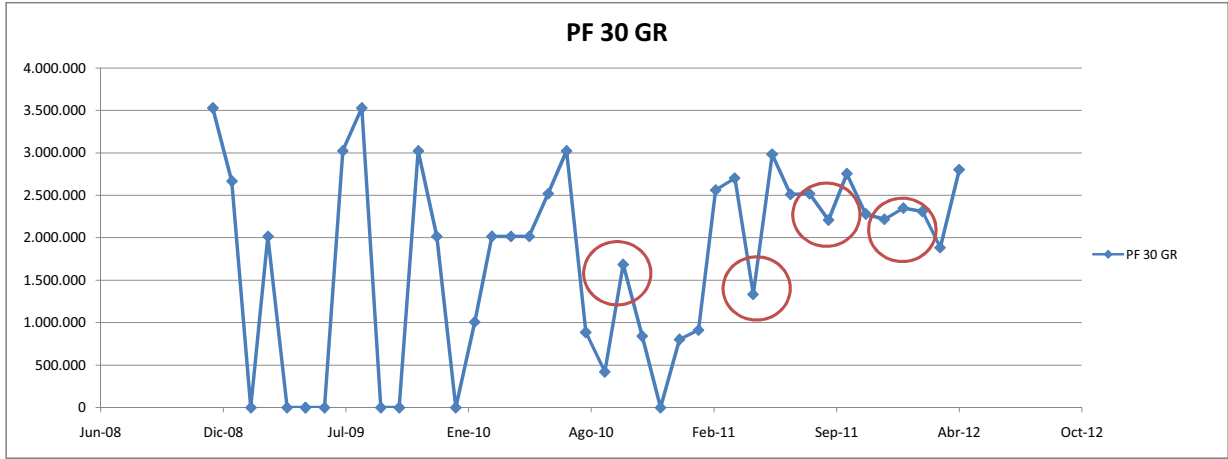
MES	PF 18 GR	PF 22 GR	PF 23 GR	PF 25 GR	PF 27 GR	PF 28 GR	PF 30 GR	PF 30 GR Kerr	PF 30.5 GR	PF 44 GR	PF 47.5 GR	PF 52 GR	PF 54 GR	PF 60 GR
	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real
Dic-08	350.000	0	822.822	7.390.822	0	62.500	3.528.000	3.481.920	3.024.000	1.859.752	1.922.900	1.460.476	1.406.015	353.500
Ene-09	60.544	0	1.808.466	5.519.184	0	187.500	2.667.000	4.043.520	2.516.850	1.429.819	2.815.900	666.463	1.608.676	1.323.000
Feb-09	32.000	0	636.944	6.896.264	0	237.500	0	5.896.800	3.315.528	1.072.525	2.096.700	958.474	1.885.957	1.433.300
Mar-09	58.000	0	625.570	7.272.701	0	237.500	2.016.000	4.717.440	4.053.600	1.011.531	3.509.900	84.168	1.768.109	1.612.000
Abr-09	14.000	0	272.976	7.060.189	0	475.000	0	5.784.480	2.970.450	1.122.480	2.941.300	1.280.875	1.288.705	1.643.200
May-09	0	0	636.944	7.027.292	0	387.500	0	5.391.360	1.892.160	4.813.311	782.300	1.122.058	1.743.267	1.018.000
Jun-09	0	0	1.063.469	6.762.264	0	51.500	0	3.201.120	3.537.360	5.705.132	0	531.775	1.493.489	1.140.800
Jul-09	84.000	0	1.097.591	4.614.431	0	50.000	3.024.000	5.054.400	2.897.550	4.923.673	0	791.966	1.375.392	1.022.800
Ago-09	2.730.000	0	0	6.213.272	0	12.500	3.528.000	5.117.040	3.058.560	7.405.968	0	1.137.739	1.456.904	902.400
Sep-09	3.402.000	0	1.046.408	5.558.381	0	75.000	0	5.171.040	1.918.080	4.808.556	0	831.391	1.500.551	3.225.600
Oct-09	3.542.000	0	2.246.365	8.822.202	0	100.000	0	4.250.480	3.366.360	892.081	135.477	503.687	1.333.128	62.400
Nov-09	3.654.000	0	90.922	6.500.052	0	87.500	3.024.000	4.687.578	2.448.320	253.006	787.249	1.125.908	1.425.061	2.721.600
Dic-09	602.000	0	727.936	7.597.757	0	162.500	2.016.000	6.516.180	2.877.480	123.875	817.525	831.479	1.157.103	1.856.800
Ene-10	294.000	0	1.091.904	7.531.918	0	87.500	0	7.750.080	3.142.800	2.120.486	1.075.262	1.095.994	1.615.520	1.216.800
Feb-10	840.000	0	1.000.912	6.031.929	0	87.500	1.008.000	5.930.280	2.851.200	3.198.812	1.167.421	837.008	1.502.511	1.603.600
Mar-10	4.270.000	0	1.091.904	11.201.639	0	12.500	2.016.000	5.321.160	3.214.080	6.809.352	852.504	227.021	2.462.763	1.990.000
Abr-10	1.126.000	0	0	9.456.747	0	37.500	2.016.000	5.447.520	4.406.400	3.731.879	1.211.109	1.509.187	1.642.514	2.128.800
May-10	1.184.000	0	0	9.611.053	0	162.500	2.016.000	6.518.880	3.006.720	121.651	882.300	82.484	1.169.091	961.200
Jun-10	1.168.000	0	556.820	11.814.488	0	321.500	2.520.000	2.575.440	1.286.280	5.125.578	709.726	331.034	1.723.470	1.944.400
Jul-10	1.182.000	0	511.830	11.418.677	0	212.500	3.024.000	3.830.400	4.769.280	8.141.709	788.082	716.356	1.209.517	728.000
Ago-10	1.156.000	0	791.936	12.515.535	3.136.320	87.500	886.578	4.760.640	1.503.360	4.753.168	1.103.879	638.059	1.528.913	1.923.600
Sep-10	1.170.000	0	914.928	11.002.313	847.968	325.000	421.344	7.599.240	2.093.040	4.900.802	1.117.252	856.621	1.743.328	2.256.400
Oct-10	1.320.000	0	636.944	14.593.348	0	112.500	1.685.376	7.517.160	1.571.400	270.198	452.829	795.971	2.953.093	902.000
Nov-10	1.224.000	0	90.992	11.976.061	888.624	262.500	842.688	7.626.600	1.801.440	1.391.470	499.150	213.466	2.365.387	333.600
Dic-10	1.114.000	0	909.920	8.741.008	2.979.504	50.000	0	4.480.200	881.280	5.408.239	941.359	241.574	1.558.629	1.344.800
Ene-11	1.196.000	3.407.616	1.000.912	11.008.798	4.204.992	87.500	803.187	4.910.039	651.240	6.428.705	1.582.981	1.341.728	2.724.008	3.143.600
Feb-11	1.670.000	5.787.736	454.960	12.430.792	2.973.696	1.835.000	912.912	6.580.080	165.800	3.964.587	946.099	1.295.853	1.868.284	776.000
Mar-11	1.576.000	5.763.307	454.960	11.469.461	5.761.536	1.636.500	2.561.792	5.013.720	4.777.600	3.770.648	1.105.617	1.275.461	1.770.445	238.400
Abr-11	1.362.000	6.166.325	727.936	4.288.988	371.712	1.851.500	2.702.240	4.596.480	2.524.880	2.548.634	958.495	1.477.843	2.000.936	1.456.000
May-11	1.098.000	6.330.399	1.636.944	5.542.472	3.252.480	1.225.000	1.334.256	4.856.400	2.864.720	286.316	779.687	1.483.184	1.782.311	1.239.200
Jun-11	1.262.500	7.186.824	1.119.074	5.136.129	3.836.352	1.525.000	2.983.968	5.472.000	5.481.280	4.950.000	719.172	1.346.770	1.868.284	1.844.214
Jul-11	1.289.500	8.486.169	1.295.624	6.020.422	4.996.312	1.485.000	2.510.964	6.949.440	3.567.360	4.580.000	716.702	2.093.724	2.200.936	839.412
Ago-11	1.027.892	9.657.733	1.113.387	4.955.038	1.605.920	1.336.000	2.519.168	7.770.240	6.028.992	2.625.770	756.723	1.076.554	2.248.000	2.347.052
Sep-11	1.677.984	12.761.833	1.705.847	5.720.956	1.698.848	1.760.000	2.208.864	5.745.600	4.172.256	5.145.331	728.923	2.409.043	2.186.204	1.391.732
Oct-11	944.781	10.357.513	2.985.227	7.613.105	2.698.432	1.388.000	2.755.152	5.745.600	4.798.278	4.457.800	825.600	3.438.759	2.258.432	1.143.930
Nov-11	1.082.124	11.565.419	3.454.354	6.390.152	1.302.752	1.032.000	2.279.088	8.262.720	4.674.096	4.651.888	967.455	2.474.731	2.145.700	1.161.658
Dic-11	1.072.800	10.365.303	2.189.242	6.319.211	1.955.008	1.364.000	2.217.072	5.796.900	4.448.464	4.289.344	825.000	2.168.717	2.223.556	1.057.443
Ene-12	1.201.452	8.443.084	2.267.432	6.004.881	1.912.576	1.165.000	2.349.312	6.511.680	4.880.768	4.123.890	890.000	2.636.725	2.008.741	981.008
Feb-12	1.304.564	9.956.547	2.306.423	5.848.461	1.141.280	1.289.777	2.310.096	5.472.000	3.062.880	3.896.000	725.678	2.165.442	2.124.568	935.839
Mar-12	5.535.904	13.952.876	2.309.898	6.814.000	1.878.876	963.500	1.883.907	6.549.300	4.632.528	4.697.725	912.000	2.667.253	1.892.000	2.546.241
Abr-12	4.293.717	11.526.006	3.087.810	5.202.624	1.960.368	867.000	2.802.192	6.019.200	4.298.746	3.581.098	780.145	1.965.291	2.186.700	1.345.926

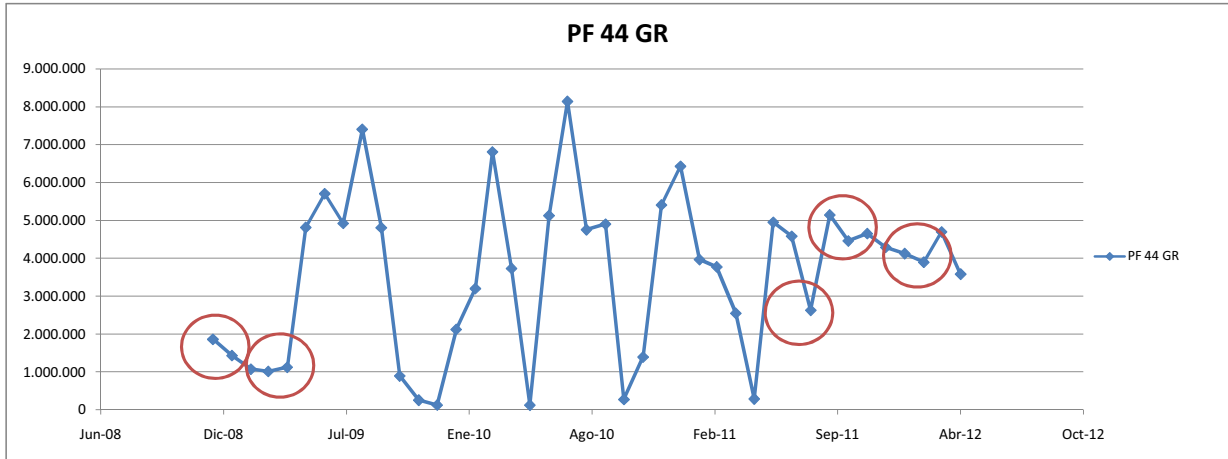
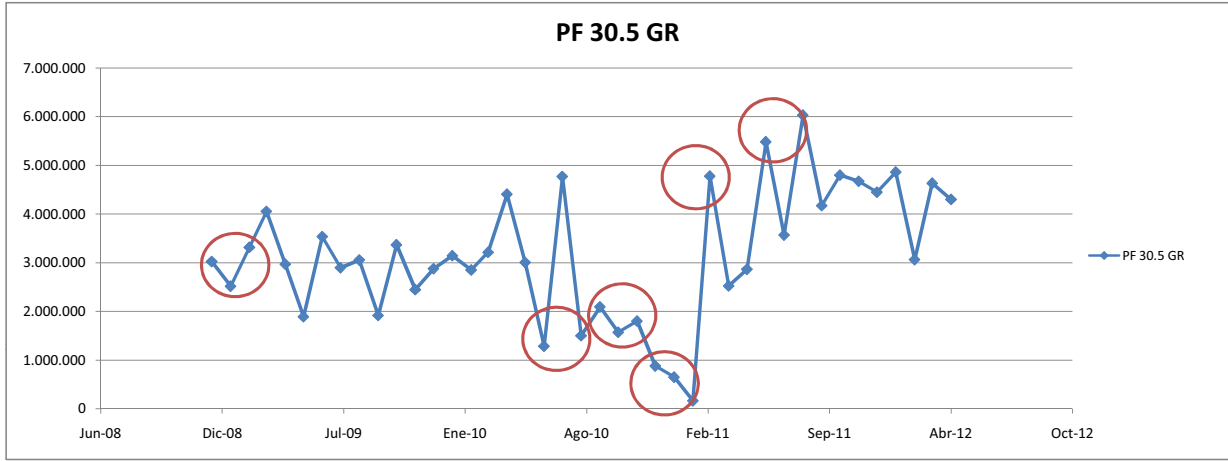
GRAFICAS DE COMPORTAMIENTO (VER COMENTARIOS - ANÁLISIS DE DATOS)

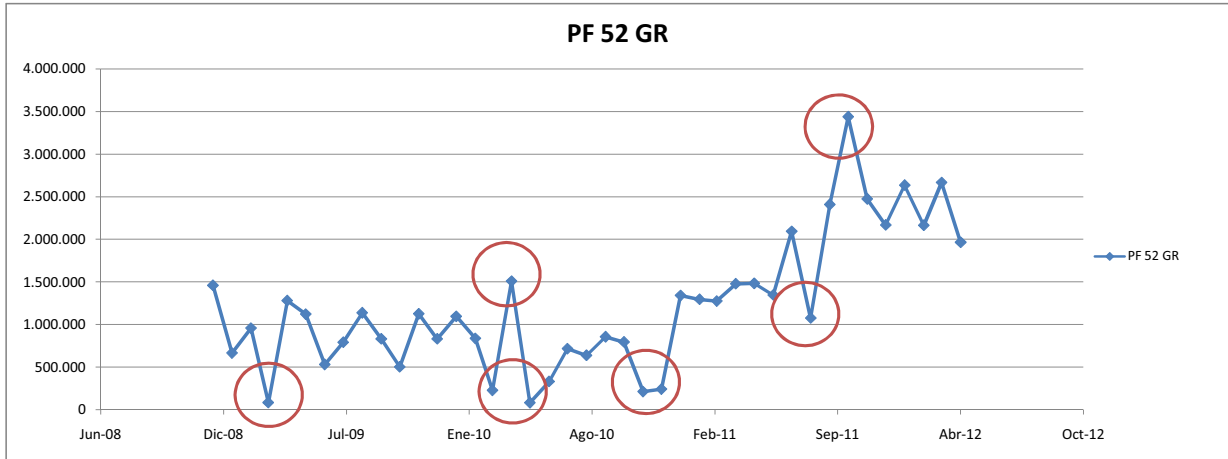
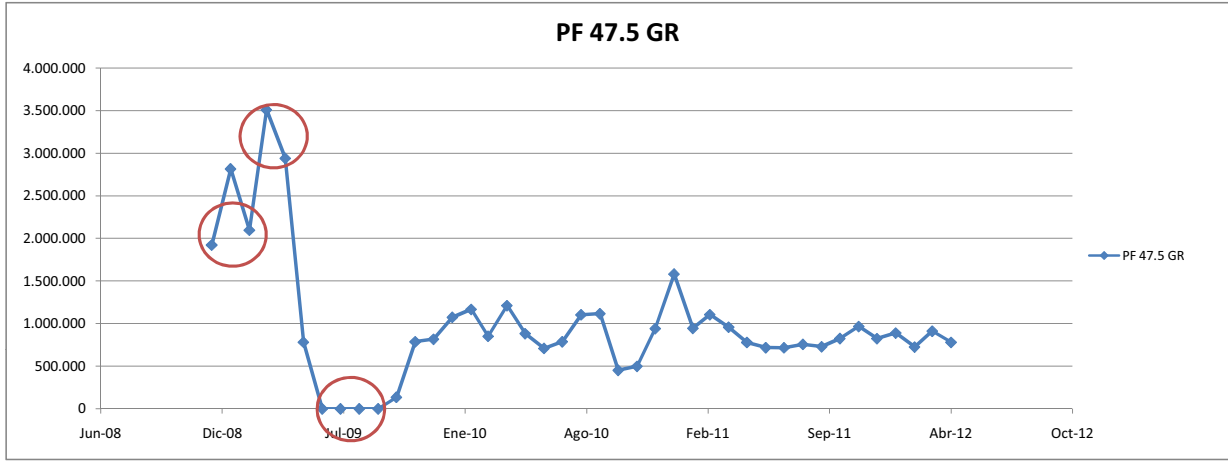


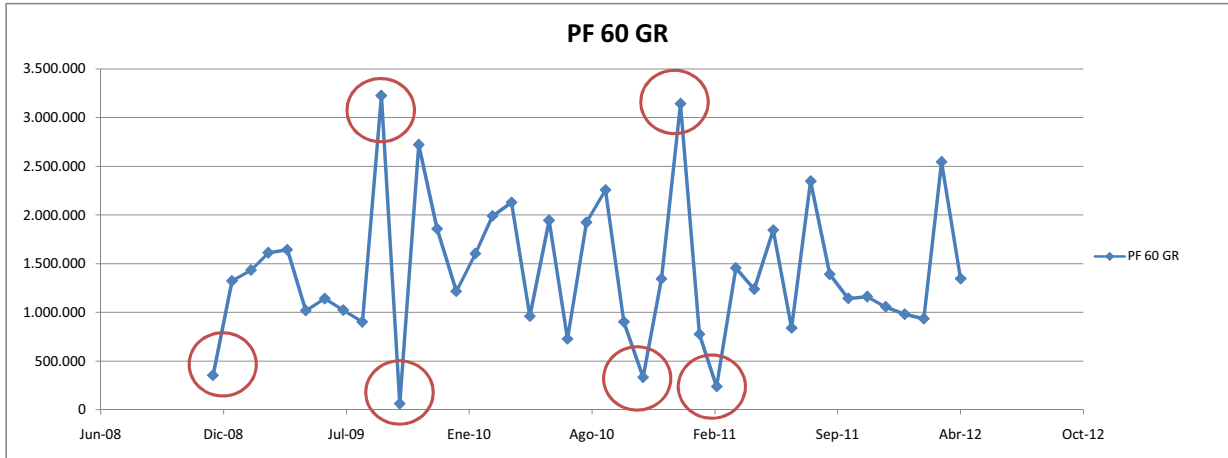
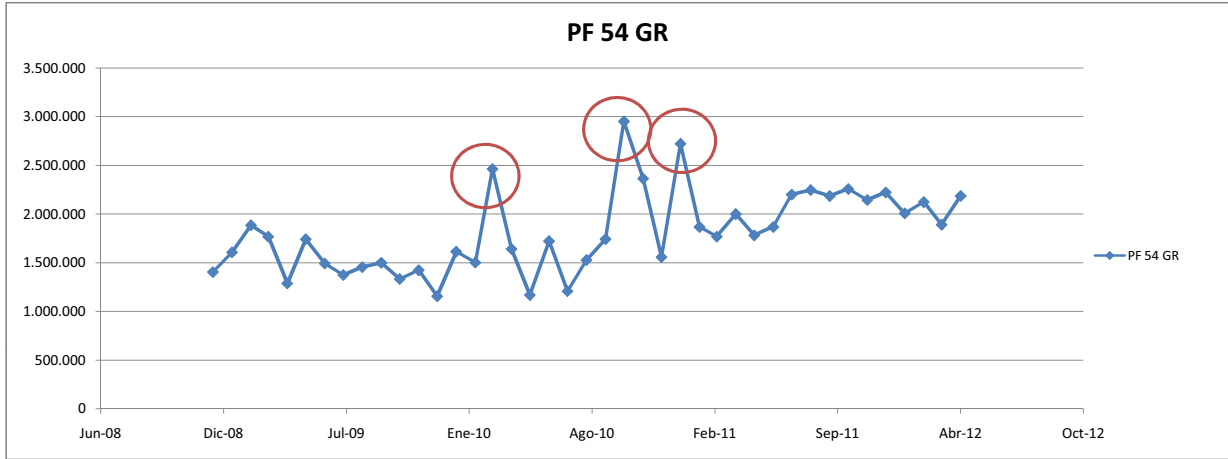














2. AJUSTE DATOS DE DEMANDA

DEMANDA AJUSTADA DE DATOS DE ACUERDO A COMPORTAMIENTOS HISTÓRICOS EN UNIDADES DICIEMBRE 2008 A ABRIL 2012

MES	PF 18 GR	PF 22 GR	PF 23 GR	PF 25 GR	PF 27 GR	PF 28 GR	PF 30 GR	PF 30 GR Kerr	PF 30.5 GR	PF 44 GR	PF 47.5 GR	PF 52 GR	PF 54 GR	PF 60 GR
	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real
Dic-08	350.000	0	822.822	7.390.822	0	62.500	3.528.000	3.481.920	3.024.000	1.859.752	1.922.900	1.460.476	1.406.015	353.500
Ene-09	60.544	0	1.808.466	5.519.184	0	187.500	2.667.000	4.043.520	2.516.850	1.429.819	2.815.900	666.463	1.608.676	1.323.000
Feb-09	32.000	0	636.944	6.896.264	0	237.500	0	5.896.800	3.315.528	1.072.525	2.096.700	958.474	1.885.957	1.433.300
Mar-09	58.000	0	625.570	7.272.701	0	237.500	2.016.000	4.717.440	4.053.600	1.011.531	3.509.900	84.168	1.768.109	1.612.000
Abr-09	14.000	0	272.976	7.060.189	0	475.000	0	5.784.480	2.970.450	1.122.480	2.941.300	1.280.875	1.288.705	1.643.200
May-09	0	0	636.944	7.027.292	0	387.500	0	5.391.360	1.892.160	4.813.311	782.300	1.122.058	1.743.267	1.018.000
Jun-09	0	0	1.063.469	6.762.264	0	51.500	0	3.201.120	3.537.360	5.705.132	0	531.775	1.493.489	1.140.800
Jul-09	84.000	0	1.097.591	4.614.431	0	50.000	3.024.000	5.054.400	2.897.550	4.923.673	0	791.966	1.375.392	1.022.800
Ago-09	2.730.000	0	0	6.213.272	0	12.500	3.528.000	5.117.040	3.058.560	7.405.968	0	1.137.739	1.456.904	902.400
Sep-09	3.402.000	0	1.046.408	5.558.381	0	75.000	0	5.171.040	1.918.080	4.808.556	0	831.391	1.500.551	3.225.600
Oct-09	3.542.000	0	2.246.365	8.822.202	0	100.000	0	4.250.480	3.366.360	892.081	135.477	503.687	1.333.128	62.400
Nov-09	3.654.000	0	90.922	6.500.052	0	87.500	3.024.000	4.687.578	2.478.320	253.006	787.249	1.125.908	1.425.061	2.721.600
Dic-09	602.000	0	727.936	7.597.757	0	162.500	2.016.000	6.516.180	2.877.480	123.875	817.525	831.479	1.157.103	1.856.800
Ene-10	294.000	0	1.091.904	7.531.918	0	87.500	0	7.750.080	3.142.800	2.120.486	1.075.262	1.095.994	1.615.520	1.216.800
Feb-10	840.000	0	1.000.912	6.031.929	0	87.500	1.008.000	5.930.280	2.851.200	3.198.812	1.167.421	837.008	1.502.511	1.603.600
Mar-10	4.270.000	0	1.091.904	6.701.639	0	12.500	2.016.000	5.321.160	3.214.080	6.809.352	852.504	227.021	2.482.763	1.990.000
Abr-10	1.126.000	0	0	4.956.747	0	37.500	2.016.000	5.447.520	4.406.400	3.731.879	1.211.109	1.509.187	1.642.514	2.128.800
May-10	1.184.000	0	0	5.111.053	0	162.500	2.016.000	6.518.880	3.006.720	121.651	882.300	82.484	1.169.091	961.200
Jun-10	1.168.000	0	556.820	7.314.488	0	321.500	2.520.000	2.575.440	1.286.280	5.125.578	709.726	331.034	1.723.470	1.944.400
Jul-10	1.182.000	0	511.830	6.918.677	0	212.500	3.024.000	3.830.400	4.769.280	8.141.709	788.082	716.356	1.209.517	728.000
Ago-10	1.156.000	0	791.936	8.015.535	3.136.320	87.500	886.578	4.760.640	1.503.360	4.753.168	1.103.879	638.059	1.528.913	1.923.600
Sep-10	1.170.000	0	914.928	6.502.313	847.968	325.000	421.344	7.599.240	2.093.040	4.900.802	1.117.252	856.621	1.743.328	2.256.400
Oct-10	1.320.000	0	636.944	10.093.348	0	112.500	1.685.376	7.517.160	1.571.400	270.198	452.829	795.971	2.953.093	902.000
Nov-10	1.224.000	0	90.992	7.476.061	888.624	262.500	842.688	7.626.600	1.801.440	1.391.470	499.150	213.466	2.365.387	333.600
Dic-10	1.114.000	0	909.920	4.241.008	2.979.504	50.000	0	4.480.200	881.280	5.408.239	941.359	241.574	1.558.629	1.344.800
Ene-11	1.196.000	3.407.616	1.000.912	6.508.798	2.704.992	87.500	803.187	4.910.039	651.240	6.428.705	1.582.981	1.341.728	2.724.008	3.143.600
Feb-11	1.670.000	5.787.736	454.960	7.930.792	2.973.696	1.835.000	912.912	6.580.080	165.800	3.964.587	946.099	1.295.853	1.868.284	776.000
Mar-11	1.576.000	5.763.307	454.960	6.969.461	4.261.536	1.636.500	2.561.792	5.013.720	4.777.600	3.770.648	1.105.617	1.275.461	1.770.445	238.400
Abr-11	1.362.000	6.166.325	727.936	4.288.988	2.000.000	1.851.500	2.702.240	4.596.480	2.524.880	2.548.634	958.495	1.477.843	2.000.936	1.456.000
May-11	1.098.000	6.330.399	1.636.944	5.542.472	3.252.480	1.225.000	1.334.256	4.856.400	2.864.720	4.000.000	779.687	1.483.184	1.782.311	1.239.200
Jun-11	1.262.500	7.186.824	1.119.074	5.136.129	2.336.352	1.525.000	2.983.968	5.472.000	5.481.280	4.950.000	719.172	1.346.770	1.868.284	1.844.214
Jul-11	1.289.500	8.485.169	1.295.624	6.020.422	3.496.312	1.485.000	2.510.964	6.949.440	3.567.360	4.580.000	716.702	2.093.724	2.200.936	839.412
Ago-11	1.027.892	9.657.733	1.113.387	4.955.038	1.605.920	1.336.000	2.519.168	7.770.240	6.028.992	2.625.770	756.723	1.076.554	2.248.000	2.347.052
Sep-11	1.677.984	12.761.833	1.705.847	5.720.956	1.698.848	1.760.000	2.208.864	5.745.600	4.172.256	5.145.331	728.923	2.409.043	2.186.204	1.391.732
Oct-11	944.781	10.357.513	2.985.227	7.613.105	2.698.432	1.388.000	2.755.152	5.745.600	4.798.278	4.457.800	825.600	3.438.759	2.258.432	1.143.930
Nov-11	1.082.124	11.565.419	3.454.354	6.390.152	1.302.752	1.032.000	2.279.088	8.282.720	4.674.096	4.651.888	967.455	2.474.731	2.145.700	1.161.658
Dic-11	1.072.800	10.365.303	2.189.242	6.319.211	1.955.008	1.364.000	2.217.072	5.796.900	4.448.464	4.289.344	825.000	2.168.717	2.223.556	1.057.443
Ene-12	1.201.452	8.443.084	2.267.432	6.004.881	1.912.576	1.165.000	2.349.312	6.511.880	4.860.768	4.123.890	890.000	2.636.725	2.008.741	981.008
Feb-12	1.304.564	9.956.547	2.306.423	5.848.461	1.141.280	1.289.777	2.310.096	5.472.000	3.062.880	3.896.000	725.678	2.165.442	2.124.568	935.839
Mar-12	5.535.904	13.952.876	2.309.898	6.814.000	1.878.876	963.500	1.883.907	6.549.300	4.632.528	4.697.725	912.000	2.667.253	1.892.000	2.546.241
Abr-12	4.293.717	11.526.006	3.087.810	5.202.624	1.960.368	867.000	2.802.192	6.019.200	4.298.746	3.581.098	780.145	1.965.291	2.186.700	1.345.926

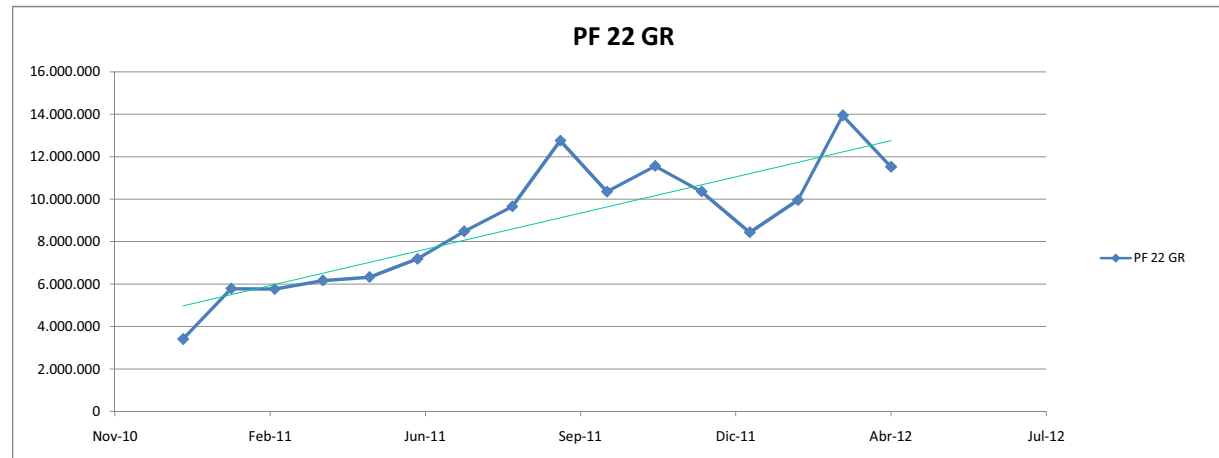
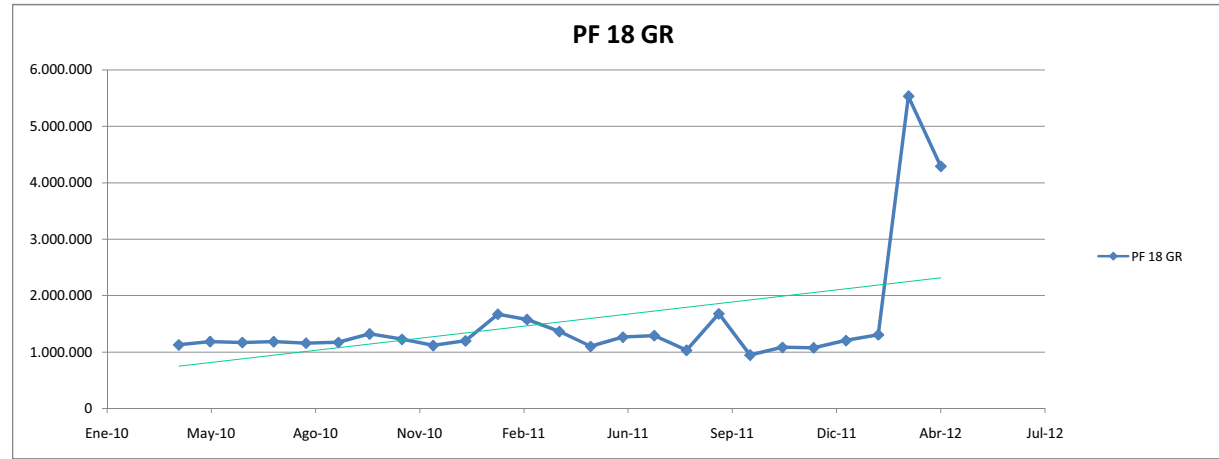
Datos Históricos que no se Incluirán en el Análisis
 Dato que se Ajustara en el Análisis

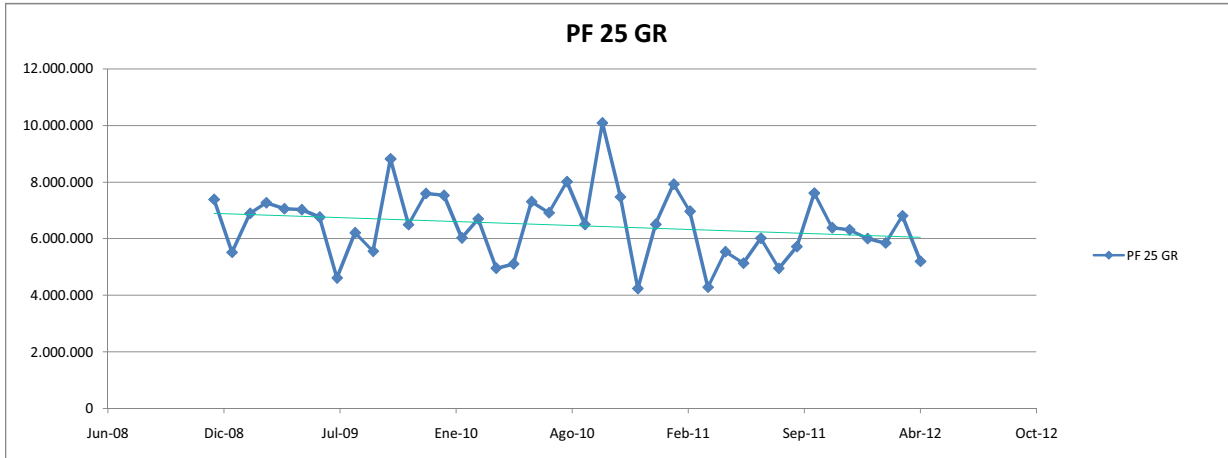
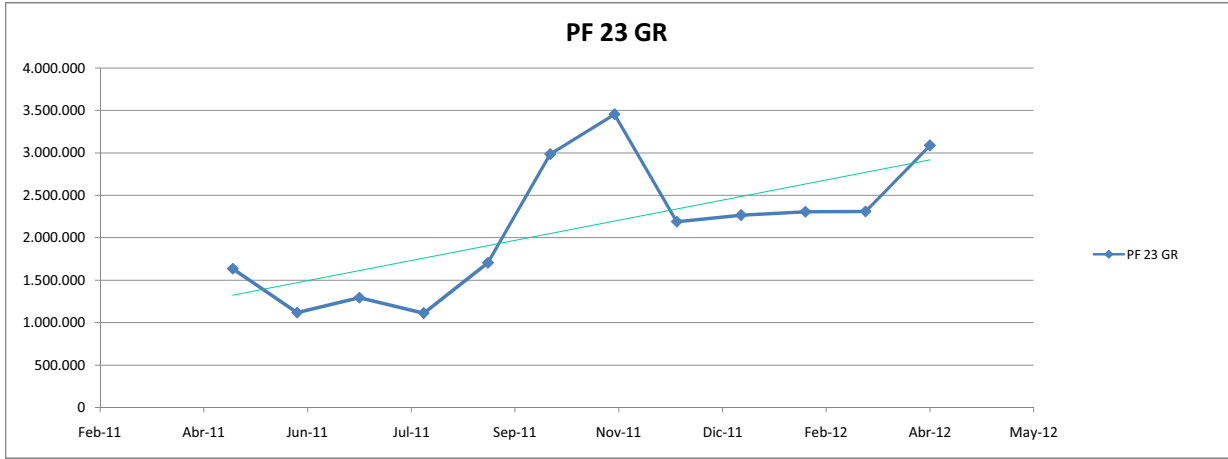
LIMPIEZA DE DATOS DE DEMANDA EN UNIDADES DICIEMBRE 2008 A ABRIL 2012

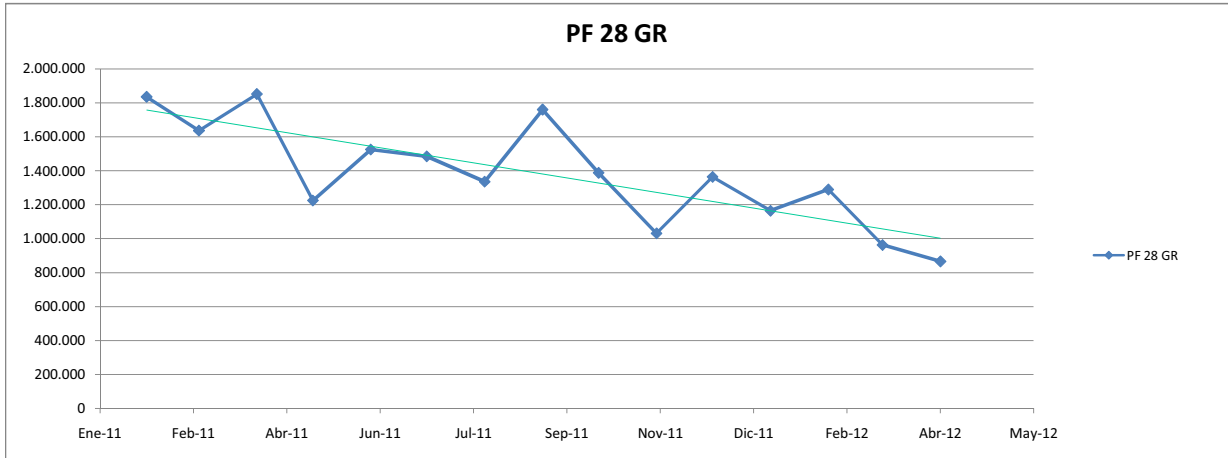
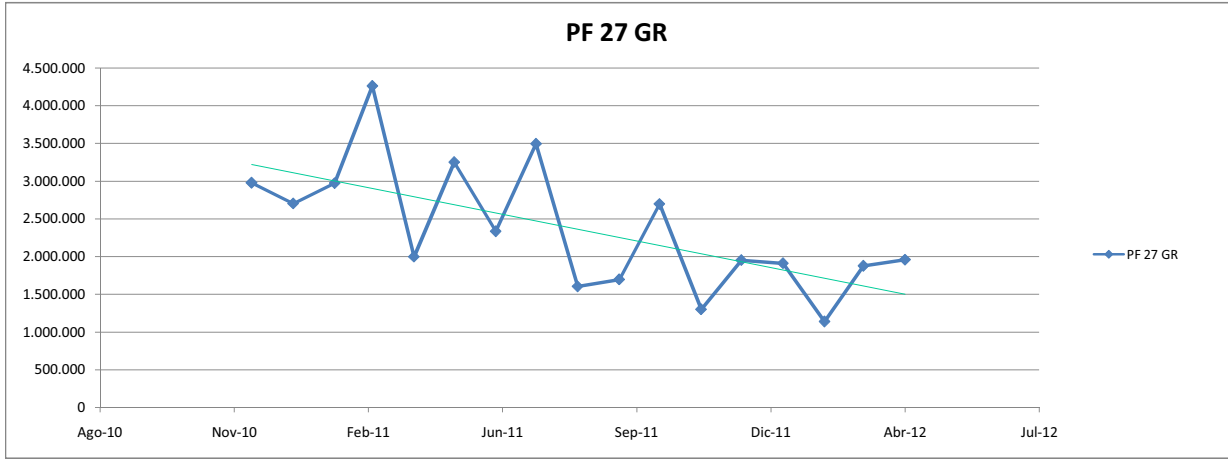
MES	PF 18 GR	PF 22 GR	PF 23 GR	PF 25 GR	PF 27 GR	PF 28 GR	PF 30 GR	PF 30 GR Kerr	PF 30.5 GR	PF 44 GR	PF 47.5 GR	PF 52 GR	PF 54 GR	PF 60 GR
	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real
Dic-08				7.390.822				3.481.920					1.406.015	
Ene-09				5.519.184				4.043.520					1.608.676	
Feb-09				6.896.264				5.896.800					1.885.957	
Mar-09				7.272.701				4.717.440					1.768.109	
Abr-09				7.060.189				5.784.480					1.288.705	
May-09				7.027.292				5.391.360					1.743.267	
Jun-09				6.762.264				3.201.120					1.493.489	
Jul-09				4.614.431				5.054.400					1.375.392	
Ago-09				6.213.272				5.117.040					1.456.904	
Sep-09				5.558.381				5.171.040					1.500.551	
Oct-09				8.822.202				4.250.480					1.333.128	
Nov-09				6.500.052				4.687.578			787.249		1.425.061	2.721.600
Dic-09				7.597.757				6.516.180			817.525		1.157.103	1.856.800
Ene-10				7.531.918				7.750.080			1.075.262		1.075.262	1.216.800
Feb-10				6.031.929				5.930.280			1.167.421		1.502.511	1.603.600
Mar-10				6.701.639				5.321.160			852.504		2.462.763	1.990.000
Abr-10	1.126.000			4.956.747				5.447.520			1.211.109		1.642.514	2.128.800
May-10	1.184.000			5.111.053				6.518.880			882.300		1.169.091	961.200
Jun-10	1.168.000			7.314.488				2.575.440			709.726		1.723.470	1.944.400
Jul-10	1.182.000			6.918.677				3.830.400			788.082		1.209.517	728.000
Ago-10	1.156.000			8.015.535				4.760.640			1.103.879		1.528.913	1.923.600
Sep-10	1.170.000			6.502.313				7.599.240			1.117.252		1.743.328	2.256.400
Oct-10	1.320.000			10.093.348				7.517.160			452.829		2.953.093	902.000
Nov-10	1.224.000			7.476.061				7.626.600			499.150		2.365.387	333.600
Dic-10	1.114.000			4.241.008	2.979.504			4.480.200			941.359		1.558.629	1.344.800
Ene-11	1.196.000	3.407.616		6.508.798	2.704.992			4.910.039			1.582.981	1.341.728	2.724.008	3.143.600
Feb-11	1.670.000	5.787.736		7.930.792	2.973.696	1.835.000		6.580.080			946.099	1.295.853	1.868.284	776.000
Mar-11	1.576.000	5.763.307		6.969.461	4.261.536	1.636.500	2.561.792	5.013.720	4.777.600		1.105.617	1.275.461	1.770.445	238.400
Abr-11	1.362.000	6.166.325		4.288.988	2.000.000	1.851.500	2.702.240	4.596.480	2.524.880		958.495	1.477.843	2.000.936	1.456.000
May-11	1.098.000	6.330.399	1.636.944	5.542.472	3.252.480	1.225.000	1.334.256	4.856.400	2.864.720	4.000.000	779.687	1.483.184	1.782.311	1.239.200
Jun-11	1.262.500	7.186.824	1.119.074	5.136.129	2.336.352	1.525.000	2.983.968	5.472.000	5.481.280	4.950.000	719.172	1.346.770	1.868.284	1.844.214
Jul-11	1.289.500	8.485.169	1.295.624	6.020.422	3.496.312	1.485.000	2.510.964	6.949.440	3.567.360	4.580.000	716.702	2.093.724	2.200.936	839.412
Ago-11	1.027.892	9.657.733	1.113.387	4.955.038	1.605.920	1.336.000	2.519.168	7.770.240	6.028.992	2.625.770	756.723	1.076.554	2.248.000	2.347.052
Sep-11	1.677.984	12.761.833	1.705.847	5.720.956	1.698.848	1.760.000	2.208.864	5.745.600	4.172.256	5.145.331	728.923	2.409.043	2.186.204	1.391.732
Oct-11	944.781	10.357.513	2.985.227	7.613.105	2.696.432	1.388.000	2.755.152	5.745.600	4.798.278	4.457.800	825.600	3.438.759	2.258.432	1.143.930
Nov-11	1.082.124	11.565.419	3.454.354	6.390.152	1.302.752	1.032.000	2.279.088	8.262.720	4.674.096	4.651.888	967.455	2.474.731	2.145.700	1.161.658
Dic-11	1.072.800	10.365.303	2.189.242	6.319.211	1.955.008	1.364.000	2.217.072	5.796.800	4.448.464	4.289.344	825.000	2.168.717	2.223.556	1.057.443
Ene-12	1.201.452	8.443.084	2.267.432	6.004.881	1.912.576	1.165.000	2.349.312	6.511.680	4.860.768	4.123.890	890.000	2.636.725	2.008.741	981.008
Feb-12	1.304.564	9.956.547	2.306.423	5.848.461	1.141.280	1.289.777	2.310.096	5.472.000	3.062.880	3.896.000	725.678	2.165.442	2.124.568	935.839
Mar-12	5.535.904	13.952.876	2.309.898	6.814.000	1.878.876	963.500	1.883.907	6.549.300	4.632.528	4.697.725	912.000	2.667.253	1.892.000	2.546.241
Abr-12	4.293.717	11.526.006	3.087.810	5.202.624	1.960.368	867.000	2.802.192	6.019.200	4.298.746	3.581.098	780.145	1.965.291	2.186.700	1.345.926

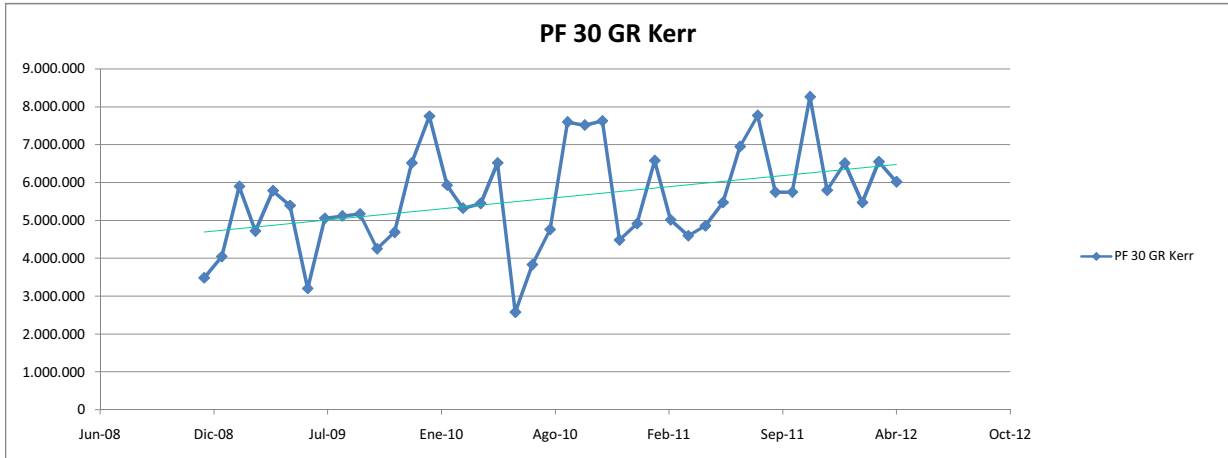
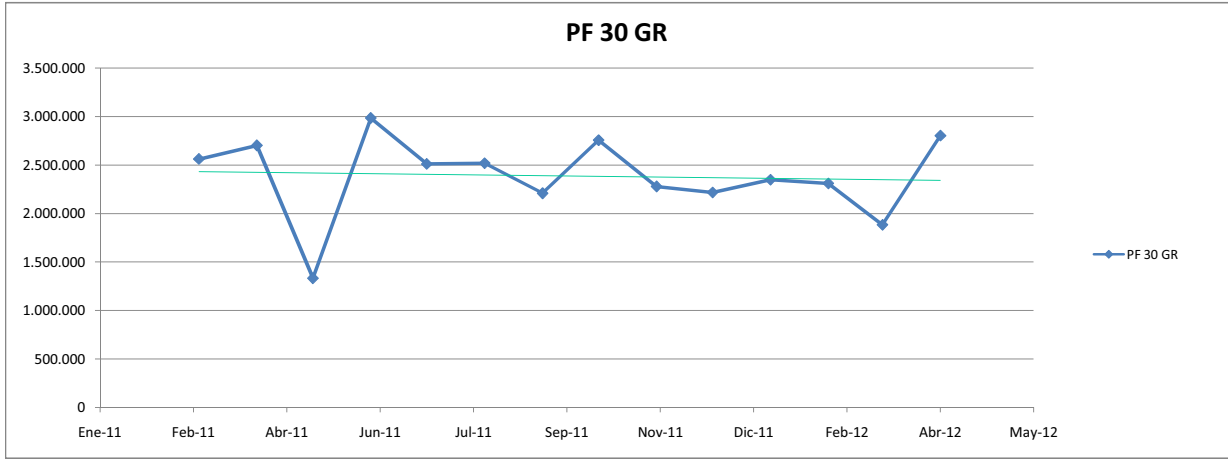
- Patrón de Comportamiento Estable
- Patrón de Comportamiento Con Tendencia
- Patrón de Comportamiento Estacional
- Patrón de Comportamiento con Ciclicidad

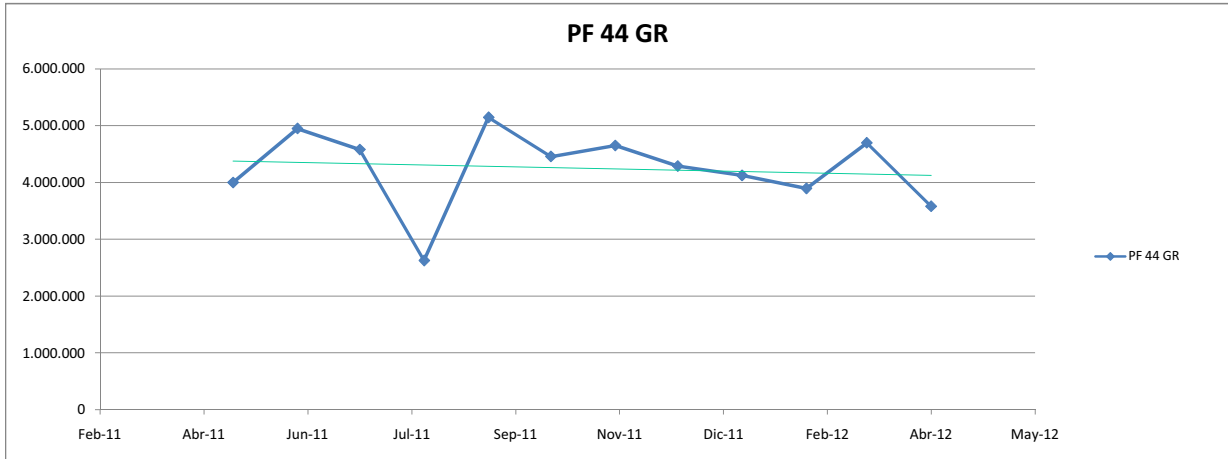
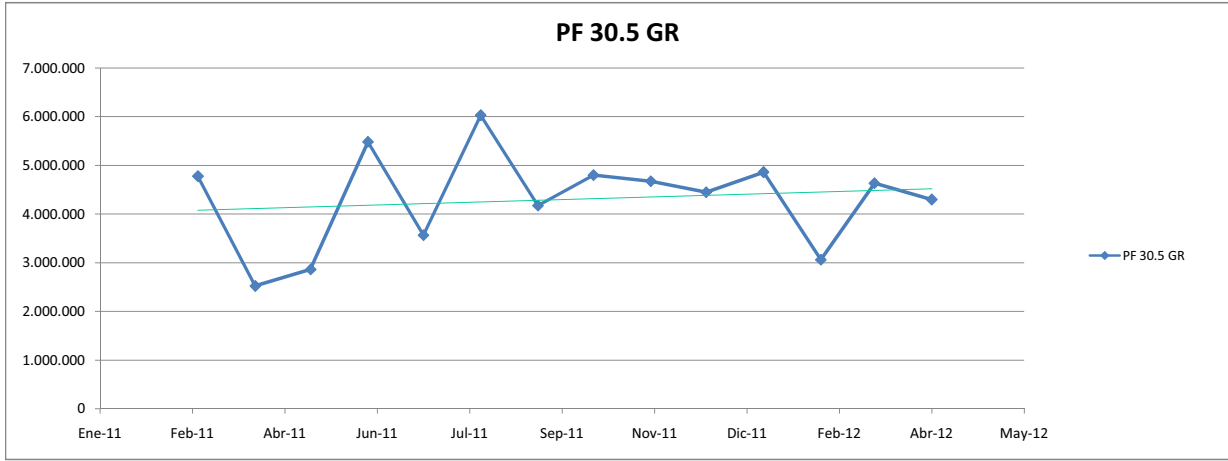
GRAFICAS DE COMPORTAMIENTO AJUSTADAS

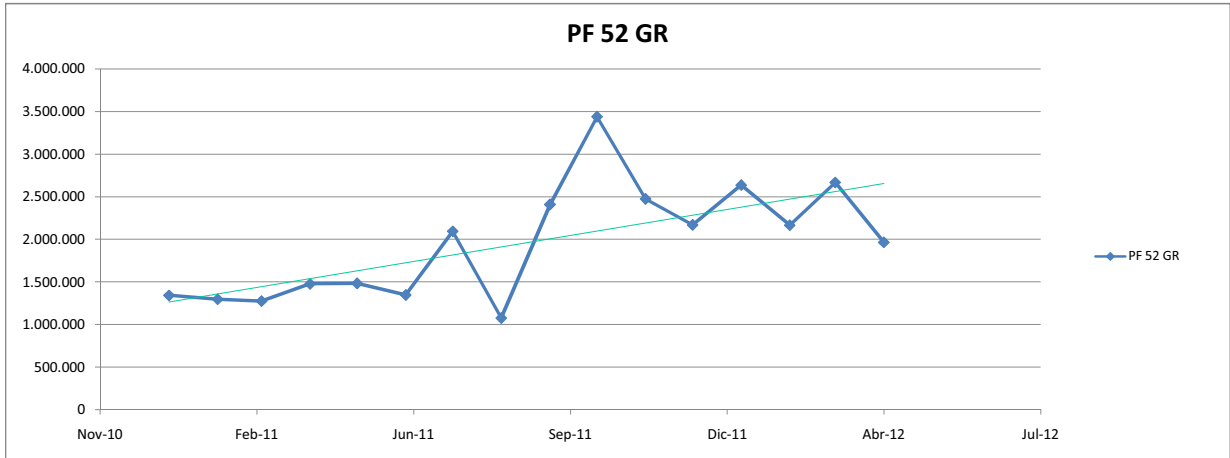
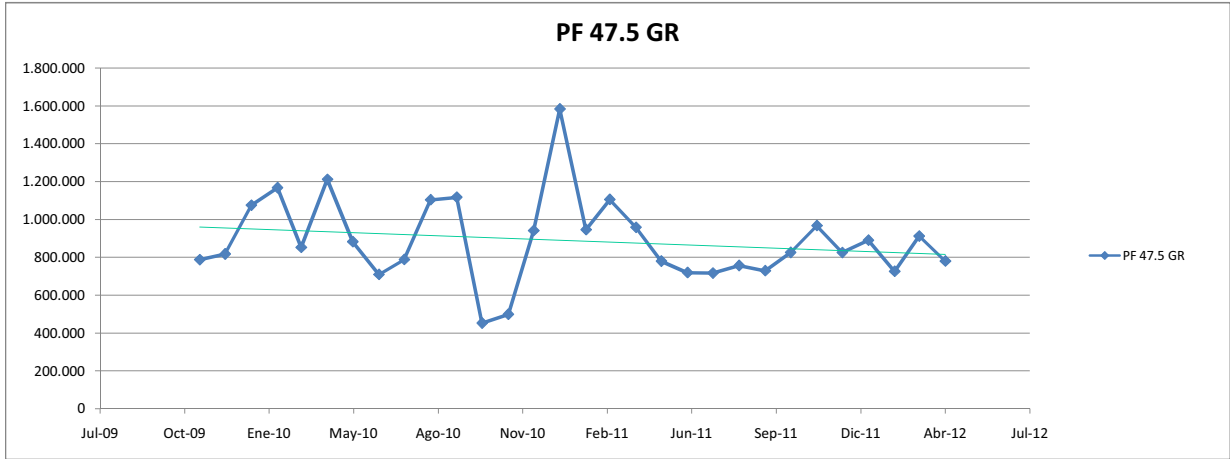


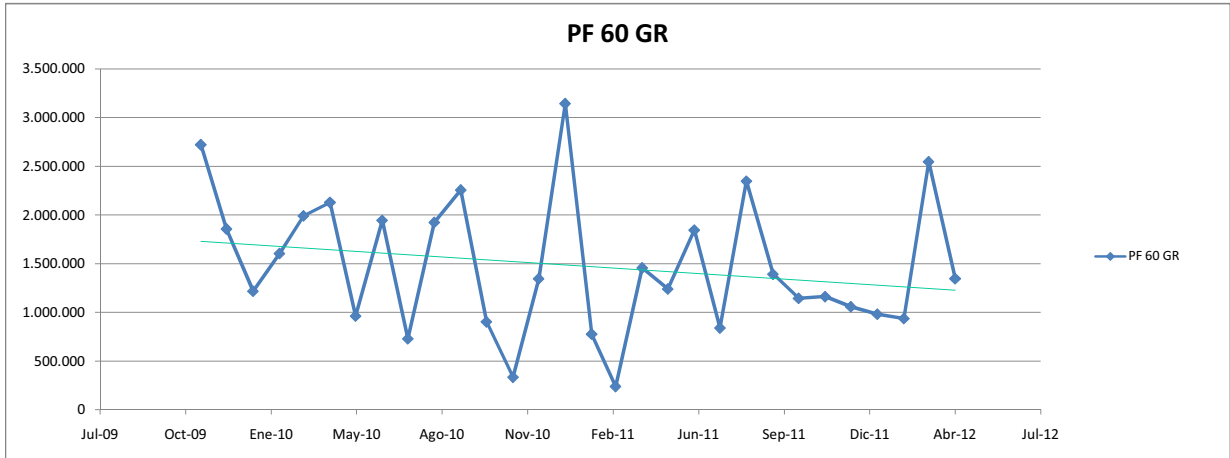
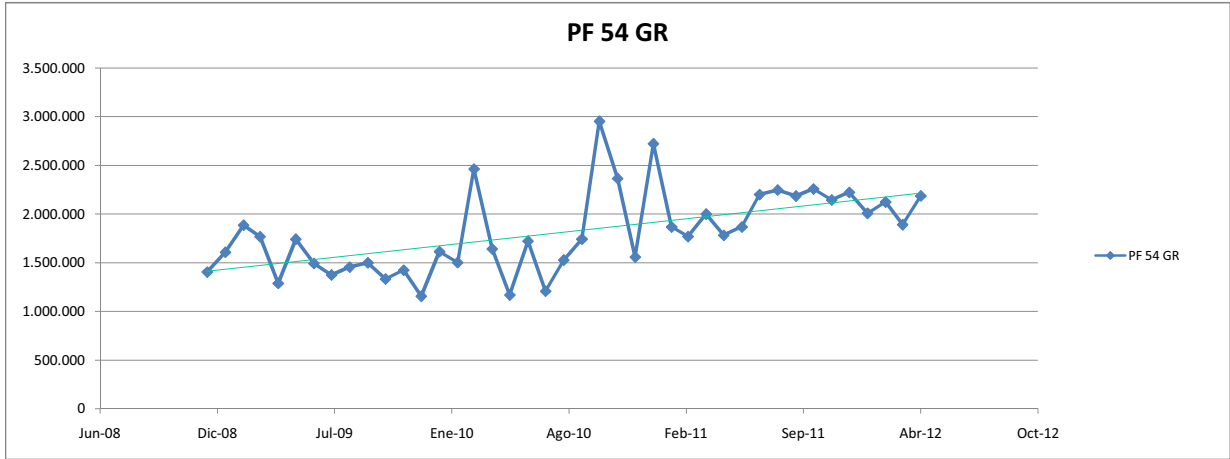














3. COMPORTAMIENTO ANUAL DEMANDA

MES	PF 18 GR	PF 22 GR	PF 23 GR	PF 25 GR	PF 27 GR	PF 28 GR	PF 30 GR	PF 30 GR Kerr	PF 30.5 GR	PF 44 GR	PF 47.5 GR	PF 52 GR	PF 54 GR	PF 60 GR
	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real
Dic-08				7.390.822				3.481.920						1.406.015
Ene-09				5.519.184				4.043.520						1.608.676
Feb-09				6.896.264				5.896.800						1.885.957
Mar-09				7.272.701				4.717.440						1.768.109
Abr-09				7.060.189				5.784.480						1.288.705
May-09				7.027.292				5.391.360						1.743.267
Jun-09				6.762.264				3.201.120						1.493.489
Jul-09				4.614.431				5.054.400						1.375.392
Ago-09				6.213.272				5.117.040						1.456.904
Sep-09				5.558.381				5.171.040						1.500.551
Oct-09				8.822.202				4.250.480						1.333.128
Nov-09				6.500.052				4.687.578			787.249			1.425.061
Dic-09				7.597.757				6.516.180			817.525			1.157.103
Ene-10				7.531.918				7.750.080			1.075.262			1.615.520
Feb-10				6.031.929				5.930.280			1.167.421			1.502.511
Mar-10				6.701.639				5.321.160			852.504			2.462.763
Abr-10	1.126.000			4.956.747				5.447.520			1.211.109			2.128.800
May-10	1.184.000			5.111.053				6.518.880			882.300			1.169.091
Jun-10	1.168.000			7.314.488				2.575.440			709.726			1.723.470
Jul-10	1.182.000			6.918.677				3.830.400			788.082			1.209.517
Ago-10	1.156.000			8.015.535				4.760.640			1.103.879			1.528.913
Sep-10	1.170.000			6.502.313				7.599.240			1.117.252			1.743.328
Oct-10	1.320.000			10.093.348				7.517.160			452.829			2.953.093
Nov-10	1.224.000			7.476.061				7.626.600			499.150			2.365.387
Dic-10	1.114.000			4.241.008	2.979.504			4.480.200			941.359			1.558.629
Ene-11	1.196.000	3.407.616		6.508.798	2.704.992			4.910.039			1.582.981	1.341.728		2.724.008
Feb-11	1.670.000	5.787.736		7.930.792	2.973.696	1.835.000		6.580.080			946.099	1.295.853	1.868.284	776.000
Mar-11	1.576.000	5.763.307		6.969.461	4.261.536	1.636.500	2.561.792	5.013.720	4.777.600		1.105.617	1.275.461	1.770.445	238.400
Abr-11	1.362.000	6.166.325		4.288.988	2.000.000	1.851.500	2.702.240	4.596.480	2.524.880		958.495	1.477.843	2.000.936	1.456.000
May-11	1.098.000	6.330.399	1.636.944	5.542.472	3.252.480	1.225.000	1.334.256	4.856.400	2.864.720	4.000.000	779.687	1.483.184	1.782.311	1.239.200
Jun-11	1.262.500	7.186.824	1.119.074	5.136.129	2.336.352	1.525.000	2.983.968	5.472.000	5.481.280	4.950.000	719.172	1.346.770	1.868.284	1.844.214
Jul-11	1.289.500	8.485.169	1.295.624	6.020.422	3.496.312	1.485.000	2.510.964	6.949.440	3.567.360	4.580.000	716.702	2.093.724	2.200.936	839.412
Ago-11	1.027.892	9.657.733	1.113.387	4.955.038	1.605.920	1.336.000	2.519.168	7.770.240	6.028.992	2.625.770	756.723	1.076.554	2.040.000	2.347.052
Sep-11	1.677.984	12.761.833	1.705.847	5.720.956	1.698.848	1.760.000	2.208.864	5.745.600	4.172.256	5.145.331	728.923	2.409.043	2.186.204	1.391.732
Oct-11	944.781	10.357.513	2.985.227	7.613.105	2.698.432	1.388.000	2.755.152	5.745.600	4.798.278	4.457.800	825.600	3.438.759	2.258.432	1.143.930
Nov-11	1.082.124	11.565.419	3.454.354	6.390.152	1.302.752	1.032.000	2.279.088	8.262.720	4.674.096	4.651.888	967.455	2.474.731	2.145.700	1.161.658
Dic-11	1.072.800	10.365.303	2.189.242	6.319.211	1.955.008	1.364.000	2.217.072	5.796.900	4.448.464	4.289.344	825.000	2.168.717	2.223.556	1.057.443
Ene-12	1.201.452	8.443.084	2.267.432	6.004.881	1.912.576	1.165.000	2.349.312	6.511.680	4.860.768	4.123.890	890.000	2.636.725	2.008.741	981.008
Feb-12	1.304.564	9.956.547	2.306.423	5.848.461	1.141.280	1.289.777	2.310.096	5.472.000	3.062.880	3.896.000	725.878	2.165.442	2.124.568	935.839
Mar-12	5.535.904	13.952.876	2.309.898	6.814.000	1.878.876	963.500	1.883.907	6.549.300	4.632.528	4.697.725	912.000	2.667.253	1.892.000	2.546.241
Abr-12	4.293.717	11.526.006	3.087.810	5.202.624	1.960.368	867.000	2.802.192	6.019.200	4.298.746	3.581.098	780.145	1.965.291	2.186.700	1.345.926
Desvest	1.050.062	2.915.031	778.263	1.213.399	836.354	305.887	417.687	1.308.463	990.061	680.674	221.426	664.497	420.241	700.351
Promedio	1.529.569	8.857.106	2.122.605	6.473.049	2.362.290	1.381.552	2.387.005	5.583.472	4.299.489	4.249.904	887.531	1.957.317	1.814.785	1.478.642
Coef. Variación	0,687	0,329	0,367	0,187	0,354	0,221	0,175	0,234	0,230	0,160	0,249	0,339	0,232	0,474
Dispersión	Alta	Media	Media	Baja	Media	Media	Baja	Media	Media	Baja	Media	Media	Media	Media
Comportamiento	Estable	Estable	Estable	Estable	Estable	Estable	Estable	Estable	Estable	Estable	Estable	Estable	Estable	Estable
Tendencia	Crecente	Crecente	Crecente	Decreciente	Decreciente	Decreciente	Estable	Crecente	Crecente	Estable	Decreciente	Crecente	Crecente	Decreciente



**ANEXO B
MEDIDAS DE DESEMPEÑO MODELOS DE PRONOSTICO**

1. DEMANDA

DATOS DE DEMANDA EN UNIDADES DICIEMBRE 2008 A ABRIL 2012

MES	PF 18 GR	PF 22 GR	PF 23 GR	PF 25 GR	PF 27 GR	PF 28 GR	PF 30 GR	PF 30 GR Kerr	PF 30.5 GR	PF 44 GR	PF 47.5 GR	PF 52 GR	PF 54 GR	PF 60 GR	Resina
	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real
Dic-08				7.390.822				3.481.920					1.406.015		365.153
Ene-09				5.519.184				4.043.520					1.608.676		346.154
Feb-09				6.896.264				5.896.800					1.885.957		451.152
Mar-09				7.272.701				4.717.440					1.768.109		418.819
Abr-09				7.060.189				5.784.480					1.288.705		419.629
May-09				7.027.292				5.391.360					1.743.267		431.560
Jun-09				6.762.264				3.201.120					1.493.489		345.739
Jul-09				4.614.431				5.054.400					1.375.392		341.264
Ago-09				6.213.272				5.117.040					1.456.904		387.516
Sep-09				5.558.381				5.171.040					1.500.551		375.120
Oct-09				8.822.202				4.250.480					1.333.128		420.058
Nov-09				6.500.052				4.687.578			787.249		1.425.061	2.721.600	580.772
Dic-09				7.597.757				6.516.180			817.525		1.157.103	1.856.800	598.153
Ene-10				7.531.918				7.750.080			1.075.262		1.615.520	1.216.800	632.121
Feb-10				6.031.929				5.930.280			1.167.421		1.502.511	1.603.600	561.511
Mar-10				6.701.639				5.321.160			852.504		2.462.763	1.990.000	620.059
Abr-10	1.126.000			4.956.747				5.447.520			1.211.109		1.642.514	2.128.800	581.564
May-10	1.184.000			5.111.053				6.518.880			882.300		1.169.091	961.200	507.367
Jun-10	1.168.000			7.314.488				2.575.440			709.726		1.723.470	1.944.400	524.593
Jul-10	1.182.000			6.918.677				3.830.400			788.082		1.209.517	728.000	455.583
Ago-10	1.156.000			8.015.535				4.760.640			1.103.879		1.528.913	1.923.600	614.427
Sep-10	1.170.000			6.502.313				7.599.240			1.117.252		1.743.328	2.256.400	694.188
Oct-10	1.320.000			10.093.348				7.517.160			452.829		2.953.093	902.000	736.705
Nov-10	1.224.000			7.476.061				7.626.600			499.150		2.365.387	333.600	609.188
Dic-10	1.114.000			4.241.008	2.979.504			4.480.200			941.359		1.558.629	1.344.800	550.498
Ene-11	1.196.000	3.407.616		6.508.798	2.704.992			4.910.039			1.582.981	1.341.728	2.724.008	3.143.600	960.225
Feb-11	1.670.000	5.787.736		7.930.792	2.973.696	1.835.000		6.580.080			946.099	1.295.853	1.868.284	776.000	944.504
Mar-11	1.576.000	5.763.307		6.969.461	4.261.536	1.636.500	2.561.792	5.013.720	4.777.600		1.105.617	1.275.461	1.770.445	238.400	1.092.012
Abr-11	1.362.000	6.166.325		4.288.988	2.000.000	1.851.500	2.702.240	4.596.480	2.524.880		958.495	1.477.843	2.000.936	1.456.000	986.999
May-11	1.098.000	6.330.399	1.636.944	5.542.472	3.252.480	1.225.000	1.334.256	4.856.400	2.864.720	4.000.000	779.687	1.483.184	1.782.311	1.239.200	1.191.212
Jun-11	1.262.500	7.186.824	1.119.074	5.136.129	2.336.352	1.525.000	2.983.968	5.472.000	5.481.280	4.950.000	719.172	1.346.770	1.868.284	1.844.214	1.395.150
Jul-11	1.289.500	8.485.169	1.295.624	6.020.422	3.496.312	1.485.000	2.510.964	6.949.440	3.567.360	4.580.000	716.702	2.093.724	2.200.936	839.412	1.432.444
Ago-11	1.027.892	9.657.733	1.113.387	4.955.038	1.605.920	1.336.000	2.519.168	7.770.240	6.028.992	2.625.770	756.723	1.076.554	2.248.000	2.347.052	1.423.465
Sep-11	1.677.984	12.761.833	1.705.847	5.720.956	1.698.848	1.760.000	2.208.864	5.745.600	4.172.256	5.145.331	728.923	2.409.043	2.186.204	1.391.732	1.542.107
Oct-11	944.781	10.357.513	2.985.227	7.613.105	2.698.432	1.388.000	2.755.152	5.745.600	4.798.278	4.457.800	825.600	3.438.759	2.258.432	1.143.930	1.621.717
Nov-11	1.082.124	11.565.419	3.454.354	6.390.152	1.302.752	1.032.000	2.279.088	8.262.720	4.674.096	4.651.888	967.455	2.474.731	2.145.700	1.161.658	1.600.896
Dic-11	1.072.800	10.365.303	2.189.242	6.319.211	1.955.008	1.364.000	2.217.072	5.796.900	4.448.464	4.289.344	825.000	2.168.717	2.223.556	1.057.443	1.446.965
Ene-12	1.201.452	8.443.084	2.267.432	6.004.881	1.912.576	1.165.000	2.349.312	6.511.680	4.860.768	4.123.890	890.000	2.636.725	2.008.741	981.008	1.436.158
Feb-12	1.304.564	9.956.547	2.306.423	5.848.461	1.141.280	1.289.777	2.310.096	5.472.000	3.062.880	3.896.000	725.678	2.165.442	2.124.568	935.839	1.324.968
Mar-12	5.535.904	13.952.876	2.309.898	6.814.000	1.878.876	963.500	1.883.907	6.549.300	4.632.528	4.697.725	912.000	2.667.253	1.892.000	2.546.241	1.745.743
Abr-12	4.293.717	11.526.006	3.087.810	5.202.624	1.960.368	867.000	2.802.192	6.019.200	4.298.746	3.581.098	780.145	1.965.291	2.186.700	1.345.926	1.500.561
May-12	3.329.952	13.172.235	2.867.810	5.543.136	2.562.688	1.420.000	2.924.736	5.848.200	3.640.320	3.515.493	845.000	2.193.083	2.511.680	967.149	1.539.956
Jun-12	3.709.402	11.503.150	2.419.846	6.074.253	2.646.768	1.277.000	2.399.648	6.894.720	3.264.624	3.878.870	892.000	1.642.697	2.161.080	1.047.966	1.491.009
Jul-12	4.333.491	13.286.782	2.169.365	6.997.076	1.962.720	1.058.000	2.962.000	8.344.800	4.508.048	4.314.689	965.239	2.281.687	2.174.240	1.109.837	1.692.793

2. MEDIDAS DE DESEMPEÑO MODELOS DE PRONOSTICO
PF 18 GR

PMS

N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
1	387515,042	0,173	13,533	131988,208	873086101674,125	954487,489	8
2	380248,522	0,167	15,047	231072,565	880836906234,109	959622,294	6
3	429527,045	0,179	15,452	276659,439	1025002174484,070	1036248,909	4
4	456821,571	0,180	16,156	307942,381	1150891900664,850	1099289,087	5
5	486062,550	0,187	14,439	334955,970	1273380827098,240	1157756,827	2
6	512935,281	0,196	13,770	359352,263	1342123552641,420	1190246,181	2
7	532021,984	0,198	13,757	374297,619	1433536317286,500	1232015,415	4
8	571300,750	0,214	13,621	400609,015	1543603063543,000	1280655,401	3
9	608708,000	0,226	11,940	434708,639	1653518555584,550	1328063,675	2
10	652897,147	0,242	11,129	467125,080	1784820710567,530	1382862,214	2
11	663192,805	0,235	12,513	470077,792	1903045685511,770	1431584,372	4
12	681768,026	0,232	13,631	482507,679	2026965538545,140	1481849,970	4
13	724768,795	0,242	13,082	517425,744	2170448240799,790	1538753,300	3

PMD

N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	539358,477	0,256	11,714	86537,182	1133723853852,770	1089821,409	9
3	456554,739	0,224	11,902	202995,872	980157244138,149	1015748,230	6
4	481984,640	0,213	13,340	276867,980	1158260478517,050	1107426,498	5
5	551114,213	0,218	12,814	354858,455	1431477966783,960	1235681,930	5
6	611467,278	0,233	13,371	392159,457	1590293423555,680	1308672,490	2
7	692225,590	0,254	12,678	453882,408	1938302304513,680	1454136,034	1
8	826202,354	0,287	10,465	603500,727	2414641702085,190	1637966,796	1
9	1019792,041	0,334	7,921	801022,350	3072686590976,370	1873937,517	2
10	1236363,763	0,328	7,877	1070622,630	4153361786044,030	2232495,049	1

SE

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,880	1,000	356299,065	0,159	13,679	154149,793	829810366350,307	930531,610	4
0,840	2,000	358778,495	0,159	13,415	167113,789	856314852948,494	946170,310	8
0,860	3,000	380404,110	0,169	12,774	170455,788	899806704228,583	970904,034	0
0,830	4,000	388052,471	0,172	12,521	184566,245	935729804098,898	991219,599	9
0,840	5,000	409774,711	0,181	11,674	191692,762	984702733483,238	1018100,777	8
0,860	6,000	437689,297	0,193	11,000	197063,862	1041882563568,410	1048696,776	8
0,850	7,000	447205,153	0,194	10,916	209010,175	1095131177422,980	1076824,340	8
0,810	8,000	455807,077	0,196	10,549	231289,585	1149391277999,900	1105091,957	0
0,870	9,000	497973,380	0,210	9,772	229939,798	1237311264920,210	1148824,914	6
0,830	10,000	514895,869	0,217	9,164	256866,638	1306994399416,050	1183364,332	6

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,880	1,000	356299,065	0,159	13,679	154149,793	829810366350,307	930531,610	4
		0%	0%	49%	0%	0%	0%	56%
0,840	2,000	358778,495	0,159	13,415	167113,789	856314852948,494	946170,310	8
		1%	0%	46%	8%	3%	2%	11%
0,860	3,000	380404,110	0,169	12,774	170455,788	899806704228,583	970904,034	0
		7%	6%	39%	11%	8%	4%	100%
0,830	4,000	388052,471	0,172	12,521	184566,245	935729804098,898	991219,599	9
		9%	8%	37%	20%	13%	7%	0%
0,840	5,000	409774,711	0,181	11,674	191692,762	984702733483,238	1018100,777	8
		15%	14%	27%	24%	19%	9%	11%
0,860	6,000	437689,297	0,193	11,000	197063,862	1041882563568,410	1048696,776	8
		23%	21%	20%	28%	26%	13%	11%
0,850	7,000	447205,153	0,194	10,916	209010,175	1095131177422,980	1076824,340	8
		26%	22%	19%	36%	32%	16%	11%
0,810	8,000	455807,077	0,196	10,549	231289,585	1149391277999,900	1105091,957	0
		28%	23%	15%	50%	39%	19%	100%
0,870	9,000	497973,380	0,210	9,772	229939,798	1237311264920,210	1148824,914	6
		40%	32%	7%	49%	49%	23%	33%
0,830	10,000	514895,869	0,217	9,164	256866,638	1306994399416,050	1183364,332	6
		45%	36%	0%	67%	58%	27%	33%

MEJORES MEDIDAS DE DESEMPEÑO							
356299,065	0,159	9,164	154149,793	829810366350,307	930531,610	9,000	

% DE DESVIACIÓN RESPECTO LAS MEJORES MEDIDAS DE DESEMPEÑO

SED

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,840	1,000	616405,626	0,274	11,548	3629,614	1695121676183,920	1332607,127	9,000
0,870	2,000	661838,717	0,294	10,869	-7746,869	1886125196500,710	1407278,031	10,000
0,870	3,000	691937,939	0,306	10,339	-6617,546	1980266062330,050	1443776,503	9,000
0,850	4,000	715390,544	0,316	9,813	1626,363	2002376426255,910	1453829,275	8,000
0,830	5,000	734146,866	0,322	9,660	2839,491	2029473503331,540	1465897,097	5,000
0,850	6,000	781440,814	0,339	9,047	-1397,986	2234485294904,440	1540824,658	8,000
0,850	7,000	819788,756	0,351	8,526	6779,521	2372273031054,070	1590730,828	6,000
0,810	8,000	836858,857	0,356	8,137	25040,886	2335371403624,110	1581829,209	0,000
0,820	9,000	871316,385	0,364	9,005	-13803,766	2537404336178,320	1653054,532	4,000
0,830	10,000	935296,205	0,392	8,086	-14160,717	2787386373014,000	1737719,359	4,000

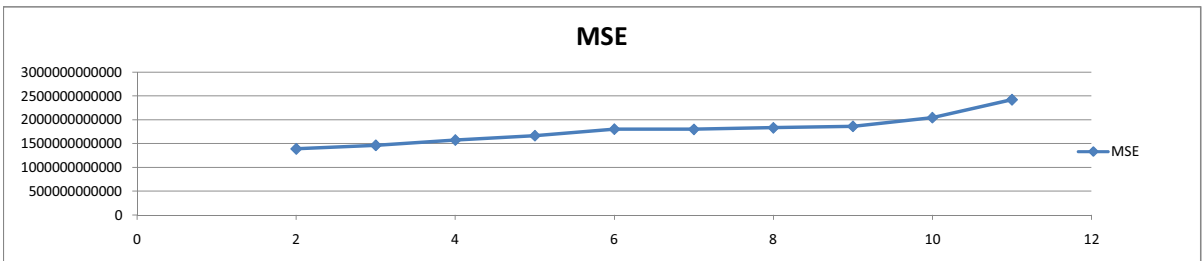
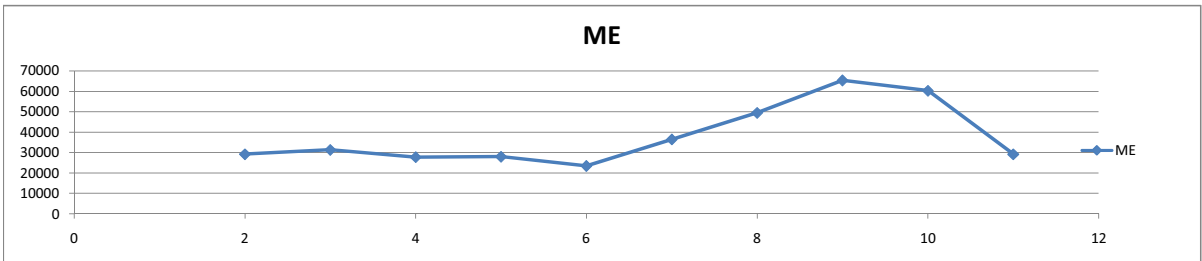
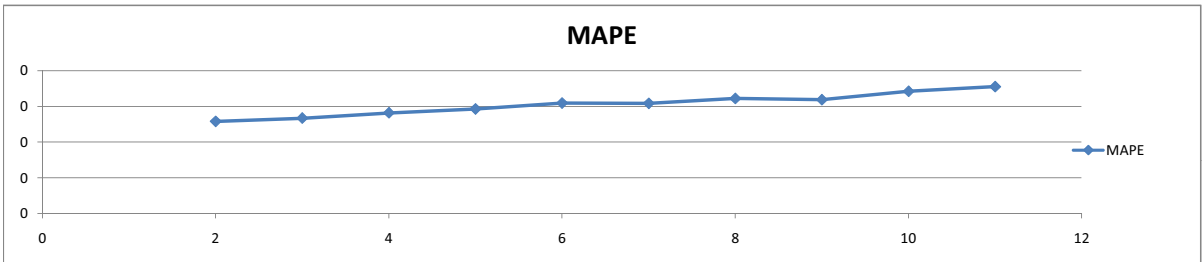
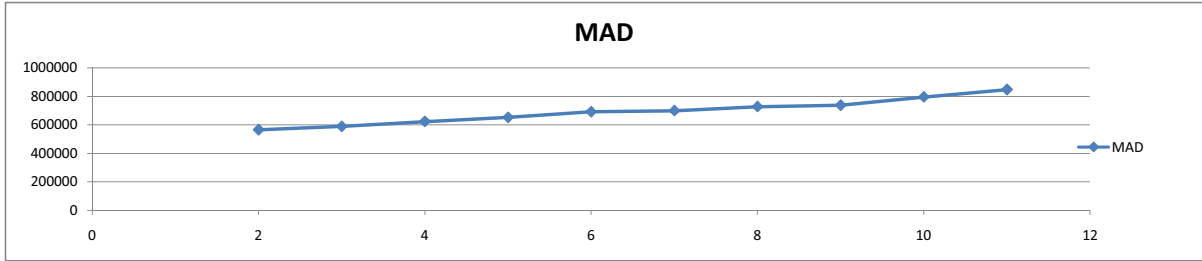
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,840	1,000	616405,626	0,274	11,548	3629,614	1695121676183,920	1332607,127	9,000
		0%	0%	43%	126%	0%	0%	10%
0,870	2,000	661838,717	0,294	10,869	-7746,869	1886125196500,710	1407278,031	10,000
		7%	7%	34%	45%	11%	6%	0%
0,870	3,000	691937,939	0,306	10,339	-6617,546	1980266062330,050	1443776,503	9,000
		12%	12%	28%	53%	17%	8%	10%
0,850	4,000	715390,544	0,316	9,813	1626,363	2002376426255,910	1453829,275	8,000
		16%	15%	21%	111%	18%	9%	20%
0,830	5,000	734146,866	0,322	9,660	2839,491	2029473503331,540	1465897,097	5,000
		19%	18%	19%	120%	20%	10%	50%
0,850	6,000	781440,814	0,339	9,047	-1397,986	2234485294904,440	1540824,658	8,000
		27%	24%	12%	90%	32%	16%	20%
0,850	7,000	819788,756	0,351	8,526	6779,521	2372273031054,070	1590730,828	6,000
		33%	28%	5%	148%	40%	19%	40%
0,810	8,000	836858,857	0,356	8,137	25040,886	2335371403624,110	1581829,209	0,000
		36%	30%	1%	277%	38%	19%	100%
0,820	9,000	871316,385	0,364	9,005	-13803,766	2537404336178,320	1653054,532	4,000
		41%	33%	11%	3%	50%	24%	60%
0,830	10,000	935296,205	0,392	8,086	-14160,717	2787386373014,000	1737719,359	4,000
		52%	43%	0%	0%	64%	30%	60%

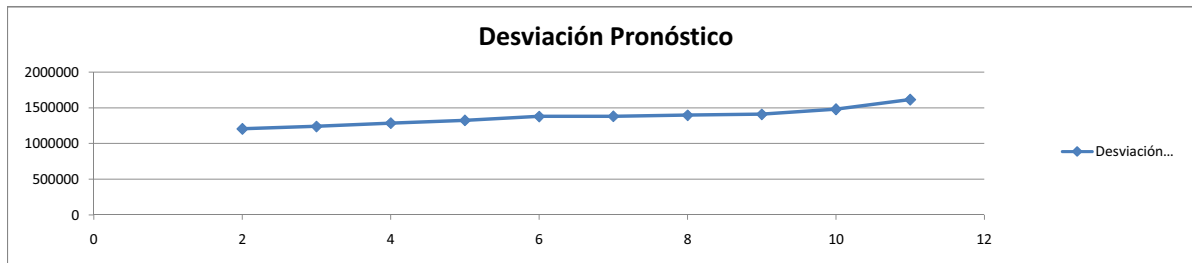
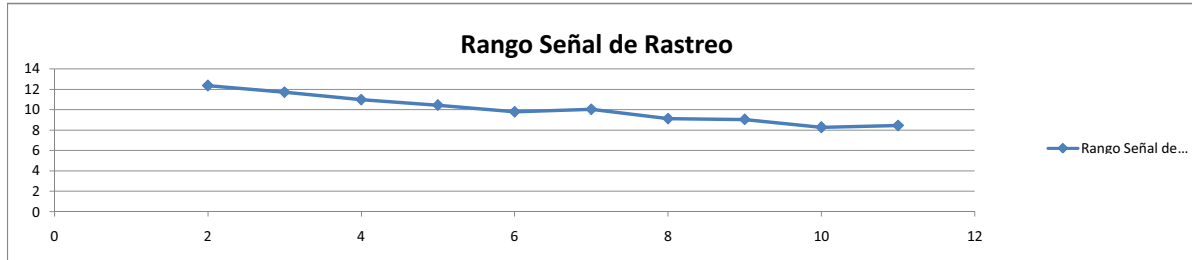
MEJORES MEDIDAS DE DESEMPEÑO							
616405,626	0,274	8,086	-14160,717	1695121676183,920	1332607,127	10,000	

% DE DESVIACIÓN RESPECTO LAS MEJORES MEDIDAS DE DESEMPEÑO

SET

Alpha	Beta	N (Periodos de Promedio)	MAD	MAPE	Pendiente	Intercepto	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,830	0,840	2	566147,240	0,258	58000,000	1068000,000	12,364	29238,668	1390293545788,550	1205607,194	9
0,830	0,850	3	589746,753	0,267	21000,000	1117333,333	11,719	31340,489	1464392070037,690	1238598,008	9
0,840	0,860	4	624005,250	0,282	152000,000	1127000,000	10,986	27766,694	1575001430707,380	1285982,699	9
0,840	0,870	5	652780,393	0,293	58000,000	1145800,000	10,455	27976,837	1666791868903,510	1324582,106	9
0,850	0,880	6	692297,156	0,309	4285,714	1149333,333	9,800	23462,774	1801953932123,300	1379152,814	8
0,830	0,860	7	700024,681	0,309	19357,143	1109142,857	10,043	36431,384	1800117268021,750	1380581,949	7
0,830	0,810	8	728417,329	0,322	16023,810	1119142,857	9,124	49494,163	1833036865214,150	1395565,000	7
0,810	0,800	9	738310,528	0,319	6066,667	1152333,333	9,052	65392,953	1861179331056,430	1408991,822	0
0,810	0,840	10	795772,112	0,342	5139,394	1155733,333	8,279	60309,176	2044579537065,430	1480074,637	6
0,870	0,840	11	848044,356	0,355	25945,455	1072509,091	8,459	29185,528	2421616638835,070	1614897,781	6





Regresión Lineal

Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
681516,740	65234,768	0,457	590565,217	0,372	21,848	0,000	83723575530,835	933873,963	2

Media

MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
568460,912	0,313	20,927	0,000	1058525651156,040	1050062,325	1

Descomposición

Estacionalidad	Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	688674,993	64684,133	0,462	588739,307	0,369	21,335	0,000	823685398681,001	926285,930	2,000
3	787975,246	57045,652	0,457	574465,406	0,357	18,973	-3603,175	753485009514,500	885934,658	1,000
4	832693,421	53605,792	0,459	572183,536	0,362	17,600	-6115,015	726874089015,173	870149,705	1,000
6	1007973,136	40122,737	0,442	507386,240	0,308	16,406	-11840,525	581872950719,261	778535,585	4,000
12	1207282,118	24791,277	0,412	388918,142	0,234	15,019	-16575,997	402921656234,268	647850,337	4,000

Winters

Estacionalidad	Alpha	Beta	Gamma	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	0,840	0,860	0,830	566566,275	0,280	11,441	57369,702	1132443330866,780	1089205,767	11
3	0,830	0,840	0,810	572879,050	0,280	10,305	79833,150	1137905272947,690	1093069,319	0
4	0,840	0,820	0,820	618524,070	0,305	10,013	68785,979	1295402666668,220	1167725,034	9
6	0,810	0,840	0,820	607087,677	0,292	9,649	123541,494	1221635099733,850	1137319,651	5
12	0,820	0,820	0,830	830165,600	0,387	7,260	166570,937	2059649021114,720	1498962,922	3

**3. MEDIDAS DE DESEMPEÑO MODELOS DE PRONOSTICO
PF 22 GR**

PMS

N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
1	1604953,200	0,165	6,958	541226,000	3720688535343,330	1996610,128	0
2	1414980,786	0,143	6,782	786492,857	3783470322095,390	2018540,686	0
3	1596700,410	0,159	7,385	1029930,974	4414356766984,140	2186828,715	0
4	1864767,063	0,183	6,961	1237094,188	5316377426193,290	2408253,405	0
5	2116004,400	0,203	6,748	1490406,218	6423602889689,890	2658187,950	0
6	2275879,517	0,211	6,664	1744343,883	7323337724257,290	2852550,072	0
7	2347112,063	0,208	6,391	1927479,333	8255139191277,890	3047463,140	0
8	2366077,453	0,201	6,032	2079654,922	9079240221339,230	3221222,522	0
9	2073099,302	0,182	5,262	1854408,444	6133073647643,460	2674930,390	0

PMD

N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	1915207,481	0,185	6,382	-91560,327	6501294350716,560	2653878,083	4
3	1878597,162	0,171	6,387	201074,576	5520734345587,070	2464306,754	2
4	2331016,241	0,214	4,611	-37118,407	7416891305210,020	2888598,747	1
5	2286536,240	0,219	4,000	-982750,274	7619533546425,140	2981519,043	0
6	2400984,770	0,242	2,000	-1435394,977	7965894538172,510	3155529,777	0
7	1879849,964	0,166	0,754	-694449,510	3789384627363,630	2384130,227	0

SE

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,860	1,000	1572971,294	0,164	7,000	649338,538	3594661956352,790	1962504,401	0
0,870	2,000	1589367,761	0,159	6,000	588961,369	3552544232213,510	1955969,546	0
0,860	3,000	1673767,105	0,164	5,000	608037,872	3803286877598,850	2029834,341	0
0,870	4,000	1788781,196	0,173	4,251	621645,556	4113193932402,880	2118282,477	0
0,860	5,000	1924664,212	0,183	3,740	665222,669	4580686852310,010	2244717,251	0
0,870	6,000	2089358,407	0,194	3,157	689370,602	5320003784103,530	2431278,535	0
0,890	7,000	2280467,144	0,207	2,555	696858,633	6387489301496,770	2680657,655	0
0,910	8,000	2460873,095	0,213	2,133	702327,659	8844123803871,590	3179240,485	0

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,860	1,000	1572971,294	0,164	7,000	649338,538	3594661956352,790	1962504,401	0
		0%	3%	228%	10%		0%	#jDIV/0!
0,870	2,000	1589367,761	0,159	6,000	588961,369	3552544232213,510	1955969,546	0
		1%	0%	181%	0%		0%	#jDIV/0!
0,860	3,000	1673767,105	0,164	5,000	608037,872	3803286877598,850	2029834,341	0
		6%	3%	134%	3%		7%	4%
0,870	4,000	1788781,196	0,173	4,251	621645,556	4113193932402,880	2118282,477	0
		14%	9%	99%	6%		16%	8%
0,860	5,000	1924664,212	0,183	3,740	665222,669	4580686852310,010	2244717,251	0
		22%	15%	75%	13%		29%	15%
0,870	6,000	2089358,407	0,194	3,157	689370,602	5320003784103,530	2431278,535	0
		33%	22%	48%	17%		50%	24%
0,890	7,000	2280467,144	0,207	2,555	696858,633	6387489301496,770	2680657,655	0
		45%	30%	20%	18%		80%	37%
0,910	8,000	2460873,095	0,213	2,133	702327,659	8844123803871,590	3179240,485	0
		56%	34%	0%	19%		149%	63%

MEJORES MEDIDAS DE DESEMPEÑO							
1572971,294	0,159	2,133	588961,369	3552544232213,510	1955969,546	0,000	

% DE DESVIACIÓN RESPECTO LAS MEJORES MEDIDAS DE DESEMPEÑO

SED

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,920	1,000	2185976,039	0,212	3,957	-316788,591	7849733284122,590	2916140,896	4,000
0,890	2,000	2221269,056	0,209	4,627	-256033,982	7960178351076,180	2946834,052	4,000
0,950	3,000	2408838,732	0,220	4,854	-305551,003	9447127513891,950	3223637,738	6,000
0,850	4,000	2405508,097	0,217	4,781	-305997,367	8794892418429,740	3126036,258	4,000
0,880	5,000	2807492,669	0,255	2,879	-490094,714	10341123093688,500	3410830,321	4,000
0,870	6,000	2870821,151	0,262	3,790	-651690,415	11522816652768,700	3628902,495	3,000
0,940	7,000	3737341,083	0,343	1,767	-1219068,146	19416700699945,900	4759497,608	0,000
0,880	8,000	2996708,953	0,271	3,208	-862669,179	10940394683163,300	3623323,560	2,000

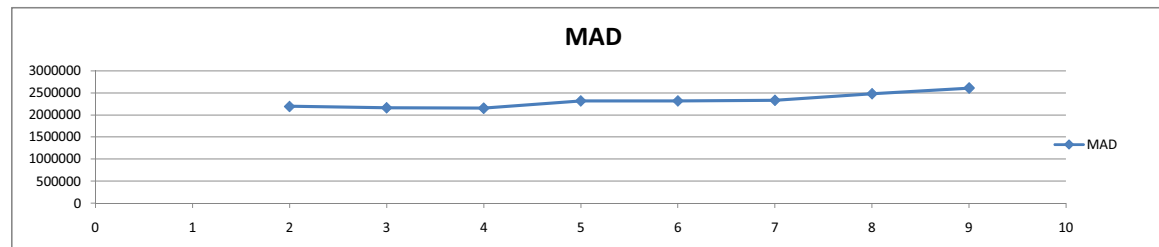
Alfa	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,920	1,000	2185976,039	0,212	3,957	-316788,591	7849733284122,590	2916140,896	4,000
		0%	1%	124%	74%	0%	0%	33%
0,890	2,000	2221269,056	0,209	4,627	-256033,982	7960178351076,180	2946834,052	4,000
		2%	0%	162%	79%	1%	1%	33%
0,950	3,000	2408838,732	0,220	4,854	-305551,003	9447127513891,950	3223637,738	6,000
		10%	5%	175%	75%	20%	11%	0%
0,850	4,000	2405508,097	0,217	4,781	-305997,367	8794892418429,740	3126036,258	4,000
		10%	4%	171%	75%	12%	7%	33%
0,880	5,000	2807492,669	0,255	2,879	-490094,714	10341123093688,500	3410830,321	4,000
		28%	22%	63%	60%	32%	17%	33%
0,870	6,000	2870821,151	0,262	3,790	-651690,415	11522816652768,700	3628902,495	3,000
		31%	25%	115%	47%	47%	24%	50%
0,940	7,000	3737341,083	0,343	1,767	-1219068,146	19416700699945,900	4759497,608	0,000
		71%	64%	0%	0%	147%	63%	100%
0,880	8,000	2996708,953	0,271	3,208	-862669,179	10940394683163,300	3623323,560	2,000
		37%	29%	82%	29%	39%	24%	67%

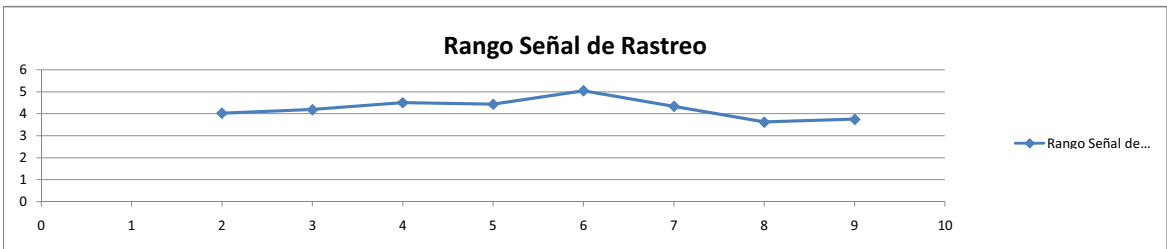
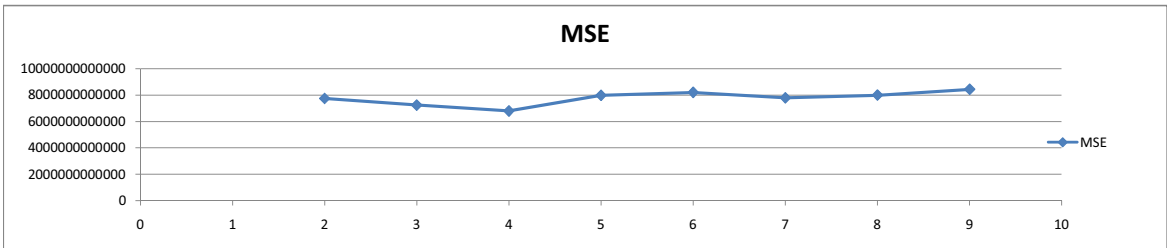
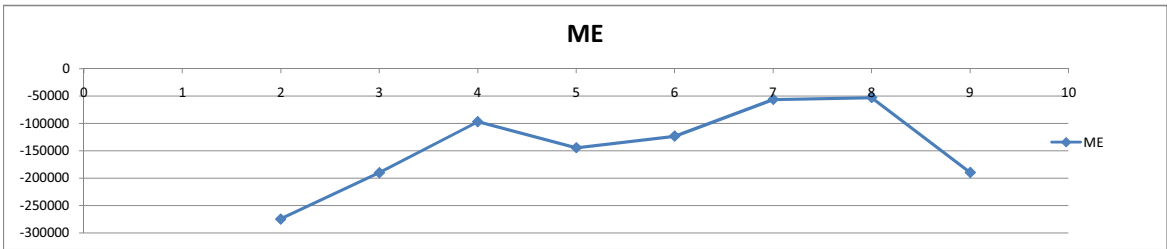
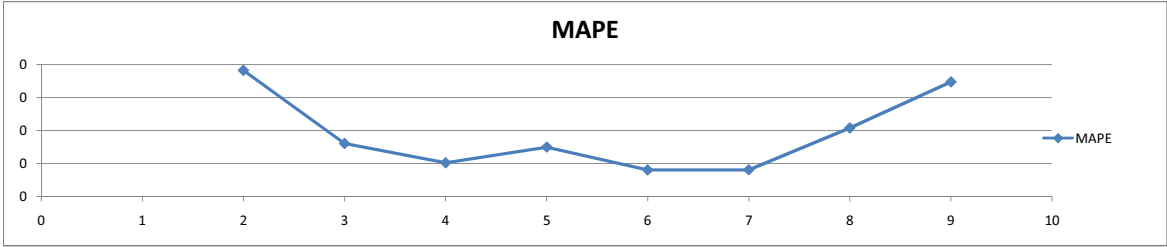
MEJORES MEDIDAS DE DESEMPEÑO						
2185976,039	0,209	1,767	-1219068,146	7849733284122,590	2916140,896	6,000

 % DE DESVIACIÓN RESPECTO LAS MEJORES MEDIDAS DE DESEMPEÑO

SET

Alfa	Beta	N (Periodos de Promedio)	MAD	MAPE	Pendiente	Intercepto	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersección es con cero
0,850	0,860	2	2193273,411	0,238	2380120,000	1027496,000	4,030	-274549,053	7747660140855,590	2888534,922	4
0,890	0,850	3	2162398,688	0,216	1177845,500	2630528,667	4,187	-190004,582	7244779221636,480	2801519,378	4
0,800	0,800	4	2153965,429	0,210	825169,800	3218321,500	4,506	-96763,340	6802351583675,750	2724104,841	4
0,860	0,880	5	2316476,328	0,215	622415,500	3623830,100	4,434	-144423,010	7988194140813,500	2964289,722	4
0,830	0,860	6	2316510,942	0,208	597915,629	3680996,467	5,044	-123383,662	8204537561260,730	3019296,747	3
0,760	0,760	7	2334093,728	0,208	664211,679	3504207,000	4,342	-56312,943	7785618978400,730	2959530,596	3
0,740	0,700	8	2479426,257	0,221	734197,726	3294248,857	3,627	-52928,437	7997276382614,920	3023201,025	3
0,800	0,800	9	2608972,800	0,235	924851,367	2658736,722	3,748	-189397,560	8435455602416,200	3137094,973	2







Regresión Lineal

Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
4439635,925	519702,318	0,849	1158660,479	0,135	9,376	0,000	2226896552351,590	1541219,103	3

Media

MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2410798,125	0,340	7,349	0,000	7966319655415,730	2915031,326	1

Descomposición

Estacionalidad	Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	4441330,793	519502,921	0,848	1163381,769	0,136	9,423	-539,402	2241242101966,380	1546175,359	4,000
3	4487258,429	514099,670	0,879	1118923,506	0,136	8,376	-12211,515	1683076358653,790	1339881,133	2,000
4	4769798,597	480859,650	0,803	1033309,907	0,122	8,817	-45460,864	2240352156194,240	1545868,354	2,000
6	4820253,011	474923,837	0,876	961145,168	0,119	7,967	-50058,628	1356757425453,640	1202999,551	2,000
12	5115857,645	440146,821	0,903	803279,935	0,099	5,346	-124787,161	867160875942,758	961754,439	4,000

Winters

Estacionalidad	Alpha	Beta	Gamma	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	0,840	0,860	0,840	2867604,495	0,299	2,933	-471722,455	10857745031086,000	3429658,455	0
3	0,840	0,860	0,840	1846459,445	0,197	3,338	-303333,133	4700779637084,880	2264535,988	0
4	0,870	0,850	0,870	2510935,858	0,240	3,401	-642400,552	10894962280127,700	3461857,667	2
6	0,860	0,840	0,870	2810382,379	0,264	2,507	-966973,653	10780495125545,400	3482536,004	0
12	0,890	0,840	0,850	2766409,346	0,241	4,551	-2352742,649	19722505861326,800	5439095,402	1

4. MEDIDAS DE DESEMPEÑO MODELOS DE PRONOSTICO
PF 23 GR

PMS

N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
1	489209,455	0,232	5,181	131896,909	432161203981,091	689476,123	1
2	582773,600	0,230	6,475	230521,300	596281173980,500	813962,307	1
3	690467,519	0,271	5,069	312136,481	737611525496,037	910940,704	1
4	711753,813	0,255	3,898	435803,125	853140822786,453	987430,040	0
5	664154,686	0,219	4,293	502207,714	910620866242,091	1030723,537	0
6	482759,472	0,158	4,276	424474,083	607581145666,245	853871,990	0
7	277170,714	0,108	4,000	277170,714	117259717038,853	382850,684	0

PMD

N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	710687,194	0,303	3,856	110263,417	996006596139,896	1058540,231	2
3	1033140,825	0,406	3,177	60373,778	1381705878265,760	1269641,757	2
4	1011251,467	0,418	3,000	-507202,342	1170771231697,520	1209737,178	0
5	795672,640	0,329	1,000	-499530,640	696007689147,004	1021768,826	0

SE

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,890	1,000	491763,122	0,228	5,642	139449,399	442452288829,658	697637,096	1
0,880	2,000	489367,291	0,204	6,027	183675,862	460859985862,216	715588,325	1
0,880	3,000	538911,615	0,224	4,466	207551,673	512577481623,198	759374,523	1
0,870	4,000	557830,348	0,215	2,493	243577,789	546453774126,319	790264,892	0
0,880	5,000	620074,083	0,224	2,026	263016,443	721665426831,813	917574,519	0
0,890	6,000	622875,071	0,216	1,934	254581,960	837885998809,598	1002727,879	0

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,890	1,000	491763,122	0,228	5,642	139449,399	442452288829,658	697637,096	1
		0%	12%	192%	0%	0%	0%	0%
0,880	2,000	489367,291	0,204	6,027	183675,862	460859985862,216	715588,325	1
		0%	0%	212%	32%	4%	3%	0%
0,880	3,000	538911,615	0,224	4,466	207551,673	512577481623,198	759374,523	1
		10%	10%	131%	49%	16%	9%	0%
0,870	4,000	557830,348	0,215	2,493	243577,789	546453774126,319	790264,892	0
		14%	5%	29%	75%	24%	13%	100%
0,880	5,000	620074,083	0,224	2,026	263016,443	721665426831,813	917574,519	0
		27%	10%	5%	89%	63%	32%	100%
0,890	6,000	622875,071	0,216	1,934	254581,960	837885998809,598	1002727,879	0
		27%	6%	0%	83%	89%	44%	100%

MEJORES MEDIDAS DE DESEMPEÑO							
489367,291	0,204	1,934	139449,399	442452288829,658	697637,096	1,000	

% DE DESVIACIÓN RESPECTO LAS MEJORES MEDIDAS DE DESEMPEÑO

SED

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,930	1,000	693971,062	0,296	3,989	124472,544	770885148273,429	931260,324	2,000
0,740	2,000	694384,046	0,291	2,602	129410,123	807138419014,861	960439,435	2,000
0,680	3,000	637838,156	0,252	2,567	57253,157	826043185081,449	981690,913	2,000
0,840	4,000	740567,779	0,299	1,304	-152386,934	938894830628,676	1061448,914	0,000
0,880	5,000	881520,862	0,379	1,277	-260041,808	1822836356288,160	1509485,159	0,000
0,890	6,000	322966,006	0,120	3,726	58587,525	180474073929,161	490542,657	1,000

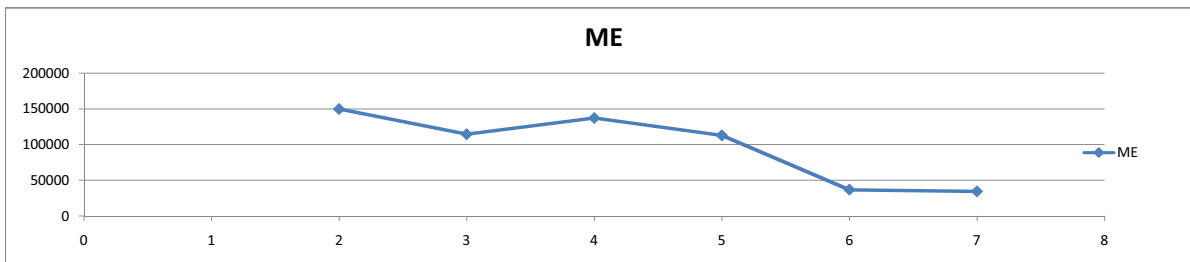
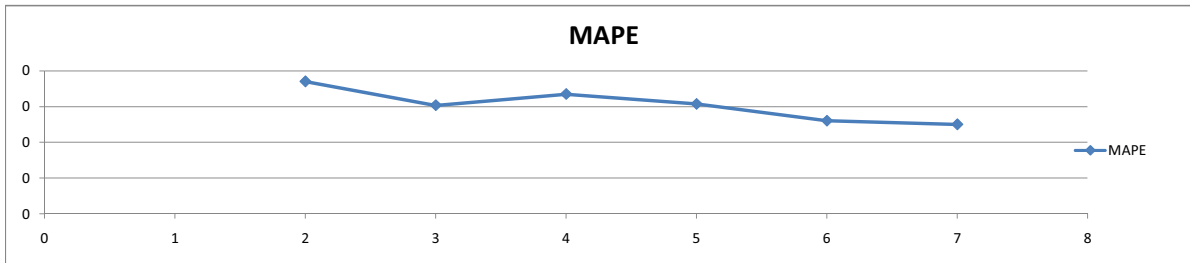
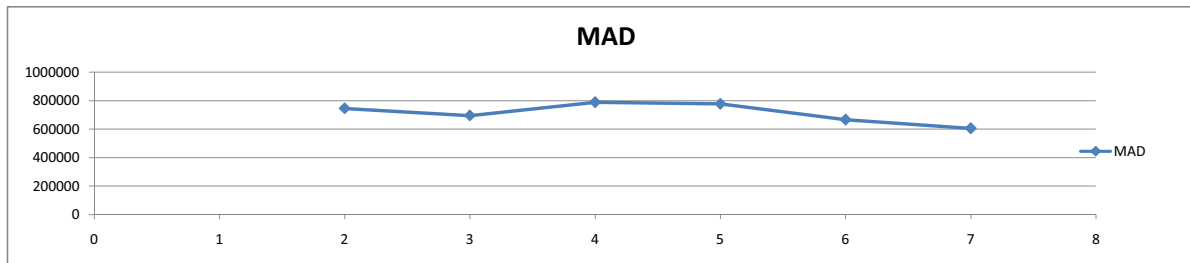
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,930	1,000	693971,062	0,296	3,989	124472,544	770885148273,429	931260,324	2,000
		115%	147%	212%	148%	327%	90%	0%
0,740	2,000	694384,046	0,291	2,602	129410,123	807138419014,861	960439,435	2,000
		115%	143%	104%	150%	347%	96%	0%
0,680	3,000	637838,156	0,252	2,567	57253,157	826043185081,449	981690,913	2,000
		97%	110%	101%	122%	358%	100%	0%
0,840	4,000	740567,779	0,299	1,304	-152386,934	938894830628,676	1061448,914	0,000
		129%	150%	2%	41%	420%	116%	100%
0,880	5,000	881520,862	0,379	1,277	-260041,808	1822836356288,160	1509485,159	0,000
		173%	217%	0%	0%	910%	208%	100%
0,890	6,000	322966,006	0,120	3,726	58587,525	180474073929,161	490542,657	1,000
		0%	0%	192%	123%	0%	0%	50%

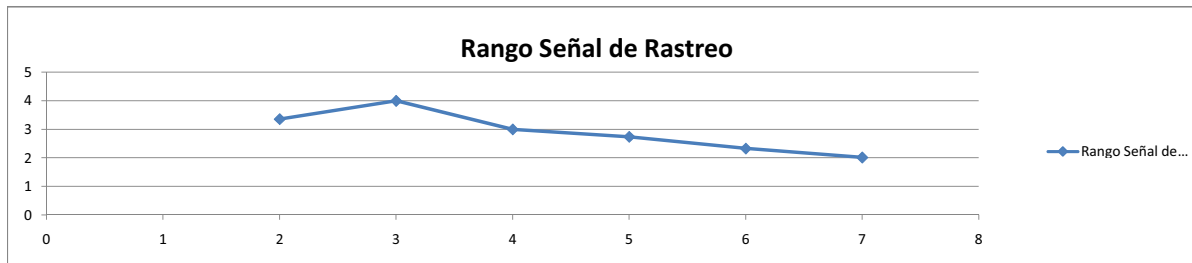
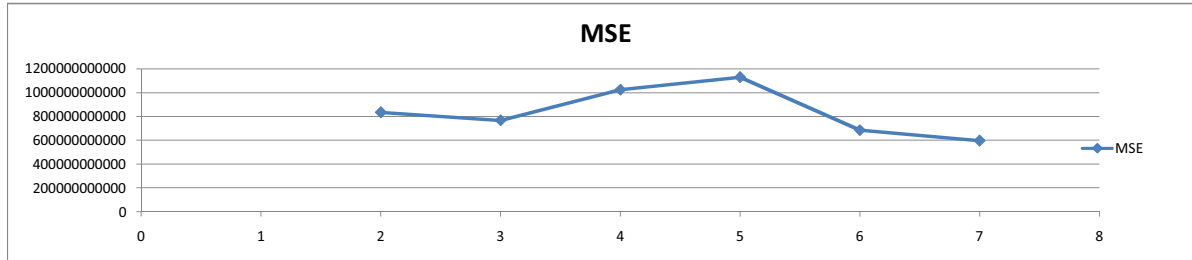
MEJORES MEDIDAS DE DESEMPEÑO							
322966,006	0,120	1,277	-260041,808	180474073929,161	490542,657	2,000	

% DE DESVIACIÓN RESPECTO LAS MEJORES MEDIDAS DE DESEMPEÑO

SET

Alpha	Beta	N (Periodos de Promedio)	MAD	MAPE	Pendiente	Intercepto	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,860	0,870	2	745521,903	0,370	-517870,000	2154814,000	3,354	149809,601	834655378134,377	963013,429	2
0,870	0,860	3	694822,363	0,304	-170660,000	1691867,333	3,993	114496,366	767246750965,475	929060,060	2
0,730	0,760	4	788620,660	0,335	-139412,100	1639787,500	2,995	137189,375	1024152200443,630	1081877,839	2
0,740	0,710	5	777226,425	0,307	13211,900	1334539,500	2,738	113031,656	1129820935296,150	1148096,000	2
0,680	0,640	6	666170,668	0,261	237699,914	810734,133	2,329	36917,841	685534360992,460	906995,718	2
0,740	0,700	7	604847,382	0,250	342669,964	530814,000	2,016	34606,711	596872161324,216	863765,131	1





Regresión Lineal

Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
1180739,894	144902,350	0,671	445652,389	0,224	5,017	0,000	305007994026,849	576832,726	4

Media

MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
623691,639	0,352	5,000	0,000	555218560992,639	778262,793	1

Descomposición

Estacionalidad	Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	1184769,237	144282,451	0,669	444786,239	0,224	5,000	-371,207	305906754737,376	577681,971	3,000
3	1226323,644	137889,465	0,683	408487,038	0,209	5,237	-6090,141	277424280188,943	550131,502	3,000
4	1254003,324	133631,053	0,657	456584,163	0,240	4,406	-7842,763	305361870947,316	577167,256	3,000
6	1272003,768	130861,754	0,776	299948,423	0,132	9,605	-17693,297	174857539419,666	436753,568	2,000

Winters

Estacionalidad	Alpha	Beta	Gamma	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	0,850	0,860	0,850	881344,087	0,355	3,714	105689,046	999771600735,119	1060539,038	4
3	0,690	0,720	0,710	824582,049	0,360	2,442	171907,089	948063465164,790	1040913,591	2
4	0,630	0,650	0,590	930562,751	0,362	2,935	127196,720	1188514324783,520	1177539,828	2
6	0,850	0,870	0,910	803113,560	0,355	2,554	-570888,731	893764474036,310	1056979,466	0

5. MEDIDAS DE DESEMPEÑO MODELOS DE PRONOSTICO
PF 25 GR

PMS

N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
1	1298724,700	0,210	5,205	-54704,950	2581001114131,350	1627015,867	12
2	1031834,538	0,171	6,260	-15512,077	2150961144105,170	1485787,799	11
3	1071520,868	0,176	6,774	-35382,886	2014046496645,370	1438221,188	9
4	1028661,480	0,171	7,420	-62530,318	1891732901595,880	1394374,784	7
5	1024840,939	0,170	7,571	-79812,528	1910926288946,430	1401971,534	5
6	1055168,095	0,177	7,818	-95003,229	2081899584206,880	1463943,962	6
7	1081952,353	0,182	8,024	-97034,000	2018044438389,160	1441942,197	6
8	993121,977	0,164	8,872	-38242,992	1787781524883,210	1357810,627	4
9	1014497,701	0,167	8,654	-38705,451	1806024622790,670	1365387,667	4
10	1000079,252	0,165	9,159	-18845,581	1806023749968,670	1366098,291	3
11	994946,191	0,168	9,396	-111701,130	1702516639380,740	1327111,190	4
12	1017422,644	0,172	8,841	-124409,615	1675430149764,000	1317295,313	3
13	994640,808	0,170	8,712	-181892,714	1690198765676,600	1323933,050	3
14	979072,529	0,169	8,921	-234999,735	1732410767076,670	1341283,695	4
15	1003731,131	0,173	8,950	-227056,777	1787286860198,450	1363370,212	2
16	1035673,763	0,178	8,702	-246282,193	1811928662177,820	1373836,122	2
17	1002924,662	0,170	9,050	-199193,819	1739424359000,500	1347238,474	2
18	1005438,800	0,169	9,265	-155283,751	1769724218295,010	1360208,156	1
19	1019729,809	0,173	9,055	-201403,919	1832343125929,260	1385495,421	1
20	1056555,376	0,180	8,420	-230909,900	1927616138121,450	1422672,466	1

PMD

N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	1748472,033	0,283	5,273	-22646,664	4728310079379,020	2203656,562	17
3	1516702,154	0,247	4,476	-47108,142	3630655153854,720	1932456,509	10
4	1321627,721	0,216	5,051	-31969,184	2900496000770,390	1728695,988	8
5	1276943,853	0,204	5,933	27420,299	2768960429186,270	1690645,360	9
6	1277831,178	0,214	6,534	-58815,473	2947208998827,050	1746091,892	5
7	1268566,428	0,214	6,503	-66150,224	2743130170128,260	1686632,024	5
8	1169130,353	0,200	7,484	-34686,780	2471768017702,120	1603321,159	5
9	1158356,700	0,195	7,648	51312,185	2376912248845,990	1574882,935	3
10	1175125,730	0,199	8,530	81598,610	2416887201592,930	1591218,737	2
11	1189242,072	0,203	7,451	-17171,273	2518553456064,040	1628222,620	6
12	1043409,169	0,193	9,287	-205702,557	1890058473649,990	1414651,329	1
13	932998,961	0,164	7,998	-113948,221	1322765638041,790	1187834,169	2
14	889809,980	0,163	7,911	-240418,148	1222880754698,210	1147583,768	1
15	734844,713	0,125	4,019	-108325,544	828003964179,045	950408,887	0

SE

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,710	1,000	1113940,496	0,182	5,806	-63223,317	2115899346121,520	1473143,977	0
0,830	2,000	1145879,022	0,186	6,394	-31056,124	2223819885032,850	1510742,023	13
0,820	3,000	1162514,569	0,189	6,105	-36566,650	2268399272224,270	1526337,892	13
0,770	4,000	1153073,230	0,188	6,010	-43686,860	2245609414532,310	1519206,192	9
0,780	5,000	1186008,601	0,193	5,277	-46827,300	2319984403083,770	1544755,538	11
0,780	6,000	1210070,248	0,197	4,590	-49382,927	2381051986306,440	1565593,474	12
0,820	7,000	1268228,946	0,207	4,134	-49651,587	2523671541419,980	1612496,957	12
0,820	8,000	1220638,808	0,196	4,893	-40843,318	2410566955993,630	1576672,817	12
0,780	9,000	1231906,485	0,198	4,356	-40687,884	2420250684929,950	1580608,518	12
0,730	10,000	1195072,440	0,193	4,603	-37961,135	2295726989560,010	1540211,421	11
0,820	11,000	1159928,249	0,190	5,756	-48217,284	2217764221420,200	1514674,503	8
0,820	12,000	1190441,644	0,196	5,308	-49358,620	2285993781214,290	1538712,584	9
0,790	13,000	1205241,540	0,199	5,000	-54691,676	2304636401134,140	1545960,318	7
0,820	14,000	1215436,169	0,201	5,310	-59005,370	2361373931813,640	1565948,916	0
0,760	15,000	1191015,746	0,198	5,732	-59856,722	2354455641253,700	1564811,128	6
0,780	16,000	1248144,350	0,207	4,394	-61838,315	2477177950712,690	1606360,389	6

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,710	1,000	1113940,496	0,182	5,806	-63223,317	2115899346121,520	1473143,977	0
		0%	0%	40%	0%	0%	0%	100%
0,830	2,000	1145879,022	0,186	6,394	-31056,124	2223819885032,850	1510742,023	13
		3%	2%	55%	51%	5%	3%	0%
0,820	3,000	1162514,569	0,189	6,105	-36566,650	2268399272224,270	1526337,892	13
		4%	4%	48%	42%	7%	4%	0%
0,770	4,000	1153073,230	0,188	6,010	-43686,860	2245609414532,310	1519206,192	9
		4%	3%	45%	31%	6%	3%	31%
0,780	5,000	1186008,601	0,193	5,277	-46827,300	2319984403083,770	1544755,538	11
		6%	6%	28%	26%	10%	5%	15%
0,780	6,000	1210070,248	0,197	4,590	-49382,927	2381051986306,440	1565593,474	12
		9%	8%	11%	22%	13%	6%	8%
0,820	7,000	1268228,946	0,207	4,134	-49651,587	2523671541419,980	1612496,957	12
		14%	13%	0%	21%	19%	9%	8%
0,820	8,000	1220638,808	0,196	4,893	-40843,318	2410566955993,630	1576672,817	12
		10%	7%	18%	35%	14%	7%	8%
0,780	9,000	1231906,485	0,198	4,356	-40687,884	2420250684929,950	1580608,518	12
		11%	9%	5%	36%	14%	7%	8%
0,730	10,000	1195072,440	0,193	4,603	-37961,135	2295726989560,010	1540211,421	11
		7%	6%	11%	40%	8%	5%	15%
0,820	11,000	1159928,249	0,190	5,756	-48217,284	2217764221420,200	1514674,503	8
		4%	4%	39%	24%	5%	3%	38%
0,820	12,000	1190441,644	0,196	5,308	-49358,620	2285993781214,290	1538712,584	9
		7%	7%	28%	22%	8%	4%	31%
0,790	13,000	1205241,540	0,199	5,000	-54691,676	2304636401134,140	1545960,318	7
		8%	9%	21%	13%	9%	5%	46%
0,820	14,000	1215436,169	0,201	5,310	-59005,370	2361373931813,640	1565948,916	0
		9%	10%	28%	7%	12%	6%	100%
0,760	15,000	1191015,746	0,198	5,732	-59856,722	2354455641253,700	1564811,128	6
		7%	9%	39%	5%	11%	6%	54%
0,780	16,000	1248144,350	0,207	4,394	-61838,315	2477177950712,690	1606360,389	6
		12%	14%	6%	2%	17%	9%	54%

MEJORES MEDIDAS DE DESEMPEÑO							
1113940,496	0,182	4,134	-63223,317	2115899346121,520	1473143,977	13,000	

% DE DESVIACIÓN RESPECTO LAS MEJORES MEDIDAS DE DESEMPEÑO

SED

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,730	1,000	1631982,097	0,260	5,909	-17400,925	4084684615714,830	2048189,810	17,000
0,800	2,000	1792570,097	0,285	5,546	-56045,869	4782178043026,370	2216983,609	14,000
0,780	3,000	1794490,642	0,286	4,616	-46770,519	4725110221317,390	2204566,481	18,000
0,820	4,000	1916155,600	0,305	3,436	-44147,077	5248658123886,980	2324441,959	18,000
0,780	5,000	1881480,072	0,300	3,348	-34119,755	4997535953901,670	2269135,615	22,000
0,810	6,000	1936665,405	0,305	3,298	29545,274	5327811237560,440	2343993,460	0,000
0,780	7,000	1835452,385	0,288	3,494	-18498,507	4960700121104,300	2262901,391	16,000
0,770	8,000	1867528,794	0,293	3,350	-6498,188	5015955631870,740	2276654,158	9,000
0,760	9,000	1782592,900	0,285	3,439	-116344,345	4575549632661,730	2175621,108	2,000
0,860	10,000	1868943,869	0,298	3,495	-49057,605	5075058475992,630	2292664,512	17,000
0,770	11,000	1757149,890	0,283	3,608	-77139,101	4466220077910,810	2152123,518	10,000
0,830	12,000	1899852,269	0,306	3,176	-81456,568	5147965135667,320	2312134,035	10,000
0,780	13,000	1806602,503	0,292	3,465	-21046,100	4743806245336,830	2221161,519	11,000
0,780	14,000	1835937,803	0,297	3,226	-46329,064	4880856158093,830	2254822,646	14,000
0,740	15,000	1788564,241	0,287	3,396	24755,634	4646090815818,970	2201838,951	4,000
0,760	16,000	1853601,731	0,295	3,008	17873,748	5020580812362,530	2291023,577	4,000

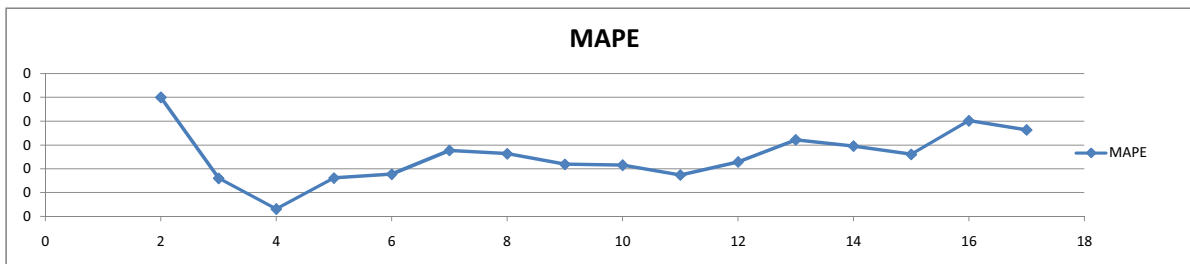
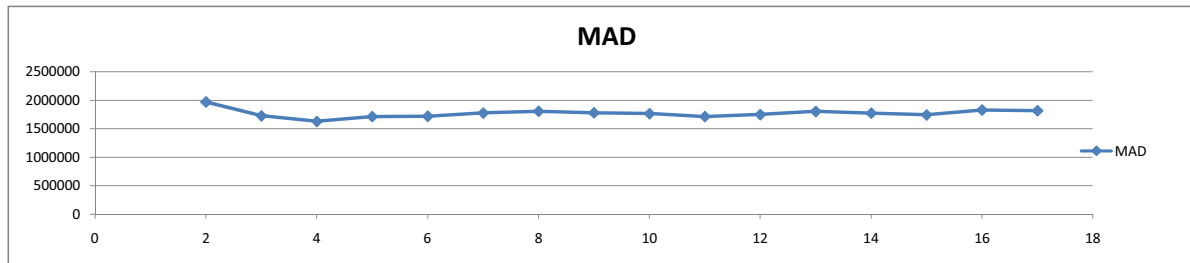
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,730	1,000	1631982,097	0,260	5,909	-17400,925	4084684615714,830	2048189,810	17
		0%	0%	96%	85%	0%	0%	23%
0,800	2,000	1792570,097	0,285	5,546	-56045,869	4782178043026,370	2216983,609	14
		10%	9%	84%	52%	17%	8%	36%
0,780	3,000	1794490,642	0,286	4,616	-46770,519	4725110221317,390	2204566,481	18
		10%	10%	53%	60%	16%	8%	18%
0,820	4,000	1916155,600	0,305	3,436	-44147,077	5248658123886,980	2324441,959	18
		17%	17%	14%	62%	28%	13%	18%
0,780	5,000	1881480,072	0,300	3,348	-34119,755	4997535953901,670	2269135,615	22
		15%	15%	11%	71%	22%	11%	0%
0,810	6,000	1936665,405	0,305	3,298	29545,274	5327811237560,440	2343993,460	0
		19%	17%	10%	125%	30%	14%	100%
0,780	7,000	1835452,385	0,288	3,494	-18498,507	4960700121104,300	2262901,391	16
		12%	11%	16%	84%	21%	10%	27%
0,770	8,000	1867528,794	0,293	3,350	-6498,188	5015955631870,740	2276654,158	9
		14%	12%	11%	94%	23%	11%	59%
0,760	9,000	1782592,900	0,285	3,439	-116344,345	4575549632661,730	2175621,108	2
		9%	10%	14%	0%	12%	6%	91%
0,860	10,000	1868943,869	0,298	3,495	-49057,605	5075058475992,630	2292664,512	17
		15%	14%	16%	58%	24%	12%	23%
0,770	11,000	1757149,890	0,283	3,608	-77139,101	4466220077910,810	2152123,518	10
		8%	9%	20%	34%	9%	5%	55%
0,830	12,000	1899852,269	0,306	3,176	-81456,568	5147965135667,320	2312134,035	10
		16%	17%	6%	30%	26%	13%	55%
0,780	13,000	1806602,503	0,292	3,465	-21046,100	4743806245336,830	2221161,519	11
		11%	12%	15%	82%	16%	8%	50%
0,780	14,000	1835937,803	0,297	3,226	-46329,064	4880856158093,830	2254822,646	14
		12%	14%	7%	60%	19%	10%	36%
0,740	15,000	1788564,241	0,287	3,396	24755,634	4646090815818,970	2201838,951	4
		10%	10%	13%	121%	14%	8%	82%
0,760	16,000	1853601,731	0,295	3,008	17873,748	5020580812362,530	2291023,577	4
		14%	13%	0%	115%	23%	12%	82%

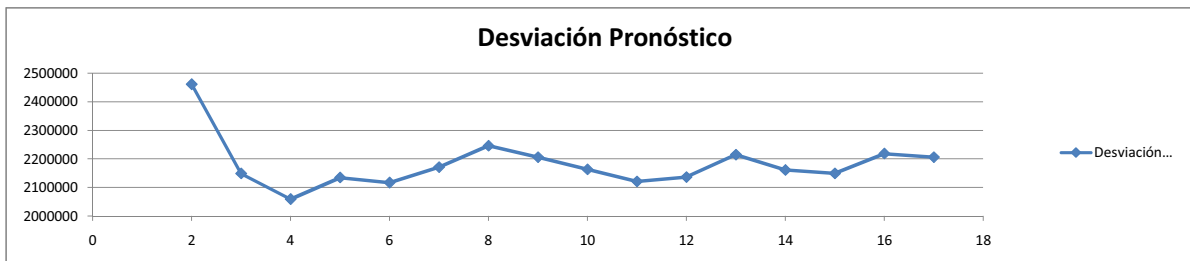
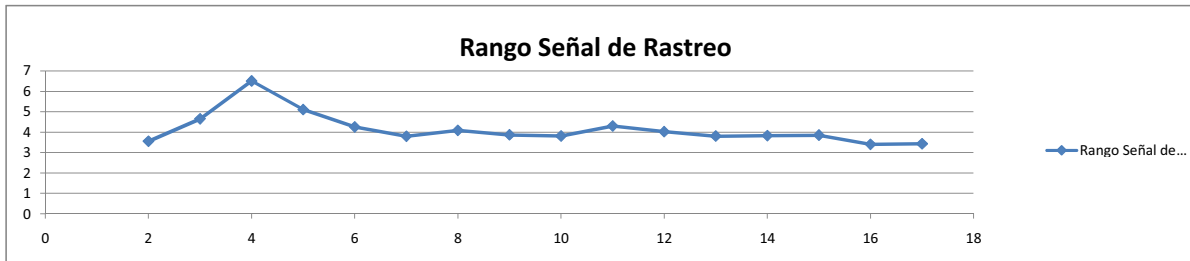
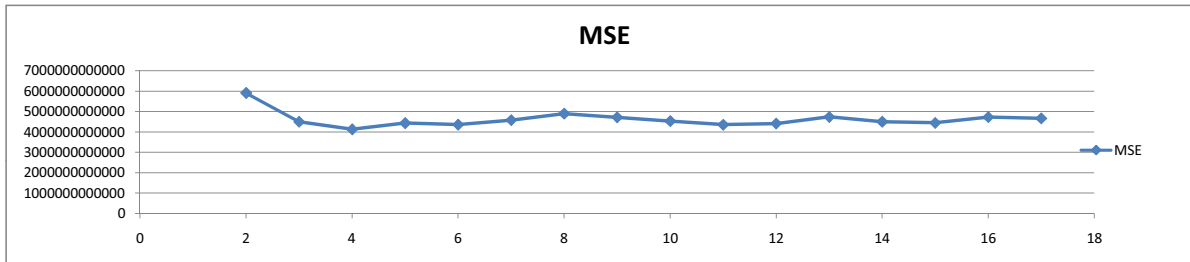
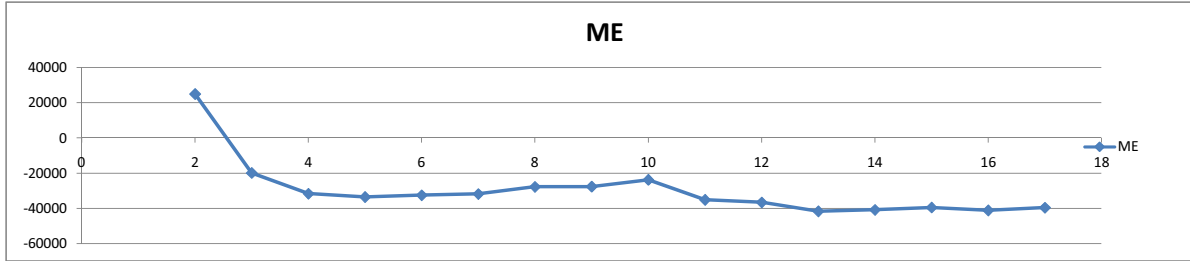
MEJORES MEDIDAS DE DESEMPEÑO							
1631982,097	0,260	3,008	-116344,345	4084684615714,830	2048189,810	22,000	

% DE DESVIACIÓN RESPECTO LAS MEJORES MEDIDAS DE DESEMPEÑO

SET

Alpha	Beta	N (Periodos de Promedio)	MAD	MAPE	Pendiente	Intercepto	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Interseccion es con cero
0,890	0,920	2	1970526,305	0,310	-1871638,000	9262460,000	3,558	24958,695	5904604167345,240	2461704,387	4
0,830	0,820	3	1728591,444	0,276	-247279,000	7096648,000	4,655	-19821,512	4497383894203,580	2149170,726	19
0,780	0,780	4	1630068,537	0,263	102271,700	6514063,500	6,506	-31605,474	4126959148435,090	2059513,754	18
0,790	0,820	5	1713698,613	0,276	109225,100	6500156,700	5,102	-33478,661	4431645808922,350	2135009,195	16
0,770	0,790	6	1719273,652	0,278	90908,629	6542895,133	4,258	-32451,668	4354958263093,260	2117320,304	0
0,780	0,790	7	1777527,235	0,288	46230,964	6662035,571	3,801	-31760,501	4577438046920,480	2171669,471	18
0,830	0,850	8	1807635,213	0,286	-155223,393	7266398,643	4,092	-27729,341	4893186799341,360	2246352,351	19
0,830	0,770	9	1779033,932	0,282	-132297,800	7189980,000	3,866	-27571,734	4716360189561,360	2206467,956	18
0,770	0,780	10	1765458,538	0,282	-149131,673	7251704,200	3,810	-23707,837	4529434935471,150	2163426,934	0
0,790	0,860	11	1713966,177	0,277	-3179,573	6667895,800	4,306	-35080,864	4350857871165,730	2121529,508	14
0,810	0,810	12	1748524,489	0,283	-8167,608	6689510,621	4,023	-36511,639	4408576205086,490	2136826,000	0
0,830	0,840	13	1804666,734	0,292	25274,984	6533445,192	3,804	-41606,577	4732326911677,540	2215309,974	13
0,790	0,810	14	1774399,400	0,290	43692,785	6441356,187	3,831	-40752,481	4498208548371,520	2161299,741	12
0,780	0,770	15	1745278,630	0,286	17072,311	6583332,048	3,853	-39478,207	4442453126602,460	2149453,710	12
0,780	0,790	16	1830080,416	0,300	13656,501	6602688,300	3,406	-41079,744	4725692581838,810	2218692,507	12
0,770	0,790	17	1817844,446	0,296	-23169,025	6823641,456	3,430	-39511,386	4665081253665,750	2206334,261	0





Regresion Lineal

Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
6914972,098	-21043,948	-0,208	883281,967	0,144	10,257	0,000	1374427317611,920	1186923,755	9

Media

MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
942077,839	0,153	9,399	0,000	1436426000691,330	1213398,801	5

Descomposición

Estacionalidad	Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	6905258,266	-20581,384	-0,207	891447,347	0,146	10,337	0,000	1353802455715,170	1177984,515	8,000
3	6917122,024	-21146,325	-0,209	885753,277	0,145	10,175	34,038	1373408992810,030	1186483,973	8,000
4	6952604,636	-22835,973	-0,248	859215,624	0,139	7,919	400,140	1139272806690,380	1080626,960	10,000
6	6935749,512	-22033,348	-0,226	893878,100	0,147	10,510	744,880	1313843617949,130	1160469,607	8,000
12	6990723,733	-24651,168	-0,318	691247,616	0,113	8,511	1581,692	719574821397,231	858815,575	6,000

Winters

Estacionalidad	Alpha	Beta	Gamma	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	0,810	0,790	0,820	1853223,108	0,296	4,512	-79067,500	5086032942341,870	2285496,290	17
3	0,820	0,780	0,830	2053962,377	0,331	5,622	-126106,724	7202381684977,160	2720743,987	11
4	0,820	0,770	0,760	2077396,160	0,341	4,019	-26992,046	5890747385273,950	2461514,667	19
6	0,760	0,770	0,780	2003485,851	0,328	5,350	-112720,859	6158433145651,310	2518938,731	10
12	0,770	0,820	0,850	1849145,286	0,306	4,422	-132058,757	5032436903186,680	2284474,437	7

6. MEDIDAS DE DESEMPEÑO MODELOS DE PRONOSTICO
PF 27 GR

PMS

N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
1	880301,000	0,430	4,040	-63696,000	1173517033650,000	1118817,010	6
2	687559,867	0,348	4,866	-86329,200	708382279610,933	871195,164	5
3	659490,095	0,326	4,724	-155486,667	648325400104,889	835581,585	3
4	610550,538	0,349	6,004	-320836,231	535371115144,692	761567,709	0
5	543923,467	0,321	7,895	-297256,267	468946670696,640	715246,941	3
6	614752,667	0,369	7,189	-412112,061	580332914272,849	798978,226	0
7	615074,400	0,390	8,131	-438636,686	604938528680,032	819849,938	1
8	654242,056	0,441	7,431	-612873,944	707188969094,694	891957,168	0
9	589252,000	0,409	7,000	-589252,000	620261658024,148	841944,456	0

PMD

N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	1119120,071	0,575	2,249	40847,786	1815669439643,500	1398333,408	8
3	642209,556	0,306	2,453	66469,704	706795903963,030	878094,572	8
4	709182,325	0,395	2,477	102597,258	551209203530,517	782594,832	6
5	514451,480	0,292	4,065	197130,080	293135254591,565	578801,969	3
6	454156,989	0,275	3,006	151823,344	258821113777,946	557301,836	1
7	584765,429	0,342	2,670	381805,238	383703227875,304	715265,198	2
8	732194,808	0,380	1,000	732194,808	566127740095,854	1064074,941	0

SE

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,860	1,000	805930,609	0,394	4,427	-75791,764	979338402978,589	1022070,267	6
0,770	2,000	797280,568	0,395	4,303	-80552,711	930083834614,517	998257,679	5
0,730	3,000	830789,102	0,413	3,329	-96531,557	957960310662,751	1015701,514	5
0,920	4,000	815270,601	0,427	2,657	-107057,631	928099568439,468	1002716,909	2
0,940	5,000	717972,606	0,394	3,450	-91396,802	802511521397,178	935663,996	3
0,910	6,000	733695,226	0,411	2,929	-108000,035	812597056256,626	945439,983	2
0,890	7,000	687791,624	0,409	3,522	-110819,193	760984318939,949	919531,474	1
0,860	8,000	645346,754	0,401	2,229	-137467,660	639010713858,973	847872,074	0

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,860	1,000	805930,609	0,394	4,427	-75791,764	979338402978,589	1022070,267	6
		25%	0%	99%	45%	53%	21%	0%
0,770	2,000	797280,568	0,395	4,303	-80552,711	930083834614,517	998257,679	5
		24%	0%	93%	41%	46%	18%	17%
0,730	3,000	830789,102	0,413	3,329	-96531,557	957960310662,751	1015701,514	5
		29%	5%	49%	30%	50%	20%	17%
0,920	4,000	815270,601	0,427	2,657	-107057,631	928099568439,468	1002716,909	2
		26%	8%	19%	22%	45%	18%	67%
0,940	5,000	717972,606	0,394	3,450	-91396,802	802511521397,178	935663,996	3
		11%	0%	55%	34%	26%	10%	50%
0,910	6,000	733695,226	0,411	2,929	-108000,035	812597056256,626	945439,983	2
		14%	4%	31%	21%	27%	12%	67%
0,890	7,000	687791,624	0,409	3,522	-110819,193	760984318939,949	919531,474	1
		7%	4%	58%	19%	19%	8%	83%
0,860	8,000	645346,754	0,401	2,229	-137467,660	639010713858,973	847872,074	0
		0%	2%	0%	0%	0%	0%	100%

MEJORES MEDIDAS DE DESEMPEÑO							
645346,754	0,394	2,229	-137467,660	639010713858,973	847872,074	6,000	

% DE DESVIACIÓN RESPECTO LAS MEJORES MEDIDAS DE DESEMPEÑO

SED

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,530	1,000	964411,706	0,468	2,003	19043,324	1289985246747,550	1178649,601	6,000
0,750	2,000	1281621,268	0,658	1,209	-85398,127	2271501926508,250	1568691,733	0,000
0,580	3,000	899028,031	0,463	1,709	98817,164	1096241339465,390	1093571,965	4,000
0,650	4,000	947732,256	0,513	1,432	27239,876	1210064715456,370	1153720,584	7,000
0,540	5,000	825228,080	0,454	1,613	91818,173	964167806957,666	1035035,054	6,000
0,740	6,000	1018875,925	0,614	1,205	-17236,189	1471048888015,160	1286440,826	2,000
0,700	7,000	808833,625	0,486	1,696	205705,047	943904168899,900	1038627,759	0,000
0,660	8,000	811968,139	0,476	1,897	231647,833	890208313121,665	1019105,669	0,000

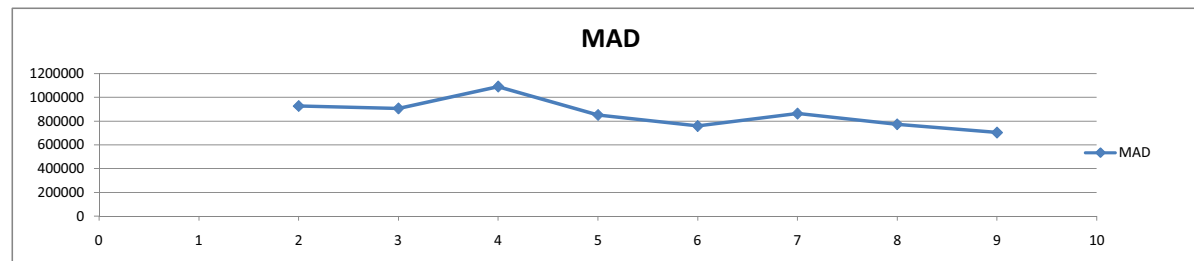
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,530	1,000	964411,706	0,468	2,003	19043,324	1289985246747,550	1178649,601	6,000
		19%	3%	66%	122%	45%	16%	14%
0,750	2,000	1281621,268	0,658	1,209	-85398,127	2271501926508,250	1568691,733	0,000
		58%	45%	0%	0%	155%	54%	100%
0,580	3,000	899028,031	0,463	1,709	98817,164	1096241339465,390	1093571,965	4,000
		11%	2%	42%	216%	23%	7%	43%
0,650	4,000	947732,256	0,513	1,432	27239,876	1210064715456,370	1153720,584	7,000
		17%	13%	19%	132%	36%	13%	0%
0,540	5,000	825228,080	0,454	1,613	91818,173	964167806957,666	1035035,054	6,000
		2%	0%	34%	208%	8%	2%	14%
0,740	6,000	1018875,925	0,614	1,205	-17236,189	1471048888015,160	1286440,826	2,000
		26%	35%	0%	80%	65%	26%	71%
0,700	7,000	808833,625	0,486	1,696	205705,047	943904168899,900	1038627,759	0,000
		0%	7%	41%	341%	6%	2%	100%
0,660	8,000	811968,139	0,476	1,897	231647,833	890208313121,665	1019105,669	0,000
		0%	5%	58%	371%	0%	0%	100%

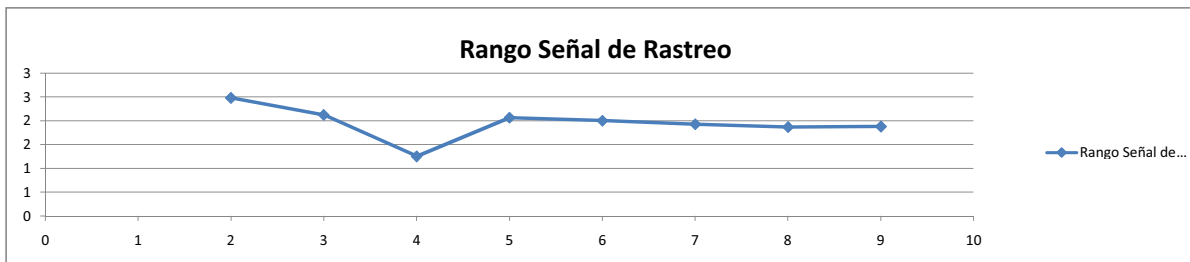
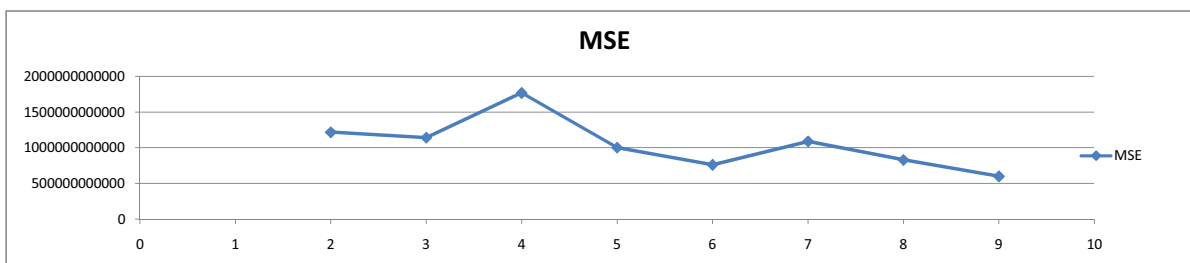
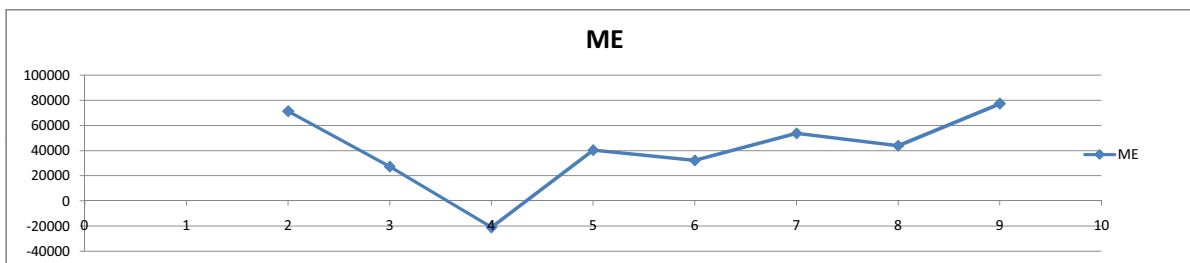
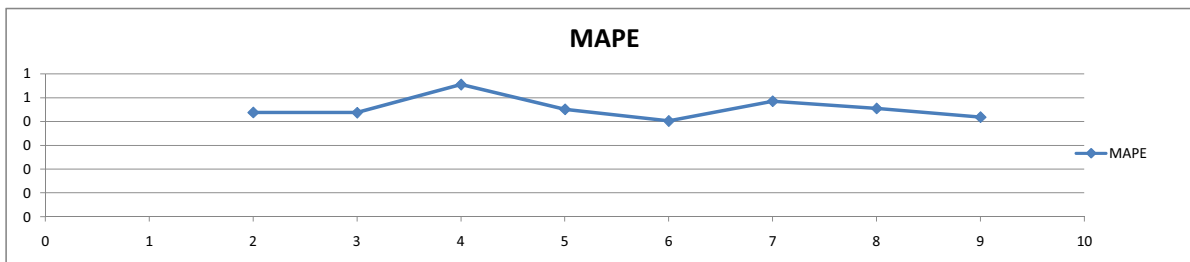
MEJORES MEDIDAS DE DESEMPEÑO							
808833,625	0,454	1,205	-85398,127	890208313121,665	1019105,669	7,000	

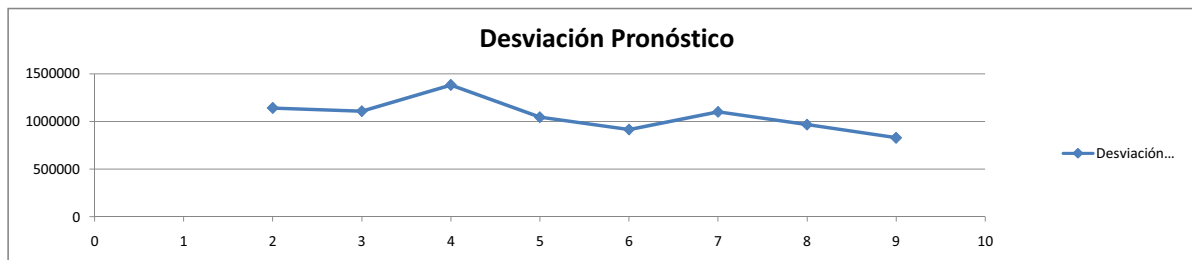
% DE DESVIACIÓN RESPECTO LAS MEJORES MEDIDAS DE DESEMPEÑO

SET

Alpha	Beta	N (Periodos de Promedio)	MAD	MAPE	Pendiente	Intercepto	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,620	0,670	2	926671,711	0,438	-274512,000	3254016,000	2,481	71295,204	1217898368617,760	1142318,305	8
0,630	0,540	3	906669,518	0,437	-2904,000	2891872,000	2,122	27303,630	1141334433202,680	1108661,080	0
0,740	0,800	4	1090426,273	0,555	411480,000	2201232,000	1,253	-20919,630	1766687093540,160	1383441,729	4
0,740	0,660	5	851546,905	0,451	-40246,400	3104684,800	2,066	40366,778	1002276316835,460	1045654,028	0
0,580	0,620	6	758233,212	0,402	15364,114	2974926,933	2,001	32221,189	762778867774,183	916000,412	7
0,730	0,690	7	863210,808	0,485	-64577,714	3188105,143	1,926	53743,514	1090504109693,730	1100759,389	6
0,680	0,660	8	773021,759	0,455	4158,000	2981898,000	1,868	43891,769	830960869681,659	966866,577	5
0,680	0,650	9	703535,444	0,418	-90068,667	3295986,889	1,879	77336,186	601801431902,572	829320,846	5







Regresión Lineal

Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
3327973,618	-107298,167	-0,648	510745,399	0,237	5,130	0,000	382031753216,496	637109,675	7

Media

MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
685990,727	0,326	6,944	0,000	658341270897,163	836353,753	0

Descomposición

Estacionalidad	Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	3318000,742	-106190,069	-0,679	477008,737	0,227	4,497	0,000	333461972127,634	595233,858	6,000
3	3346567,321	-109364,134	-0,665	519436,462	0,225	3,376	-459,478	361608482166,074	619845,959	6,000
4	3330248,117	-107550,889	-0,716	444871,535	0,219	4,087	3670,593	282256085527,039	547628,607	4,000
6	3310981,800	-105410,187	-0,672	504476,806	0,222	3,413	-3933,952	332381569773,004	594268,809	6,000
12	3126776,744	-84942,958	-0,791	259780,492	0,119	5,321	-15542,124	101717862912,473	328747,972	4,000

Winters

Estacionalidad	Alpha	Beta	Gamma	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	0,700	0,760	0,730	1124312,981	0,595	2,663	-49344,352	1979428447898,370	1460031,566	5
3	0,770	0,780	0,650	1224610,207	0,621	1,816	-188865,411	2824929447033,350	1749382,815	0
4	0,770	0,710	0,680	1055178,424	0,573	2,733	55047,811	1936279763747,930	1453377,169	0
6	0,740	0,740	0,710	1266968,311	0,692	1,776	16698,952	2723507418038,580	1739574,475	4
12	0,860	0,830	0,840	937004,579	0,523	2,334	741189,780	988571001594,680	1148083,041	0

7. MEDIDAS DE DESEMPEÑO MODELOS DE PRONOSTICO

PF 28 GR

PMS

N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
1	268539,571	0,207	3,684	-69142,857	94142123604,143	318408,268	2
2	208792,615	0,175	6,772	-92711,538	71354084064,885	278029,239	1
3	203594,028	0,176	6,932	-134575,639	69413899435,361	275180,403	0
4	200401,409	0,172	6,784	-124078,318	58210579784,784	253044,735	0
5	203803,380	0,179	6,990	-148703,380	57709723266,732	253223,053	0
6	234553,556	0,210	6,840	-178960,963	70270799749,080	281166,587	0
7	246403,839	0,230	7,347	-195475,268	83756967913,722	309390,124	1
8	271381,036	0,262	6,000	-271381,036	96523726864,094	335575,647	0
9	306001,130	0,303	5,000	-306001,130	122372200768,533	383205,742	0

PMD

N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	340861,063	0,264	2,249	-33944,396	157663930686,484	414725,229	4
3	242220,189	0,203	3,556	-10987,011	72867015785,179	284540,596	3
4	259047,836	0,210	1,558	-16199,940	96582377367,345	332234,646	5
5	143287,357	0,135	3,018	-95965,023	37458477563,567	212014,559	0
6	141733,932	0,140	2,586	-96746,821	24748302143,765	181652,790	0
7	234302,116	0,257	1,000	-234302,116	55052449343,137	331820,582	0

SE

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,880	1,000	250737,775	0,196	4,277	-77264,863	83971544068,506	300717,298	0
0,950	2,000	259139,371	0,205	4,506	-69888,571	91629538403,306	315064,015	3
0,870	3,000	254702,845	0,206	3,728	-85201,342	86064475904,175	306412,335	0
0,860	4,000	221202,127	0,180	4,372	-79320,908	62819706680,372	262871,979	2
0,920	5,000	244878,114	0,198	3,799	-80200,936	72237916953,801	283309,640	2
0,900	6,000	265645,670	0,217	3,414	-88048,776	80974004715,246	301820,734	2
0,920	7,000	246263,706	0,209	3,999	-92328,032	70631432605,301	284115,535	1
0,890	8,000	225811,624	0,203	2,508	-112412,313	59951584583,069	264468,364	0

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,880	1,000	250737,775	0,196	4,277	-77264,863	83971544068,506	300717,298	0
		13%	9%	71%	31%	40%	14%	100%
0,950	2,000	259139,371	0,205	4,506	-69888,571	91629538403,306	315064,015	3
		17%	14%	80%	38%	53%	20%	0%
0,870	3,000	254702,845	0,206	3,728	-85201,342	86064475904,175	306412,335	0
		15%	15%	49%	24%	44%	17%	100%
0,860	4,000	221202,127	0,180	4,372	-79320,908	62819706680,372	262871,979	2
		0%	0%	74%	29%	5%	0%	33%
0,920	5,000	244878,114	0,198	3,799	-80200,936	72237916953,801	283309,640	2
		11%	10%	51%	29%	20%	8%	33%
0,900	6,000	265645,670	0,217	3,414	-88048,776	80974004715,246	301820,734	2
		20%	21%	36%	22%	35%	15%	33%
0,920	7,000	246263,706	0,209	3,999	-92328,032	70631432605,301	284115,535	1
		11%	16%	59%	18%	18%	8%	67%
0,890	8,000	225811,624	0,203	2,508	-112412,313	59951584583,069	264468,364	0
		2%	13%	0%	0%	0%	1%	100%

MEJORES MEDIDAS DE DESEMPEÑO							
221202,127	0,180	2,508	-112412,313	59951584583,069	262871,979	3,000	

% DE DESVIACIÓN RESPECTO LAS MEJORES MEDIDAS DE DESEMPEÑO

SED

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,690	1,000	320887,086	0,246	2,169	-24609,291	144085607921,234	396464,752	6,000
0,890	2,000	382356,522	0,290	2,069	31467,601	193774917791,434	461684,318	0,000
0,860	3,000	328434,758	0,256	3,082	6713,499	152002256496,852	410963,984	4,000
0,590	4,000	267939,886	0,211	2,272	-21017,104	95846856394,317	328371,304	6,000
0,530	5,000	265855,831	0,213	1,687	-13674,223	89637216627,525	320066,451	3,000
0,890	6,000	345787,081	0,290	2,175	-47372,395	155674640545,743	426169,466	2,000
0,530	7,000	223120,248	0,199	1,556	-35925,191	66065141920,381	281563,794	4,000
0,690	8,000	240429,016	0,202	1,146	53821,004	90295165766,998	335959,755	0,000

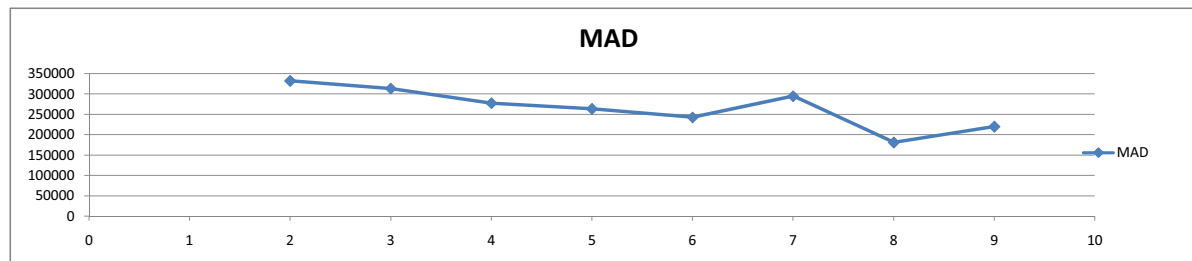
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,690	1,000	320887,086	0,246	2,169	-24609,291	144085607921,234	396464,752	6,000
		44%	24%	89%	48%	118%	41%	0%
0,890	2,000	382356,522	0,290	2,069	31467,601	193774917791,434	461684,318	0,000
		71%	46%	80%	166%	193%	64%	100%
0,860	3,000	328434,758	0,256	3,082	6713,499	152002256496,852	410963,984	4,000
		47%	29%	169%	114%	130%	46%	33%
0,590	4,000	267939,886	0,211	2,272	-21017,104	95846856394,317	328371,304	6,000
		20%	6%	98%	56%	45%	17%	0%
0,530	5,000	265855,831	0,213	1,687	-13674,223	89637216627,525	320066,451	3,000
		19%	7%	47%	71%	36%	14%	50%
0,890	6,000	345787,081	0,290	2,175	-47372,395	155674640545,743	426169,466	2,000
		55%	45%	90%	0%	136%	51%	67%
0,530	7,000	223120,248	0,199	1,556	-35925,191	66065141920,381	281563,794	4,000
		0%	0%	36%	24%	0%	0%	33%
0,690	8,000	240429,016	0,202	1,146	53821,004	90295165766,998	335959,755	0,000
		8%	1%	0%	214%	37%	19%	100%

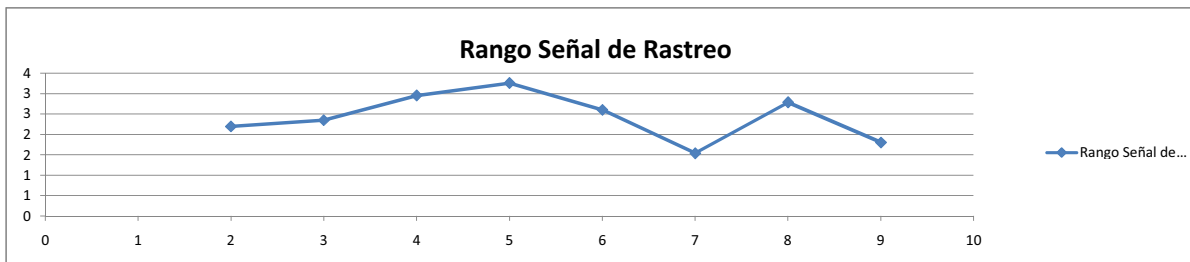
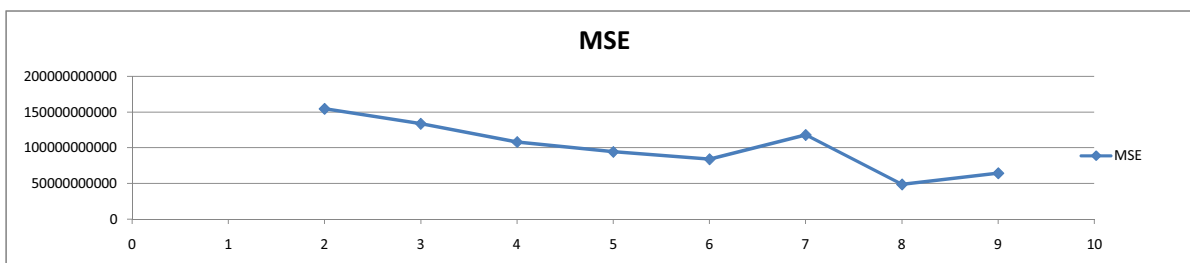
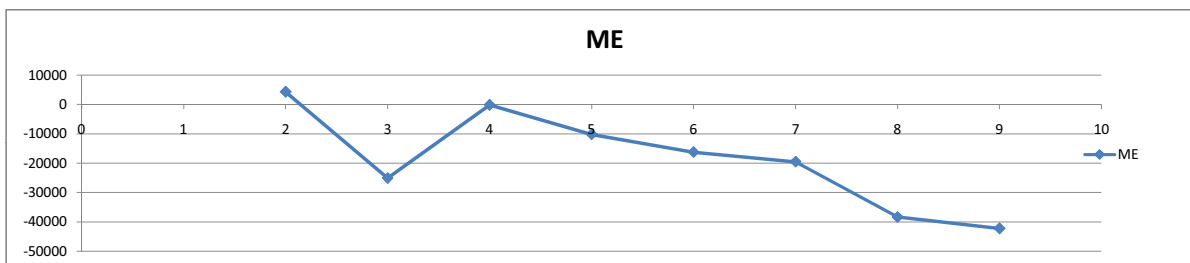
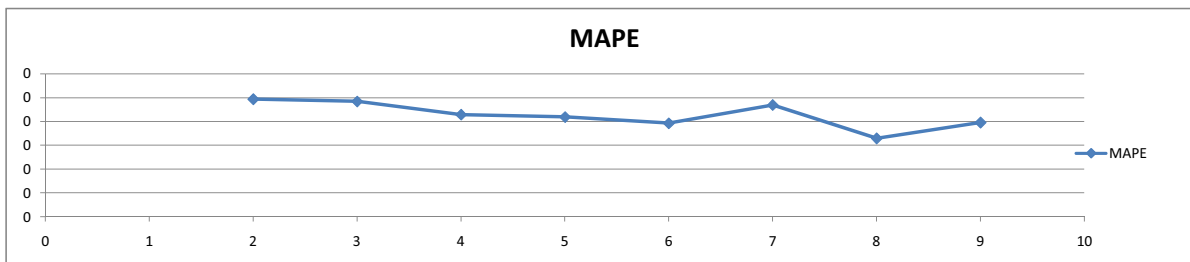
MEJORES MEDIDAS DE DESEMPEÑO							
223120,248	0,199	1,146	-47372,395	66065141920,381	281563,794	6,000	

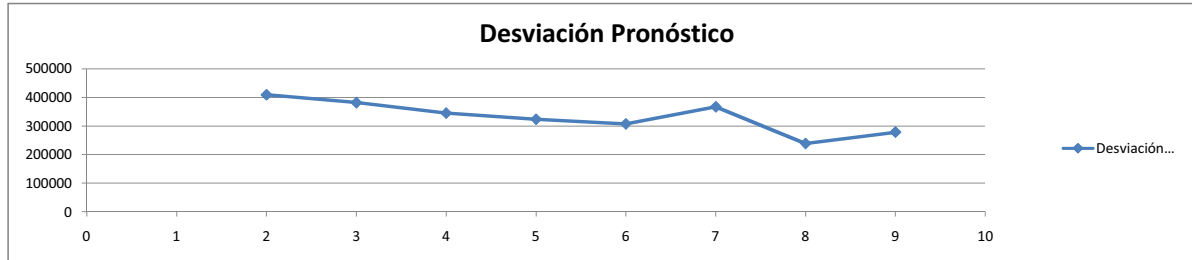
223120,248 % DE DESVIACIÓN RESPECTO LAS MEJORES MEDIDAS DE DESEMPEÑO

SET

Alpha	Beta	N (Periodos de Promedio)	MAD	MAPE	Pendiente	Intercepto	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,780	0,760	2	332155,829	0,247	-198500,000	2033500,000	2,195	4281,221	154572105557,660	409210,355	4
0,760	0,760	3	313322,045	0,242	8250,000	1757833,333	2,348	-25101,965	133671872023,696	381868,905	8
0,740	0,740	4	277282,028	0,215	-161500,000	2040750,000	2,953	-162,238	108180307482,724	344961,358	3
0,650	0,720	5	263407,448	0,209	-103150,000	1924050,000	3,258	-10181,701	94404944698,376	323874,023	3
0,560	0,580	6	242558,727	0,196	-77457,143	1864100,000	2,603	-16239,843	84088914046,825	307571,176	3
0,670	0,620	7	294407,678	0,235	-75946,429	1860071,429	1,539	-19497,197	118017657038,283	367256,480	3
0,600	0,560	8	180860,922	0,165	-33654,762	1733196,429	2,786	-38344,702	48892644180,105	238833,453	4
0,680	0,640	9	219781,712	0,198	-36475,000	1742597,222	1,802	-42211,598	64536764390,699	278287,832	2







Regresión Lineal

Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
1815826,514	-54284,339	-0,794	138226,499	0,105	4,233	0,000	32322250720,545	186094,016	5

Media

MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
241351,653	0,189	7,192	0,000	87328987898,693	305886,863	1

Descomposición

Estacionalidad	Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	1812193,567	-53830,221	-0,800	126060,633	0,097	5,981	0,000	28986349487,647	176229,405	4,000
3	1818355,734	-54600,492	-0,806	147264,900	0,110	3,505	102,025	29911808620,044	179020,575	6,000
4	1804160,816	-52826,127	-0,792	137568,280	0,100	3,481	-1578,612	30762040384,694	181547,043	6,000
6	1810457,827	-53613,253	-0,863	116951,862	0,085	5,035	100,180	19486800572,508	144494,688	3,000
12	1758349,863	-47099,758	-0,844	104133,395	0,079	3,799	-4507,582	15504782348,342	128888,583	4,000

Winters

Estacionalidad	Alpha	Beta	Gamma	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	0,740	0,710	0,650	349609,776	0,265	2,123	-40725,385	163730403133,510	422628,661	4
3	0,740	0,720	0,690	339211,677	0,265	2,861	63301,285	188152659649,861	454937,277	0
4	0,790	0,850	0,800	518377,210	0,401	3,519	-49926,028	445511741690,312	703571,636	3
6	0,750	0,760	0,750	288734,538	0,222	1,477	52682,663	150019903189,091	414066,804	0
12	0,710	0,750	0,720	280749,589	0,316	1,000	280749,589	100688226347,701	448749,878	0

8. MEDIDAS DE DESEMPEÑO MODELOS DE PRONOSTICO
PF 30 GR

PMS

N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
1	503842,615	0,233	2,628	18492,308	500428263265,385	736295,198	6
2	443588,292	0,215	2,272	-19915,875	323139054687,604	593730,016	2
3	321889,333	0,129	2,255	76225,636	152517265379,172	409596,133	0
4	214516,425	0,091	5,933	-1872,975	73324431660,556	285432,287	1
5	276721,111	0,117	4,788	-23714,667	112266889069,769	355387,465	3
6	269176,146	0,115	4,291	-48760,438	99485193842,101	337190,398	2
7	272633,878	0,116	3,966	-24606,735	101499378736,099	344116,175	1
8	254812,854	0,113	4,000	-92526,313	98534974530,732	343863,301	0
9	266675,867	0,120	3,000	-80626,756	119078771151,847	385808,844	0

PMD

N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	602805,023	0,234	2,212	169208,295	645174224422,642	842431,984	0
3	357710,667	0,150	3,373	3708,864	212032223239,553	488401,731	2
4	258724,890	0,107	4,641	16845,057	127438745037,868	385588,558	1
5	310227,744	0,131	4,075	39507,152	184003980771,614	479588,340	1
6	352699,276	0,149	2,632	74340,254	187635946191,920	530522,308	1

SE

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,710	1,000	420181,632	0,201	3,002	1115,171	358983765997,198	623617,735	6
0,800	2,000	467968,188	0,221	1,972	386,755	420078193136,847	676954,297	5
0,750	3,000	343223,190	0,137	2,490	48493,677	183820542029,730	449669,430	2
0,800	4,000	283810,722	0,118	4,388	30020,600	139384680486,430	393537,631	4
0,770	5,000	304911,408	0,127	3,367	28151,368	149390332962,538	409956,247	4
0,770	6,000	324144,508	0,135	3,062	28950,407	164290108646,292	433312,963	3
0,800	7,000	326457,300	0,135	3,236	41552,591	171090978686,624	446773,032	2
0,930	8,000	285957,838	0,120	4,566	52501,832	170542454035,405	452383,626	1

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,710	1,000	420181,632	0,201	3,002	1115,171	358983765997,198	623617,735	6
		48%	70%	52%	188%	158%	58%	0%
0,800	2,000	467968,188	0,221	1,972	386,755	420078193136,847	676954,297	5
		65%	88%	0%	201%	72%	17%	
0,750	3,000	343223,190	0,137	2,490	48493,677	183820542029,730	449669,430	2
		21%	16%	26%	12439%	32%	14%	67%
0,800	4,000	283810,722	0,118	4,388	30020,600	139384680486,430	393537,631	4
		0%	0%	122%	7662%	0%	0%	33%
0,770	5,000	304911,408	0,127	3,367	28151,368	149390332962,538	409956,247	4
		7%	8%	71%	7179%	7%	4%	33%
0,770	6,000	324144,508	0,135	3,062	28950,407	164290108646,292	433312,963	3
		14%	14%	55%	7385%	18%	10%	50%
0,800	7,000	326457,300	0,135	3,236	41552,591	171090978686,624	446773,032	2
		15%	15%	64%	10644%	23%	14%	67%
0,930	8,000	285957,838	0,120	4,566	52501,832	170542454035,405	452383,626	1
		1%	2%	132%	13475%	22%	15%	83%

MEJORES MEDIDAS DE DESEMPEÑO							
283810,722	0,118	1,972	386,755	139384680486,430	393537,631	6,000	

% DE DESVIACIÓN RESPECTO LAS MEJORES MEDIDAS DE DESEMPEÑO

SED

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,900	1,000	779409,007	0,300	2,146	187261,783	1164382986522,040	1131733,752	0,000
0,750	2,000	428758,736	0,174	3,055	35091,871	298169346601,080	575586,027	3,000
0,750	3,000	420832,557	0,173	3,170	43484,698	289837755864,772	571023,183	3,000
0,590	4,000	390421,876	0,161	2,995	54281,131	238891435964,809	522511,994	3,000
0,720	5,000	443096,360	0,180	2,671	126654,543	328610627443,654	619176,118	4,000
0,800	6,000	457599,088	0,191	3,326	71052,373	351721042376,584	649665,492	1,000
0,560	7,000	325545,613	0,134	3,895	133116,489	231332068329,458	537740,723	3,000
0,620	8,000	408527,003	0,167	3,092	203104,982	317048487257,568	650177,911	2,000

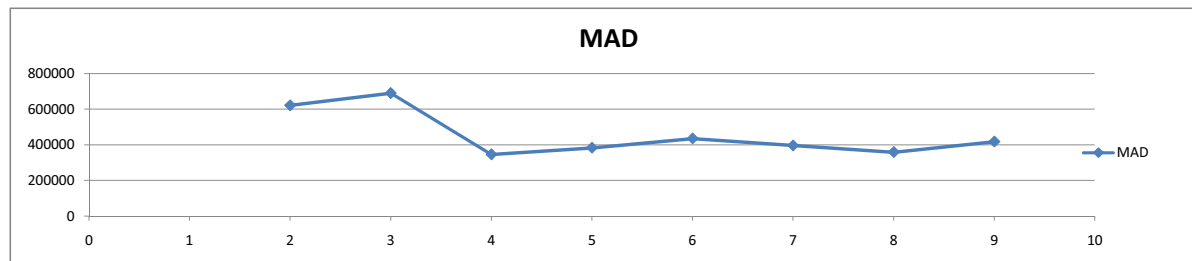
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,900	1,000	779409,007	0,300	2,146	187261,783	1164382986522,040	1131733,752	0,000
		139%	123%	0%	434%	403%	117%	100%
0,750	2,000	428758,736	0,174	3,055	35091,871	298169346601,080	575586,027	3,000
		32%	29%	42%	0%	29%	10%	25%
0,750	3,000	420832,557	0,173	3,170	43484,698	289837755864,772	571023,183	3,000
		29%	28%	48%	24%	25%	9%	25%
0,590	4,000	390421,876	0,161	2,995	54281,131	238891435964,809	522511,994	3,000
		20%	20%	40%	55%	3%	0%	25%
0,720	5,000	443096,360	0,180	2,671	126654,543	328610627443,654	619176,118	4,000
		36%	34%	24%	261%	42%	18%	0%
0,800	6,000	457599,088	0,191	3,326	71052,373	351721042376,584	649665,492	1,000
		41%	42%	55%	102%	52%	24%	75%
0,560	7,000	325545,613	0,134	3,895	133116,489	231332068329,458	537740,723	3,000
		0%	0%	82%	279%	0%	3%	25%
0,620	8,000	408527,003	0,167	3,092	203104,982	317048487257,568	650177,911	2,000
		25%	24%	44%	479%	37%	24%	50%

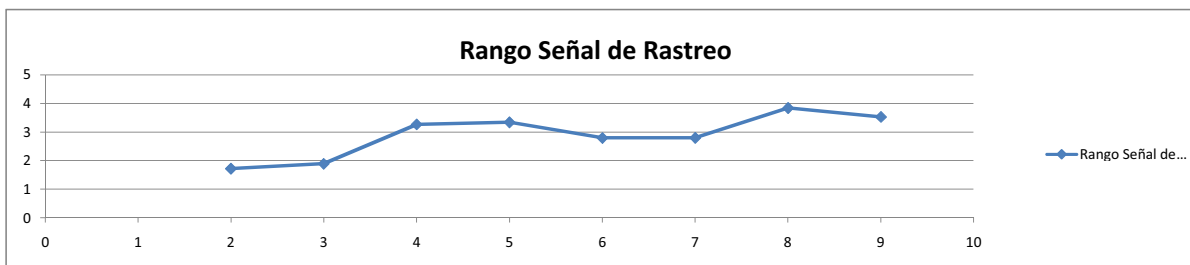
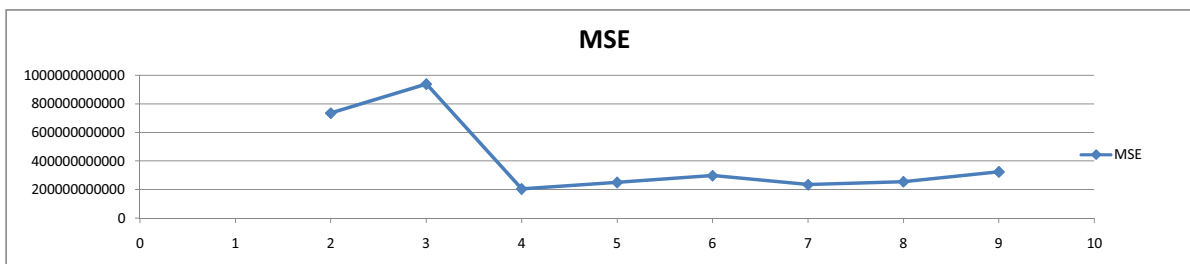
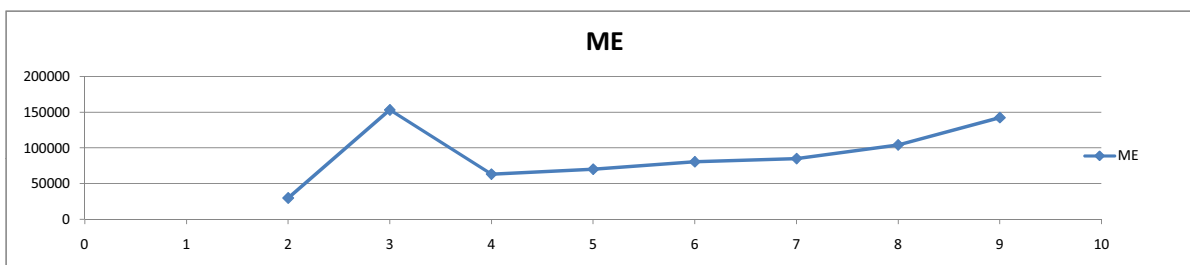
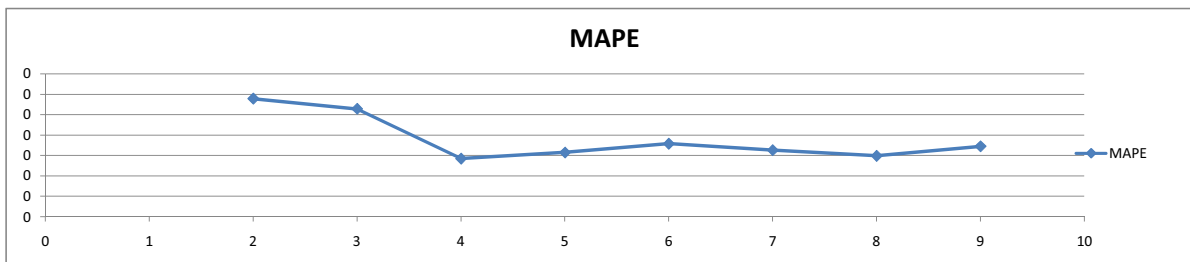
MEJORES MEDIDAS DE DESEMPEÑO						
325545,613	0,134	2,146	35091,871	231332068329,458	522511,994	4,000

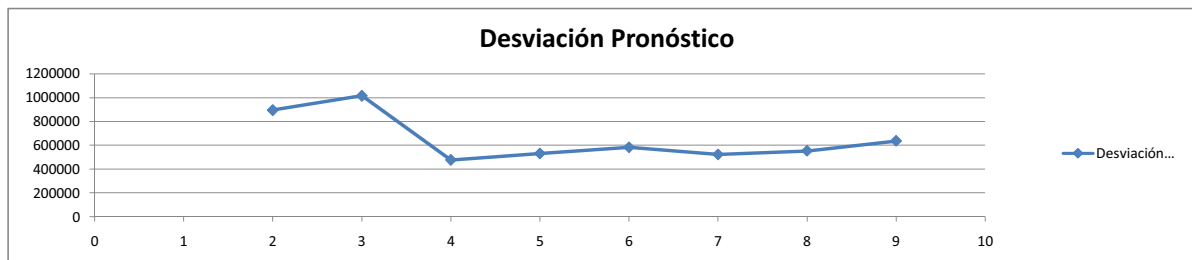
% DE DESVIACIÓN RESPECTO LAS MEJORES MEDIDAS DE DESEMPEÑO

SET

Alpha	Beta	N (Periodos de Promedio)	MAD	MAPE	Pendiente	Intercepto	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,740	0,730	2	621285,782	0,289	140448,000	2421344,000	1,721	29952,821	734908336225,739	895387,170	5
0,770	0,770	3	690091,437	0,264	-613768,000	3426965,333	1,893	153186,849	937865367890,861	1015702,665	0
0,740	0,710	4	346146,413	0,143	-10145,600	2420928,000	3,269	63291,093	205189765877,474	477481,548	6
0,760	0,830	5	382941,919	0,157	18007,200	2364622,400	3,341	70236,113	250821215633,572	531200,402	6
0,770	0,880	6	435660,470	0,179	24650,400	2349121,600	2,794	80619,774	298182305630,491	583763,461	5
0,670	0,720	7	396298,399	0,163	-8865,000	2438496,000	2,797	85173,320	234813429071,750	523401,376	4
0,790	0,780	8	359198,486	0,149	23433,000	2341602,000	3,841	104356,698	255757642987,002	553993,837	3
0,830	0,850	9	417999,333	0,173	5205,600	2402360,000	3,530	142344,282	324678450662,145	637062,056	3







Regresión Lineal

Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2439421,121	-6988,807	-0,070	291297,203	0,144	3,655	0,000	161207373405,780	416662,862	6

Media

MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
303777,214	0,148	3,406	0,000	162001078941,781	417687,324	4

Descomposición

Estacionalidad	Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	2485465,748	-13128,090	-0,151	258541,112	0,127	3,351	621,028	107482660950,197	340221,337	8,000
3	2444608,218	-7680,420	-0,084	276213,940	0,133	3,941	145,281	118137001342,413	356685,384	6,000
4	2457954,699	-9459,950	-0,114	251135,937	0,121	3,224	447,506	90569615078,451	312308,355	6,000
6	2496459,091	-14593,869	-0,191	194226,841	0,093	3,845	1072,553	66216999583,752	267040,474	4,000
12	2513847,229	-16912,288	-0,492	87401,431	0,037	3,372	950,242	14047763678,796	122997,402	4,000

Winters

Estacionalidad	Alpha	Beta	Gamma	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	0,880	0,860	0,890	740399,636	0,283	2,150	199906,726	1078533338378,250	1089213,786	0
3	0,840	0,800	0,800	1209154,359	0,525	2,228	-278048,492	1922731844641,190	1461632,210	0
4	0,870	0,870	0,890	1324727,855	0,536	4,034	-226300,790	3170027095434,800	1888459,818	2
6	0,740	0,700	0,670	974290,558	0,416	3,156	-37354,915	2052824858211,040	1547566,585	1

**9. MEDIDAS DE DESEMPEÑO MODELOS DE PRONOSTICO
PF 30 GR KERR**

PMS

N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
1	1179830,000	0,235	4,839	63432,000	2246108042940,250	1517794,636	4
2	1207003,974	0,233	5,667	89983,846	2284684659032,500	1531276,572	2
3	1172650,263	0,223	6,353	64638,947	2207728709707,540	1505787,851	8
4	1104054,014	0,211	6,727	88184,189	2101575844609,630	1469677,839	6
5	1063889,200	0,205	7,262	80433,000	2038977328344,170	1448182,939	6
6	1084554,486	0,209	8,469	98769,429	2062617505372,740	1457148,835	5
7	1076097,496	0,200	7,836	179374,538	2075148154324,490	1462200,886	4
8	1096587,280	0,202	7,580	198329,318	2005094447190,170	1437968,584	4
9	1048758,917	0,193	8,721	222843,125	1815804074556,840	1369079,399	2
10	1021615,155	0,187	9,904	249326,129	1742755738451,950	1341956,630	1
11	1035417,745	0,188	9,882	305546,970	1813757729074,220	1369781,406	1
12	1090485,299	0,196	8,150	344053,575	1907481832355,960	1405562,586	0
13	1072601,473	0,193	8,052	315296,330	1895598692004,770	1402072,056	0
14	998585,974	0,185	8,914	240814,878	1669829702342,150	1316834,812	2
15	1025017,903	0,190	9,046	239526,113	1752716321269,930	1350120,355	2
16	1077745,648	0,199	8,548	261320,058	1892021388267,510	1403871,651	2
17	1114326,211	0,205	8,113	276107,309	2007205858178,960	1447230,347	2
18	1073704,283	0,198	8,364	250410,969	1923237558873,460	1417976,533	3
19	984865,196	0,156	11,118	408163,014	1635850156961,710	1309101,900	1
20	959246,417	0,145	12,336	517806,521	1652687398931,610	1317316,123	1

PMD

N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	1711471,013	0,339	4,367	-52542,237	4406997081016,630	2127464,479	6
3	1653764,037	0,310	4,383	-38235,556	4106121801149,370	2055100,865	6
4	1348592,713	0,248	7,165	34308,419	3117395110656,260	1792166,741	4
5	1434581,748	0,268	7,617	-20317,500	3150112787714,180	1803255,204	7
6	1514523,167	0,284	5,863	-5495,167	3407905517587,970	1877610,050	7
7	1487647,299	0,280	5,583	-74589,124	3489902596418,680	1902408,539	5
8	1438075,310	0,275	5,528	-182225,770	2973785822513,160	1758617,996	0
9	1251893,088	0,245	4,550	-113131,851	2325902168590,940	1557892,278	5
10	1034235,049	0,174	5,207	49163,966	1486629936659,470	1247967,082	3
11	987154,148	0,157	3,829	183912,263	1476347961878,800	1246615,613	0
12	962121,034	0,162	3,926	-26117,598	1295407831550,500	1171156,818	3
13	883373,938	0,145	5,153	-12229,104	1116578433179,460	1091337,251	6
14	864794,190	0,139	5,293	27452,490	1125366675822,590	1100878,442	3
15	790357,423	0,119	6,209	230300,362	1103836997614,550	1097354,006	6

SE

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,830	1,000	1134252,790	0,223	5,012	78345,321	2087627679666,390	1463269,146	0
0,830	2,000	1152991,179	0,226	4,745	71679,476	2151353972656,250	1485923,467	4
0,850	3,000	1117248,852	0,221	5,254	49650,214	2095940540196,220	1467169,923	6
0,870	4,000	1147786,524	0,227	4,848	47752,293	2176062368933,120	1495496,087	6
0,880	5,000	1155458,691	0,229	4,772	40535,646	2199198957395,390	1504005,723	8
0,870	6,000	1158061,051	0,228	4,714	38953,901	2201038503111,210	1505249,125	7
0,850	7,000	1098754,857	0,210	6,250	49569,122	2092941788861,230	1468456,423	4
0,870	8,000	1132590,216	0,217	5,520	47916,625	2170543796881,980	1496119,411	6
0,830	9,000	1159751,512	0,221	4,804	50446,711	2206490544164,990	1509194,374	6
0,930	10,000	1192959,994	0,230	4,583	43893,850	2338382221052,340	1554454,340	7
0,860	11,000	1185043,808	0,226	4,430	51850,963	2336038532696,420	1554539,027	5
0,860	12,000	1222708,051	0,233	4,152	53804,854	2411249092606,130	1580305,392	4
0,890	13,000	1256102,036	0,239	3,926	47974,796	2614694496965,220	1646673,931	6
0,880	14,000	1159979,360	0,228	4,578	41794,671	2325123709455,510	1553882,732	6
0,910	15,000	1172102,403	0,232	4,847	39137,477	2411330208822,120	1583598,250	6
0,860	16,000	1202984,391	0,237	3,922	43270,294	2455580085725,930	1599342,341	6

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,830	1,000	1134252,790	0,223	5,012	78345,321	2087627679666,390	1463269,146	0
		3%	6%	28%	101%	0%	0%	100%
0,830	2,000	1152991,179	0,226	4,745	71679,476	2151353972656,250	1485923,467	4
		5%	8%	21%	84%	3%	2%	50%
0,850	3,000	1117248,852	0,221	5,254	49650,214	2095940540196,220	1467169,923	6
		2%	5%	34%	27%	0%	0%	25%
0,870	4,000	1147786,524	0,227	4,848	47752,293	2176062368933,120	1495496,087	6
		4%	8%	24%	23%	4%	2%	25%
0,880	5,000	1155458,691	0,229	4,772	40535,646	2199198957395,390	1504005,723	8
		5%	9%	22%	4%	5%	3%	0%
0,870	6,000	1158061,051	0,228	4,714	38953,901	2201038503111,210	1505249,125	7
		5%	8%	20%	0%	5%	3%	13%
0,850	7,000	1098754,857	0,210	6,250	49569,122	2092941788861,230	1468456,423	4
		0%	0%	59%	27%	0%	0%	50%
0,870	8,000	1132590,216	0,217	5,520	47916,625	2170543796881,980	1496119,411	6
		3%	3%	41%	23%	4%	2%	25%
0,830	9,000	1159751,512	0,221	4,804	50446,711	2206490544164,990	1509194,374	6
		6%	5%	22%	30%	6%	3%	25%
0,930	10,000	1192959,994	0,230	4,583	43893,850	2338382221052,340	1554454,340	7
		9%	9%	17%	13%	12%	6%	13%
0,860	11,000	1185043,808	0,226	4,430	51850,963	2336038532696,420	1554539,027	5
		8%	7%	13%	33%	12%	6%	38%
0,860	12,000	1222708,051	0,233	4,152	53804,854	2411249092606,130	1580305,392	4
		11%	11%	6%	38%	16%	8%	50%
0,890	13,000	1256102,036	0,239	3,926	47974,796	2614694496965,220	1646673,931	6
		14%	14%	0%	23%	25%	13%	25%
0,880	14,000	1159979,360	0,228	4,578	41794,671	2325123709455,510	1553882,732	6
		6%	8%	17%	7%	11%	6%	25%
0,910	15,000	1172102,403	0,232	4,847	39137,477	2411330208822,120	1583598,250	6
		7%	10%	24%	0%	16%	8%	25%
0,860	16,000	1202984,391	0,237	3,922	43270,294	2455580085725,930	1599342,341	6
		9%	12%	0%	11%	18%	9%	25%

MEJORES MEDIDAS DE DESEMPEÑO							
1098754,857	0,210	3,922	38953,901	2087627679666,390	1463269,146	8,000	

% DE DESVIACIÓN RESPECTO LAS MEJORES MEDIDAS DE DESEMPEÑO

SED

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,840	1,000	1726017,487	0,345	4,216	-70392,527	4358357133166,840	2115691,511	2,000
0,760	2,000	1587330,793	0,317	4,554	-30739,071	3783958729234,290	1972072,183	13,000
0,870	3,000	1766601,321	0,354	4,146	-44716,727	4578478938423,350	2170090,464	10,000
0,920	4,000	1872130,761	0,379	3,820	-35232,162	5161778827034,970	2305123,826	16,000
0,920	5,000	1832541,727	0,361	3,972	35500,775	4992624334441,430	2268020,278	10,000
0,880	6,000	1694981,146	0,333	5,231	-14611,748	4469643575839,190	2146932,681	16,000
0,920	7,000	1812064,714	0,357	4,305	-26515,356	4940912400584,870	2258383,641	14,000
0,850	8,000	1761677,468	0,346	4,129	-24103,831	4545537097403,210	2167269,019	14,000
0,870	9,000	1801233,698	0,353	4,527	6441,261	4776979630497,730	2222994,167	14,000
0,720	10,000	1649720,965	0,319	3,909	-2129,872	3965135863320,620	2026511,253	13,000
0,880	11,000	1855621,465	0,366	3,810	-74737,548	5082653871567,390	2295844,139	4,000
0,830	12,000	1862713,766	0,365	3,191	-120929,839	5030914988411,920	2285697,206	2,000
0,860	13,000	1855767,693	0,369	3,527	-51757,890	4958849490123,640	2270947,703	10,000
0,670	14,000	1571143,432	0,312	3,897	-15735,268	3817487849572,180	1994128,843	11,000
0,640	15,000	1593101,188	0,316	2,576	-19354,703	3830085319232,650	1999152,512	11,000
0,770	16,000	1824882,620	0,365	2,408	-68008,602	4750723970986,450	2228601,797	8,000

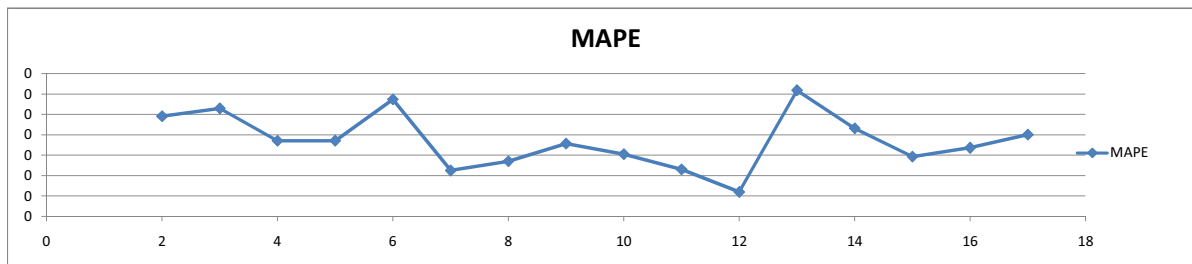
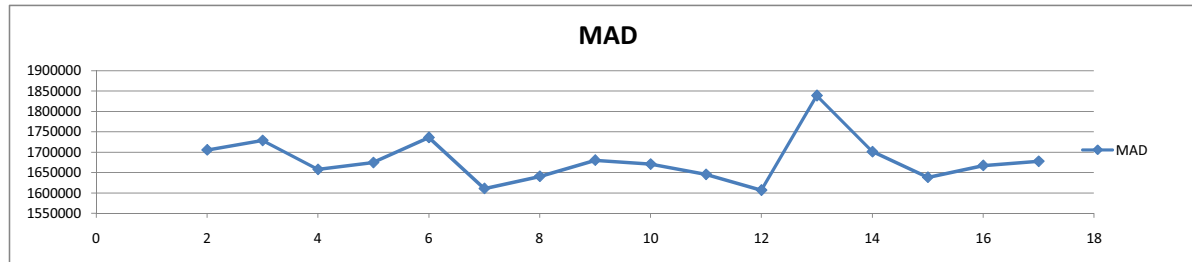
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,840	1,000	1726017,487	0,345	4,216	-70392,527	4358357133166,840	2115691,511	2,000
		10%	11%	75%	42%	15%	7%	88%
0,760	2,000	1587330,793	0,317	4,554	-30739,071	3783958729234,290	1972072,183	13,000
		1%	2%	89%	75%	0%	0%	19%
0,870	3,000	1766601,321	0,354	4,146	-44716,727	4578478938423,350	2170090,464	10,000
		12%	13%	72%	63%	21%	10%	38%
0,920	4,000	1872130,761	0,379	3,820	-35232,162	5161778827034,970	2305123,826	16,000
		19%	21%	59%	71%	36%	17%	0%
0,920	5,000	1832541,727	0,361	3,972	35500,775	4992624334441,430	2268020,278	10,000
		17%	16%	65%	129%	32%	15%	38%
0,880	6,000	1694981,146	0,333	5,231	-14611,748	4469643575839,190	2146932,681	16,000
		8%	7%	117%	88%	18%	9%	0%
0,920	7,000	1812064,714	0,357	4,305	-26515,356	4940912400584,870	2258383,641	14,000
		15%	14%	79%	78%	31%	15%	13%
0,850	8,000	1761677,468	0,346	4,129	-24103,831	4545537097403,210	2167269,019	14,000
		12%	11%	71%	80%	20%	10%	13%
0,870	9,000	1801233,698	0,353	4,527	6441,261	4776979630497,730	2222994,167	14,000
		15%	13%	88%	105%	26%	13%	13%
0,720	10,000	1649720,965	0,319	3,909	-2129,872	3965135863320,620	2026511,253	13,000
		5%	2%	62%	98%	5%	3%	19%
0,880	11,000	1855621,465	0,366	3,810	-74737,548	5082653871567,390	2295844,139	4,000
		18%	17%	58%	38%	34%	16%	75%
0,830	12,000	1862713,766	0,365	3,191	-120929,839	5030914988411,920	2285697,206	2,000
		19%	17%	32%	0%	33%	16%	88%
0,860	13,000	1855767,693	0,369	3,527	-51757,890	4958849490123,640	2270947,703	10,000
		18%	18%	46%	57%	31%	15%	38%
0,670	14,000	1571143,432	0,312	3,897	-15735,268	3817487849572,180	1994128,843	11,000
		0%	0%	62%	87%	1%	1%	31%
0,640	15,000	1593101,188	0,316	2,576	-19354,703	3830085319232,650	1999152,512	11,000
		1%	1%	7%	84%	1%	1%	31%
0,770	16,000	1824882,620	0,365	2,408	-68008,602	4750723970986,450	2228601,797	8,000
		16%	17%	0%	44%	26%	13%	50%

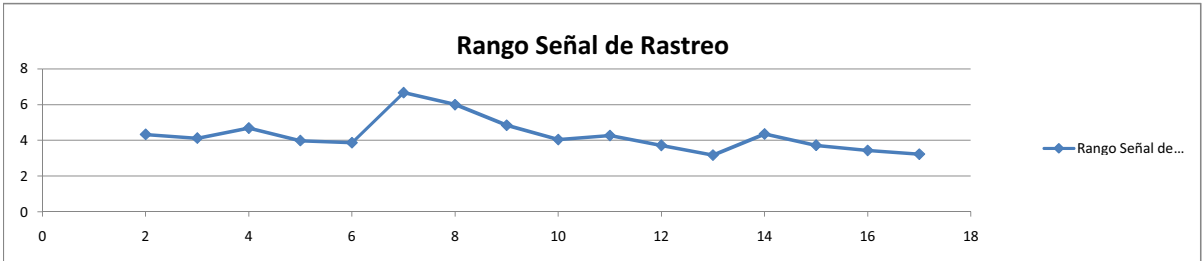
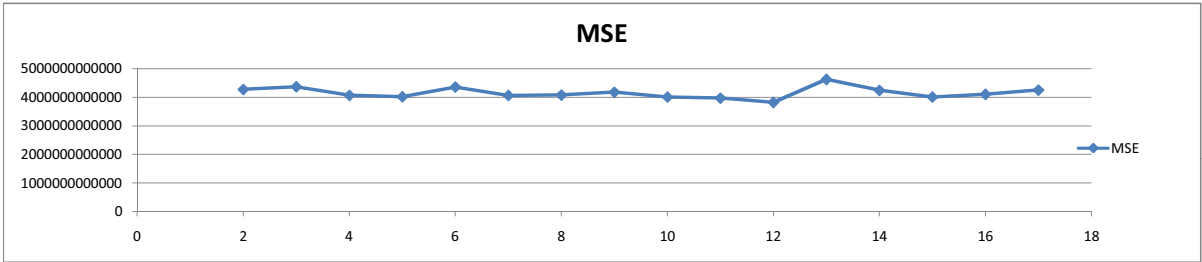
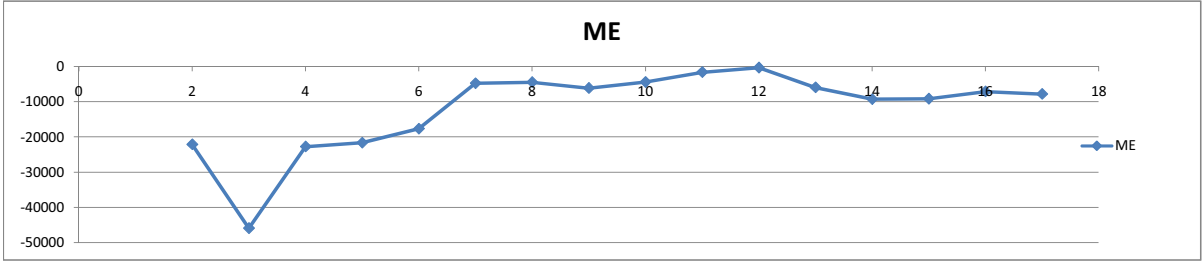
MEJORES MEDIDAS DE DESEMPEÑO							
1571143,432	0,312	2,408	-120929,839	3783958729234,290	1972072,183	16,000	

% DE DESVIACIÓN RESPECTO LAS MEJORES MEDIDAS DE DESEMPEÑO

SET

Alpha	Beta	N (Periodos de Promedio)	MAD	MAPE	Pendiente	Intercepto	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,870	0,890	2	1705231,520	0,339	561600,000	2920320,000	4,332	-22126,055	4276553703729,450	2095016,609	17
0,840	0,860	3	1728432,651	0,343	1207440,000	2059200,000	4,122	-45892,154	4371451404997,530	2118867,325	10
0,830	0,850	4	1657502,671	0,327	555984,000	3144960,000	4,689	-22751,079	4068971157888,030	2044993,431	14
0,730	0,850	5	1674319,027	0,327	527904,000	3201120,000	3,984	-21647,575	4018859924569,370	2033146,452	14
0,820	0,810	6	1735927,153	0,347	388306,286	3526848,000	3,867	-17666,321	4360781688821,090	2118735,466	16
0,840	0,880	7	1610235,165	0,313	62177,143	4396525,714	6,671	-4762,937	4063035320659,450	2046010,167	15
0,820	0,860	8	1640341,149	0,317	75548,571	4356411,429	6,006	-4442,683	4078983374834,490	2050963,580	15
0,850	0,820	9	1679957,754	0,326	80928,000	4338480,000	4,846	-6128,308	4177901376376,080	2076697,472	14
0,790	0,760	10	1670363,191	0,321	82197,818	4333824,000	4,049	-4416,972	4011408766482,060	2035957,365	14
0,770	0,750	11	1645023,867	0,313	37310,545	4513373,091	4,271	-1610,906	3973440660989,270	2027425,919	14
0,690	0,720	12	1606317,927	0,302	26790,483	4558960,030	3,719	-328,429	3821526753411,650	1989474,768	13
0,830	0,820	13	1838901,807	0,352	79832,582	4311430,231	3,177	-5940,961	4628263870701,640	2190817,439	13
0,820	0,830	14	1700836,770	0,333	146146,686	3979859,714	4,359	-9264,228	4242083143954,170	2098866,405	12
0,770	0,730	15	1638015,517	0,319	140102,186	4012097,048	3,724	-9158,989	4008848442341,350	2041862,478	12
0,740	0,750	16	1667007,306	0,324	119530,744	4128668,550	3,437	-7101,906	4105122779787,560	2067890,123	12
0,770	0,710	17	1677383,533	0,330	105546,995	4212571,044	3,224	-7829,790	4254541337426,070	2107017,180	11





Regresión Lineal

Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
4651784,904	44366,058	0,406	949900,543	0,187	7,780	0,000	1394748845637,200	1195666,160	10

Media

MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
1023633,643	0,205	11,479	0,000	1670317440154,640	1308462,982	0

Descomposición

Estacionalidad	Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	4654113,269	44255,183	0,411	943360,212	0,185	7,177	0,000	1335947931686,310	1170190,852	9,000
3	4651217,894	44393,058	0,419	885483,266	0,174	7,979	-656,350	1257441992216,330	1135287,647	12,000
4	4651439,387	44382,511	0,412	940772,848	0,184	7,235	94,045	1331897549514,380	1168415,589	9,000
6	4691223,114	42488,048	0,413	856462,904	0,163	9,091	-3107,368	1150899576302,230	1086127,095	10,000
12	4729819,387	40650,130	0,425	838512,563	0,158	7,912	-5002,733	995932659154,017	1010361,804	10,000

Winters

Estacionalidad	Alpha	Beta	Gamma	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	0,820	0,830	0,830	1739012,733	0,342	3,734	-173043,993	5113035521882,470	2291555,295	0
3	0,850	0,860	0,830	1890504,647	0,361	5,110	-173005,320	5840507293899,180	2450049,715	1
4	0,830	0,820	0,850	2972001,614	0,567	4,961	-329926,841	13375561927337,300	3709140,175	2
6	0,770	0,770	0,780	1653560,796	0,307	3,486	-81112,242	4063157621846,130	2046040,960	5
12	0,840	0,830	0,850	2142073,734	0,377	3,732	-312917,101	7480210923856,540	2785185,052	0

10. MEDIDAS DE DESEMPEÑO MODELOS DE PRONOSTICO
PF 30.5 GR

PMS

N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
1	1271605,077	0,321	2,128	-36834,923	2434050071580,000	1623849,617	8
2	841758,333	0,196	3,645	141777,500	1241012608440,830	1163542,838	1
3	739524,545	0,162	3,388	206141,030	1125275109465,090	1112565,783	0
4	598261,200	0,138	3,933	43311,400	921169879922,100	1011692,685	1
5	537792,756	0,123	3,664	115534,267	821093350821,245	961108,745	0
6	459757,167	0,123	4,633	-104113,083	489451247427,917	747912,331	2
7	424575,755	0,116	4,744	-69948,163	446011386055,161	721350,551	1
8	515996,417	0,143	4,663	-143034,750	548828224158,229	811537,965	1
9	484864,000	0,137	3,823	-176789,422	515294775829,570	802569,916	1

PMD

N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	1474196,727	0,337	1,578	199377,636	3335634244043,050	1915514,988	2
3	946052,716	0,224	3,640	-111932,914	1477678213458,620	1289336,260	1
4	831231,851	0,205	2,518	-272126,423	854250472377,610	998311,350	0
5	677084,736	0,179	2,000	-288025,920	620932583243,467	881002,684	0
6	967662,544	0,292	0,594	-514206,759	1757277621615,270	1623550,564	0

SE

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,550	1,000	954610,281	0,250	2,356	-69254,254	1569981079458,400	1304152,152	2
0,590	2,000	876230,649	0,205	3,079	89767,262	1323248804745,550	1201475,822	1
0,640	3,000	900901,416	0,205	1,896	128527,231	1375398851245,850	1230015,746	0
0,580	4,000	693204,889	0,161	3,258	64369,577	1001861654632,940	1055073,275	3
0,640	5,000	750887,751	0,173	2,390	78249,315	1100013190700,360	1112436,443	2
0,910	6,000	591232,497	0,152	4,606	15094,125	717680117601,409	905652,168	3
0,820	7,000	615579,661	0,160	4,095	20143,675	733744766148,034	925221,898	2
0,670	8,000	594152,847	0,158	3,903	5256,180	690657858143,585	910378,729	2

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,550	1,000	954610,281	0,250	2,356	-69254,254	1569981079458,400	1304152,152	2
		61%	65%	24%	0%	127%	44%	33%
0,590	2,000	876230,649	0,205	3,079	89767,262	1323248804745,550	1201475,822	1
		48%	35%	62%	230%	92%	33%	67%
0,640	3,000	900901,416	0,205	1,896	128527,231	1375398851245,850	1230015,746	0
		52%	35%	0%	286%	99%	36%	100%
0,580	4,000	693204,889	0,161	3,258	64369,577	1001861654632,940	1055073,275	3
		17%	6%	72%	193%	45%	16%	0%
0,640	5,000	750887,751	0,173	2,390	78249,315	1100013190700,360	1112436,443	2
		27%	14%	26%	213%	59%	23%	33%
0,910	6,000	591232,497	0,152	4,606	15094,125	717680117601,409	905652,168	3
		0%	0%	143%	122%	4%	0%	0%
0,820	7,000	615579,661	0,160	4,095	20143,675	733744766148,034	925221,898	2
		4%	5%	116%	129%	6%	2%	33%
0,670	8,000	594152,847	0,158	3,903	5256,180	690657858143,585	910378,729	2
		0%	4%	106%	108%	0%	1%	33%

MEJORES MEDIDAS DE DESEMPEÑO							
591232,497	0,152	1,896	-69254,254	690657858143,585	905652,168	3,000	

% DE DESVIACIÓN RESPECTO LAS MEJORES MEDIDAS DE DESEMPEÑO

SED

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,530	1,000	1165589,708	0,263	1,504	179543,273	2227112121379,160	1565191,149	0,000
0,750	2,000	1509476,069	0,358	2,293	-169502,004	3442751574175,310	1955832,183	2,000
0,610	3,000	1100181,923	0,253	2,560	-3983,689	2128175931335,410	1547319,593	7,000
0,910	4,000	1629119,770	0,392	2,137	-276335,031	3988779267051,250	2135088,962	0,000
0,630	5,000	826284,268	0,208	3,565	-24107,560	1157352952593,120	1162000,478	5,000
0,920	6,000	1329526,733	0,329	3,157	-117861,121	2731288604643,810	1810399,493	2,000
0,720	7,000	1099642,661	0,283	2,369	-63031,515	1890742578386,330	1537344,536	2,000
0,720	8,000	1271099,318	0,332	2,432	-1927,523	2340648613622,280	1766596,960	3,000

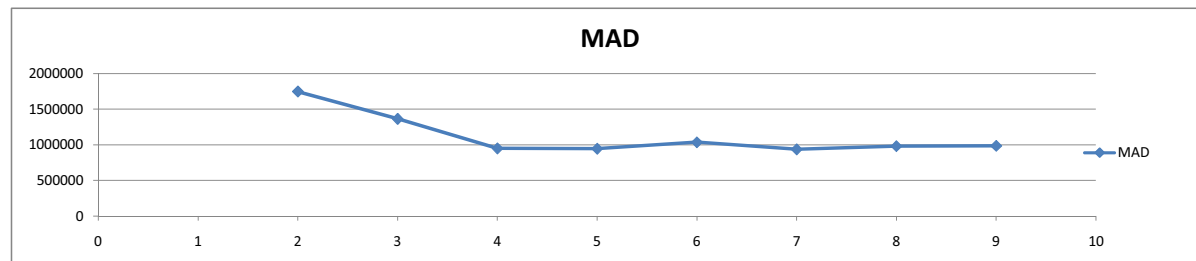
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,530	1,000	1165589,708	0,263	1,504	179543,273	2227112121379,160	1565191,149	0,000
		41%	26%	0%	165%	92%	35%	100%
0,750	2,000	1509476,069	0,358	2,293	-169502,004	3442751574175,310	1955832,183	2,000
		83%	72%	52%	39%	197%	68%	71%
0,610	3,000	1100181,923	0,253	2,560	-3983,689	2128175931335,410	1547319,593	7,000
		33%	21%	70%	99%	84%	33%	0%
0,910	4,000	1629119,770	0,392	2,137	-276335,031	3988779267051,250	2135088,962	0,000
		97%	88%	42%	0%	245%	84%	100%
0,630	5,000	826284,268	0,208	3,565	-24107,560	1157352952593,120	1162000,478	5,000
		0%	0%	137%	91%	0%	0%	29%
0,920	6,000	1329526,733	0,329	3,157	-117861,121	2731288604643,810	1810399,493	2,000
		61%	58%	110%	57%	136%	56%	71%
0,720	7,000	1099642,661	0,283	2,369	-63031,515	1890742578386,330	1537344,536	2,000
		33%	36%	58%	77%	63%	32%	71%
0,720	8,000	1271099,318	0,332	2,432	-1927,523	2340648613622,280	1766596,960	3,000
		54%	59%	62%	99%	102%	52%	57%

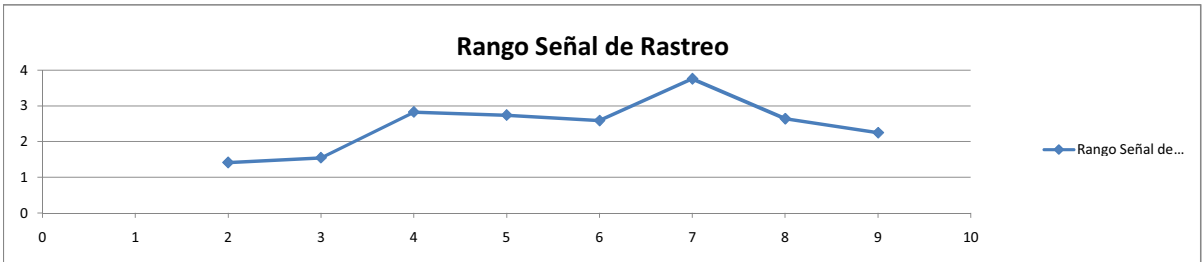
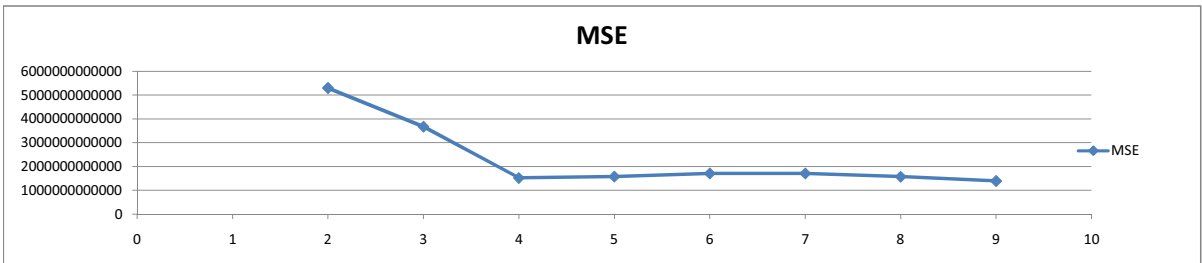
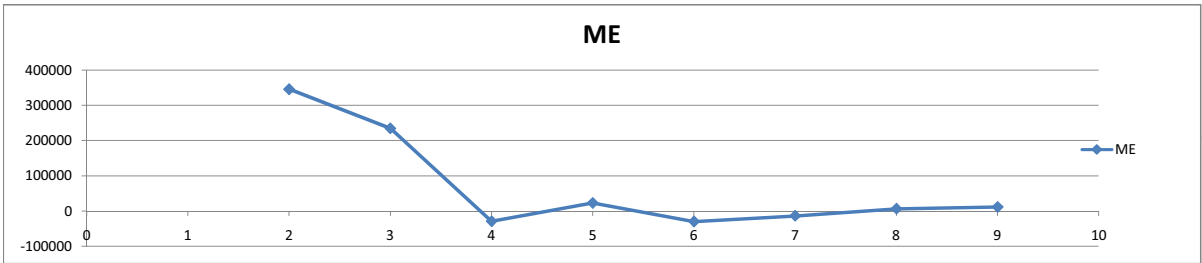
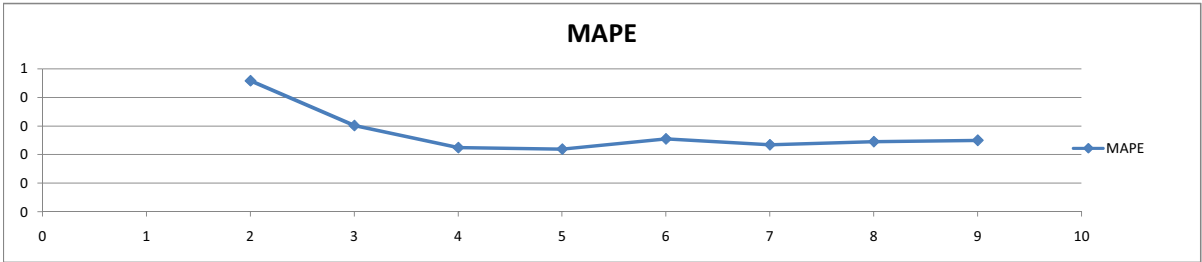
MEJORES MEDIDAS DE DESEMPEÑO							
826284,268	0,208	1,504	-276335,031	1157352952593,120	1162000,478	7,000	

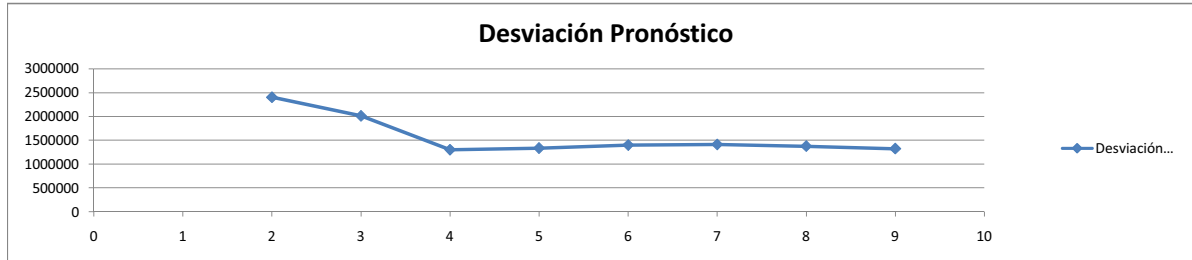
% DE DESVIACIÓN RESPECTO LAS MEJORES MEDIDAS DE DESEMPEÑO

SET

Alpha	Beta	N (Periodos de Promedio)	MAD	MAPE	Pendiente	Intercepto	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,770	0,770	2	1747119,300	0,458	-2252720,000	7030320,000	1,415	345767,786	5295420559253,960	2403502,117	0
0,630	0,670	3	1364520,116	0,302	-956440,000	5301946,667	1,549	234571,629	3677567885588,210	2011299,250	0
0,630	0,670	4	950725,675	0,224	245088,000	3299400,000	2,828	-28862,264	1528461544533,210	1303184,793	2
0,650	0,690	5	946328,845	0,219	53592,000	3682392,000	2,739	23010,024	1587006037156,060	1336181,796	4
0,850	0,800	6	1036667,230	0,255	342884,571	3007376,000	2,587	-29624,868	1715764088113,220	1400311,838	2
0,890	0,860	7	937524,735	0,234	210529,714	3360322,286	3,756	-13606,665	1714683934720,690	1414377,810	4
0,810	0,810	8	981865,890	0,245	190006,214	3421892,786	2,642	6784,912	1578502232640,480	1376300,359	0
0,660	0,750	9	985914,345	0,250	159482,700	3523637,833	2,247	11764,124	1400781095027,660	1323244,637	1







Regresión Lineal

Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
4046207,780	33770,848	0,143	748364,451	0,198	3,671	0,000	891672137995,427	979929,744	3

Media

MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
758013,265	0,204	3,322	0,000	910204778719,265	990060,872	4

Descomposición

Estacionalidad	Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	4057260,968	32297,090	0,138	751209,759	0,200	3,700	-293,550	889094902777,697	978512,554	3,000
3	3944647,236	47312,254	0,203	744878,966	0,190	4,196	1360,623	798658390793,593	927412,342	2,000
4	4034101,169	35385,063	0,152	731232,827	0,194	4,191	-321,617	866729673979,689	966126,900	3,000
6	3968603,258	44118,118	0,200	745111,633	0,191	3,876	-438,695	751609566654,654	899680,881	3,000
12	3883546,974	55458,956	0,528	246680,405	0,065	4,658	1925,535	99005472022,629	326529,137	4,000

Winters

Estacionalidad	Alpha	Beta	Gamma	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	0,720	0,840	0,800	2115847,944	0,488	1,653	90624,986	6758573493086,290	2726615,272	8
3	0,750	0,700	0,630	1791481,698	0,420	2,753	-232170,353	4362900262099,880	2201741,801	2
4	0,700	0,730	0,730	3030894,720	0,718	2,565	-273835,109	12714342088067,200	3782014,655	3
6	0,700	0,690	0,660	2943638,735	0,701	3,017	-151070,510	11138714004094,800	3604880,905	1

11. MEDIDAS DE DESEMPEÑO MODELOS DE PRONOSTICO
PF 44 GR

PMS

N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
1	849968,182	0,215	2,259	-38082,000	1256121583293,820	1175471,710	5
2	683499,050	0,187	2,813	-102003,950	858889473769,775	976893,872	3
3	712285,481	0,194	1,816	-133528,000	724637436938,494	902893,746	2
4	485342,531	0,111	3,000	68449,281	325620659677,758	610031,062	0
5	344700,086	0,085	4,677	-84234,886	183241873700,794	462365,857	3
6	333447,889	0,083	3,272	-123752,111	156709653751,028	433649,149	3
7	420247,171	0,106	2,471	-209158,486	254260608877,825	563760,376	0

PMD

N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	1119008,472	0,290	1,429	-95314,806	2456877396704,080	1662524,307	4
3	670087,698	0,156	3,199	-55622,460	583717486288,242	825229,504	3
4	535866,058	0,131	3,884	-254891,517	385545113752,029	694212,786	1
5	726389,540	0,185	1,018	-395133,620	560049891028,042	916555,965	0

SE

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,680	1,000	691754,841	0,181	2,835	-17839,419	905229606673,946	997874,024	5
0,740	2,000	688384,139	0,184	2,793	-88193,276	948812332881,678	1026759,916	5
0,750	3,000	753694,777	0,201	1,361	-103011,644	1050576021865,840	1087151,335	6
0,600	4,000	490903,823	0,113	2,383	-24443,830	346232609362,805	629042,455	3
0,550	5,000	401141,994	0,098	3,406	-79765,781	209861454183,662	494811,442	3
0,550	6,000	438589,993	0,107	2,524	-103229,432	242093219966,333	538991,525	3

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,680	1,000	691754,841	0,181	2,835	-17839,419	905229606673,946	997874,024	5
		72%	86%	108%	83%	331%	102%	17%
0,740	2,000	688384,139	0,184	2,793	-88193,276	948812332881,678	1026759,916	5
		72%	89%	105%	15%	352%	108%	17%
0,750	3,000	753694,777	0,201	1,361	-103011,644	1050576021865,840	1087151,335	6
		88%	106%	0%	0%	401%	120%	0%
0,600	4,000	490903,823	0,113	2,383	-24443,830	346232609362,805	629042,455	3
		22%	16%	75%	76%	65%	27%	50%
0,550	5,000	401141,994	0,098	3,406	-79765,781	209861454183,662	494811,442	3
		0%	0%	150%	23%	0%	0%	50%
0,550	6,000	438589,993	0,107	2,524	-103229,432	242093219966,333	538991,525	3
		9%	10%	85%	0%	15%	9%	50%

MEJORES MEDIDAS DE DESEMPEÑO							
401141,994	0,098	1,361	-103229,432	209861454183,662	494811,442	6,000	

% DE DESVIACIÓN RESPECTO LAS MEJORES MEDIDAS DE DESEMPEÑO

SED

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,700	1,000	1056951,516	0,272	1,585	-145220,522	2083869524753,430	1531128,086	4,000
0,850	2,000	1150103,334	0,254	1,753	119331,303	2814273511764,790	1793408,092	0,000
0,830	3,000	661990,567	0,159	2,454	-214832,146	728638410266,090	921996,825	2,000
0,920	4,000	610932,926	0,152	3,955	-235332,061	750433942139,366	948957,707	2,000
0,920	5,000	719312,293	0,180	3,189	-276959,910	922020553812,868	1073557,494	2,000
0,530	6,000	576075,946	0,144	3,157	-144965,634	485316828400,769	804418,488	2,000

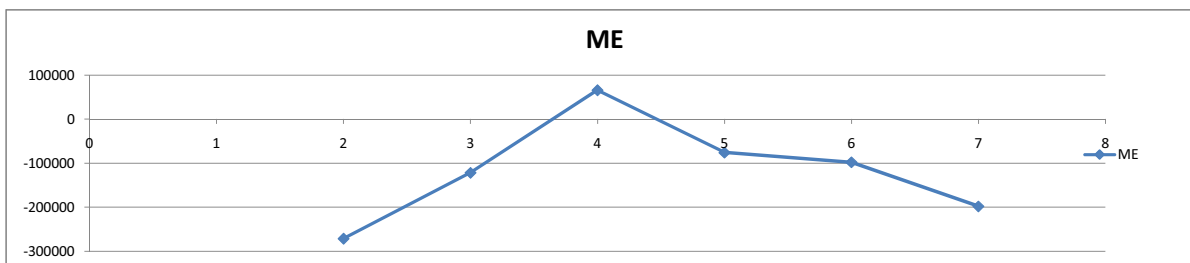
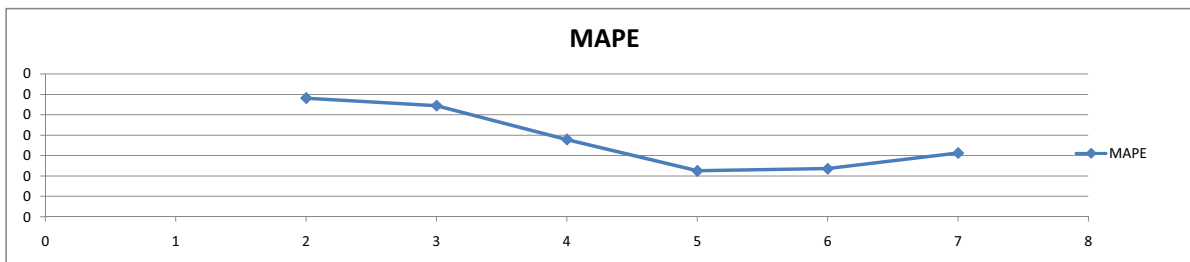
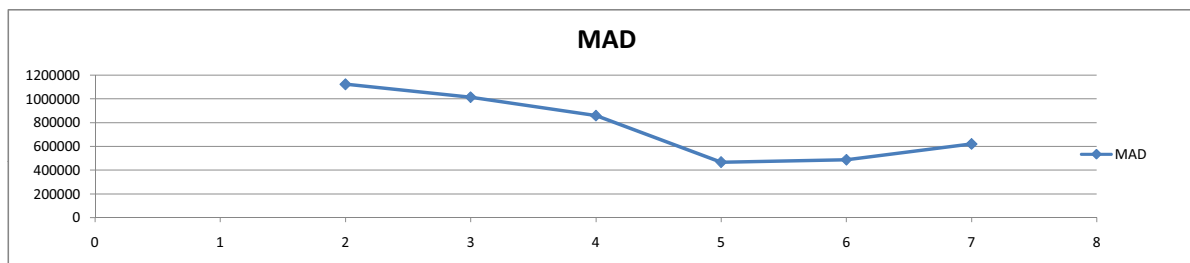
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,700	1,000	1056951,516	0,272	1,585	-145220,522	2083869524753,430	1531128,086	4,000
		83%	89%	0%	48%	329%	90%	0%
0,850	2,000	1150103,334	0,254	1,753	119331,303	2814273511764,790	1793408,092	0,000
		100%	77%	11%	143%	480%	123%	100%
0,830	3,000	661990,567	0,159	2,454	-214832,146	728638410266,090	921996,825	2,000
		15%	11%	55%	22%	50%	15%	50%
0,920	4,000	610932,926	0,152	3,955	-235332,061	750433942139,366	948957,707	2,000
		6%	6%	149%	15%	55%	18%	50%
0,920	5,000	719312,293	0,180	3,189	-276959,910	922020553812,868	1073557,494	2,000
		25%	25%	101%	0%	90%	33%	50%
0,530	6,000	576075,946	0,144	3,157	-144965,634	485316828400,769	804418,488	2,000
		0%	0%	99%	48%	0%	0%	50%

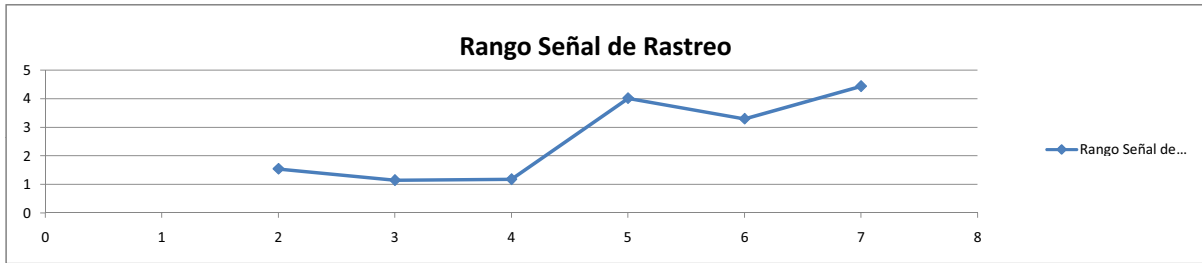
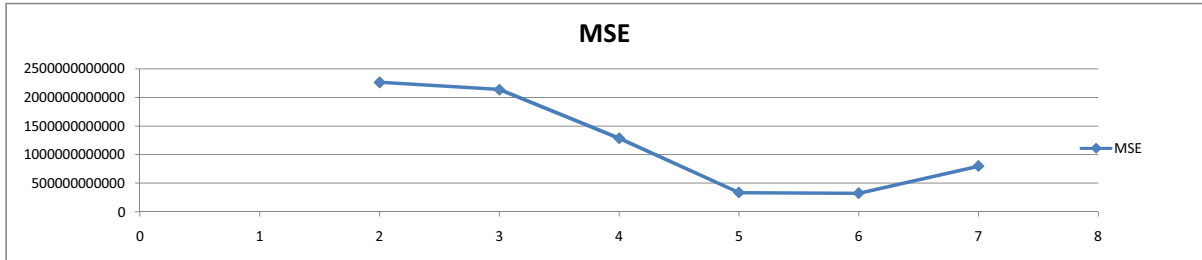
MEJORES MEDIDAS DE DESEMPEÑO							
576075,946	0,144	1,585	-276959,910	485316828400,769	804418,488	4,000	

% DE DESVIACIÓN RESPECTO LAS MEJORES MEDIDAS DE DESEMPEÑO

SET

Alpha	Beta	N (Periodos de Promedio)	MAD	MAPE	Pendiente	Intercepto	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersección con cero
0,640	0,680	2	1123534,237	0,291	950000,000	3050000,000	1,547	-271101,990	2264971142060,470	1586390,432	0
0,720	0,760	3	1014707,810	0,272	290000,000	3930000,000	1,150	-121360,937	2138999119107,080	1551249,177	4
0,650	0,640	4	859371,363	0,190	-449269,000	5162115,000	1,182	65944,842	1286923676922,020	1212753,032	0
0,670	0,660	5	466924,552	0,113	-3356,800	4270290,600	4,019	-75702,914	336466235745,913	626533,273	3
0,590	0,630	6	487421,188	0,118	26307,514	4201073,867	3,297	-97671,184	324703121189,370	624214,503	3
0,920	0,930	7	620078,954	0,156	54878,393	4124884,857	4,438	-197814,298	799650325896,649	999781,430	2





Regresión Lineal

Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
4398759,970	-22900,944	-0,121	490434,644	0,132	2,823	0,000	418457818047,185	675647,421	5

Media

MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
503793,528	0,135	2,991	0,000	424707552474,472	680674,173	3

Descomposición

Estacionalidad	Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	4336527,743	-13326,755	-0,075	450257,771	0,119	2,323	-444,081	343826848594,475	612440,883	4,000
3	4447501,183	-30399,592	-0,190	351848,223	0,096	5,146	935,333	247470232579,232	519583,994	2,000
4	4181335,807	10548,927	0,069	357557,227	0,092	3,584	795,657	230666517284,016	501633,532	5,000
6	4259553,533	-1484,569	-0,012	361795,844	0,093	2,872	-50,010	151525412386,400	406571,580	4,000

Winters

Estacionalidad	Alpha	Beta	Gamma	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	0,750	0,730	0,710	1204657,381	0,320	1,684	-225191,207	2538919129358,380	1690054,443	2
3	0,760	0,780	0,800	1089122,261	0,241	1,891	183438,716	2756889705963,760	1775029,885	0
4	0,820	0,830	0,850	1829533,890	0,429	2,080	-295541,571	4627332065320,810	2323478,874	0
6	0,860	0,850	0,860	1726550,460	0,392	2,753	-867469,784	5618681656865,300	2650160,763	2

12. MEDIDAS DE DESEMPEÑO MODELOS DE PRONOSTICO
PF 47.5 GR

PMS

N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
1	204786,207	0,240	4,400	-244,966	76627540773,793	281716,593	9
2	210915,089	0,252	4,397	892,696	82106290619,848	291800,042	8
3	204909,827	0,247	4,096	-9357,679	78779631254,288	286023,805	5
4	195625,317	0,240	4,573	-20383,010	67559737364,863	265070,041	4
5	200878,848	0,249	4,338	-17996,240	66456994061,878	263108,410	5
6	195857,250	0,251	4,542	-30666,014	66191242802,637	262810,051	2
7	189044,696	0,245	4,579	-28982,161	65435047657,237	261551,846	2
8	181803,176	0,236	4,519	-20960,994	63452111862,120	257824,826	4
9	184801,201	0,241	4,523	-17832,534	63839413528,329	258904,199	3
10	176179,265	0,235	4,836	-31404,565	63421096952,346	258377,726	3
11	170632,608	0,232	5,449	-46522,904	60393178516,263	252484,366	2
12	147772,500	0,178	5,470	-25602,546	47829096353,114	225039,047	2
13	138559,267	0,148	5,747	-6486,516	42140177633,396	211598,532	1
14	135971,085	0,145	5,535	-13041,737	44441638667,183	217725,549	3
15	103876,373	0,132	11,874	-62350,080	15589614836,680	129240,701	1

PMD

N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	291830,056	0,359	4,272	-10094,722	166728881697,764	416102,789	5
3	278128,858	0,327	5,308	-2771,880	151449388052,780	397189,853	7
4	246041,074	0,299	3,940	-903,234	111460373479,567	341360,153	8
5	242355,178	0,292	4,163	17178,056	97400487531,484	319797,611	4
6	244179,992	0,307	3,882	-4466,970	103567338437,086	330637,384	4
7	216503,298	0,232	4,125	50085,318	90941472378,458	310846,127	0
8	160862,870	0,196	7,737	-15111,933	32950262464,087	187893,195	1
9	145530,042	0,181	6,000	-34364,426	28605870653,836	176038,897	0
10	116597,824	0,147	4,300	-25567,528	19740609733,301	147358,986	0
11	85790,755	0,103	4,388	6712,707	9584789156,426	103840,685	1

SE

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,860	1,000	198933,431	0,233	4,476	326,232	72579077430,793	274173,645	8
0,890	2,000	206051,135	0,240	4,148	-392,505	76196333402,469	281102,152	9
0,780	3,000	204582,772	0,241	4,137	-4347,472	74694247082,113	278508,712	7
0,820	4,000	198328,689	0,236	4,396	-7650,589	74267336121,880	277917,307	6
0,780	5,000	198863,728	0,239	4,201	-7087,416	74522369542,232	278617,064	5
0,870	6,000	188910,394	0,230	4,784	-9132,856	73119822492,464	276222,637	4
0,810	7,000	194217,744	0,238	4,225	-9175,526	75881962525,667	281657,847	4
0,840	8,000	195443,204	0,238	3,981	-7617,547	77077447826,160	284161,578	0
0,760	9,000	190709,075	0,235	4,082	-7396,360	75638799328,263	281816,854	5
0,670	10,000	193004,067	0,239	3,245	-9751,398	75119397109,146	281199,306	3
0,870	11,000	191636,959	0,229	3,486	-9750,766	74838504811,166	281062,626	0
0,680	12,000	180078,601	0,207	2,468	-8619,666	64569603550,586	261472,399	2

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,860	1,000	198933,431	0,233	4,476	326,232	72579077430,793	274173,645	8
		10%	13%	81%	103%	12%	5%	11%
0,890	2,000	206051,135	0,240	4,148	-392,505	76196333402,469	281102,152	9
		14%	16%	68%	96%	18%	8%	0%
0,780	3,000	204582,772	0,241	4,137	-4347,472	74694247082,113	278508,712	7
		14%	17%	68%	55%	16%	7%	22%
0,820	4,000	198328,689	0,236	4,396	-7650,589	74267336121,880	277917,307	6
		10%	14%	78%	22%	15%	6%	33%
0,780	5,000	198863,728	0,239	4,201	-7087,416	74522369542,232	278617,064	5
		10%	15%	70%	27%	15%	7%	44%
0,870	6,000	188910,394	0,230	4,784	-9132,856	73119822492,464	276222,637	4
		5%	11%	94%	6%	13%	6%	56%
0,810	7,000	194217,744	0,238	4,225	-9175,526	75881962525,667	281657,847	4
		8%	15%	71%	6%	18%	8%	56%
0,840	8,000	195443,204	0,238	3,981	-7617,547	77077447826,160	284161,578	0
		9%	15%	61%	22%	19%	9%	100%
0,760	9,000	190709,075	0,235	4,082	-7396,360	75638799328,263	281816,854	5
		6%	14%	65%	24%	17%	8%	44%
0,670	10,000	193004,067	0,239	3,245	-9751,398	75119397109,146	281199,306	3
		7%	16%	32%	0%	16%	8%	67%
0,870	11,000	191636,959	0,229	3,486	-9750,766	74838504811,166	281062,626	0
		6%	11%	41%	0%	16%	7%	100%
0,680	12,000	180078,601	0,207	2,468	-8619,666	64569603550,586	261472,399	2
		0%	0%	0%	12%	0%	0%	78%

MEJORES MEDIDAS DE DESEMPEÑO							
180078,601	0,207	2,468	-9751,398	64569603550,586	261472,399	9,000	

% DE DESVIACIÓN RESPECTO LAS MEJORES MEDIDAS DE DESEMPEÑO

SED

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,770	1,000	277785,066	0,340	4,110	-13274,997	136756196575,656	376850,170	4,000
0,880	2,000	315587,575	0,388	3,419	-17651,758	170757863897,395	421412,124	2,000
0,730	3,000	270664,172	0,333	3,827	-941,496	132076098655,074	370916,796	13,000
0,820	4,000	281580,637	0,355	3,968	-13710,187	145414398821,325	389534,034	4,000
0,770	5,000	263982,345	0,335	4,056	-553,031	132480894693,531	372159,581	12,000
0,820	6,000	283812,716	0,361	3,441	8893,300	147843038473,869	393552,008	4,000
0,750	7,000	268875,318	0,339	3,301	5483,914	139675286757,296	382960,900	6,000
0,750	8,000	260663,484	0,335	3,478	-11661,461	137115035469,920	379910,011	4,000
0,750	9,000	269838,897	0,349	2,426	-13855,117	144779649595,915	390925,777	2,000
0,850	10,000	260808,011	0,301	2,883	22234,196	137003712155,780	380871,046	0,000
0,770	11,000	250305,412	0,265	2,120	22711,914	132617740336,563	375374,945	0,000
0,640	12,000	193257,161	0,202	1,883	-5158,687	82652494435,139	296921,978	7,000

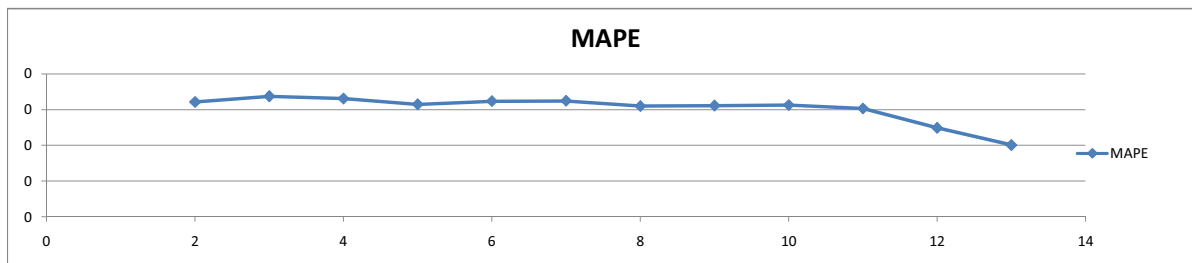
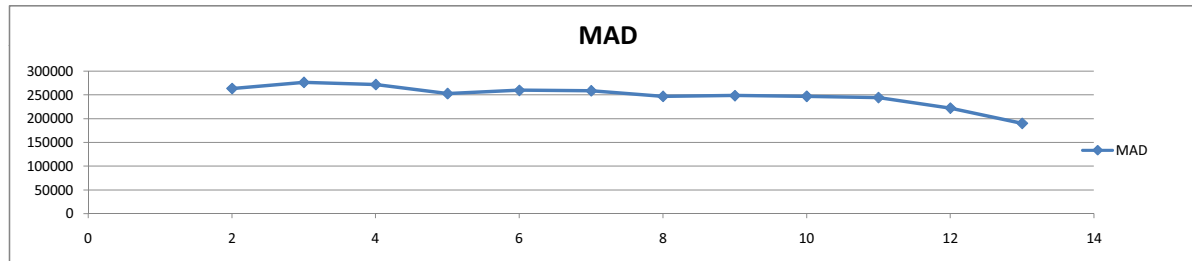
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,770	1,000	277785,066	0,340	4,110	-13274,997	136756196575,656	376850,170	4,000
		44%	68%	118%	25%	65%	27%	69%
0,880	2,000	315587,575	0,388	3,419	-17651,758	170757863897,395	421412,124	2,000
		63%	92%	82%	0%	107%	42%	85%
0,730	3,000	270664,172	0,333	3,827	-941,496	132076098655,074	370916,796	13,000
		40%	65%	103%	95%	60%	25%	0%
0,820	4,000	281580,637	0,355	3,968	-13710,187	145414398821,325	389534,034	4,000
		46%	76%	111%	22%	76%	31%	69%
0,770	5,000	263982,345	0,335	4,056	-553,031	132480894693,531	372159,581	12,000
		37%	66%	115%	97%	60%	25%	8%
0,820	6,000	283812,716	0,361	3,441	8893,300	147843038473,869	393552,008	4,000
		47%	79%	83%	150%	79%	33%	69%
0,750	7,000	268875,318	0,339	3,301	5483,914	139675286757,296	382960,900	6,000
		39%	68%	75%	131%	69%	29%	54%
0,750	8,000	260663,484	0,335	3,478	-11661,461	137115035469,920	379910,011	4,000
		35%	66%	85%	34%	66%	28%	69%
0,750	9,000	269838,897	0,349	2,426	-13855,117	144779649595,915	390925,777	2,000
		40%	73%	29%	22%	75%	32%	85%
0,850	10,000	260808,011	0,301	2,883	22234,196	137003712155,780	380871,046	0,000
		35%	49%	53%	226%	66%	28%	100%
0,770	11,000	250305,412	0,265	2,120	22711,914	132617740336,563	375374,945	0,000
		30%	31%	13%	229%	60%	26%	100%
0,640	12,000	193257,161	0,202	1,883	-5158,687	82652494435,139	296921,978	7,000
		0%	0%	0%	71%	0%	0%	46%

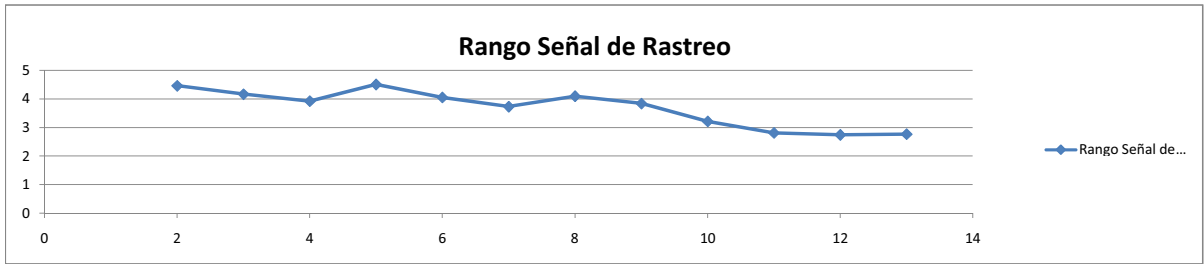
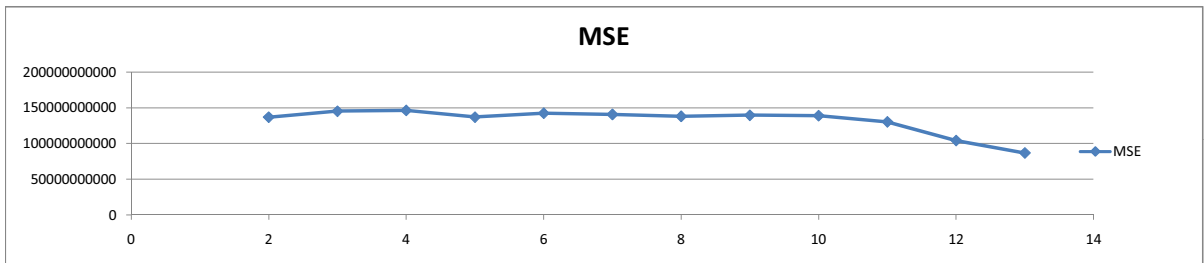
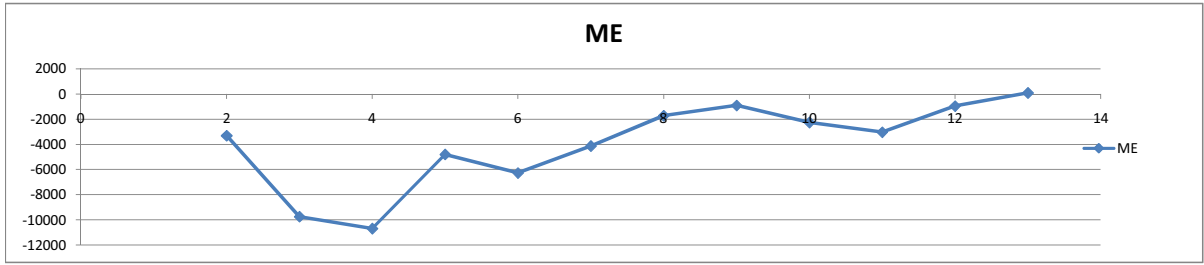
MEJORES MEDIDAS DE DESEMPEÑO							
193257,161	0,202	1,883	-17651,758	82652494435,139	296921,978	13,000	

% DE DESVIACIÓN RESPECTO LAS MEJORES MEDIDAS DE DESEMPEÑO

SET

Alpha	Beta	N (Periodos de Promedio)	MAD	MAPE	Pendiente	Intercepto	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,800	0,790	2	263501,885	0,322	30276,000	756973,000	4,458	-3310,464	137017581195,833	376951,332	0
0,820	0,820	3	276300,024	0,338	144006,500	605332,333	4,165	-9750,465	145265095058,357	388396,980	4
0,760	0,770	4	271862,201	0,331	139825,300	612301,000	3,922	-10695,353	146346803368,964	390129,050	4
0,770	0,780	5	252678,680	0,315	48040,600	795870,400	4,505	-4805,664	137127235262,540	377942,946	9
0,760	0,780	6	259752,049	0,324	66182,743	753538,733	4,048	-6270,896	142439902224,372	385529,430	6
0,760	0,730	7	258543,111	0,325	30341,536	849115,286	3,731	-4138,405	140836771417,907	383716,618	8
0,770	0,770	8	246697,809	0,310	-1501,929	944645,679	4,092	-1720,099	138211240646,327	380516,397	0
0,750	0,770	9	248499,807	0,312	-11038,350	976433,750	3,838	-901,500	139676497549,833	382962,560	9
0,780	0,760	10	247110,047	0,313	1934,127	928868,000	3,214	-2258,977	139096155838,557	382644,752	7
0,760	0,730	11	244452,316	0,304	9529,973	898484,618	2,810	-3035,319	130479937329,820	371118,341	8
0,730	0,680	12	222117,632	0,249	-12009,077	991820,500	2,742	-950,608	104309402346,477	332333,040	6
0,760	0,710	13	189917,456	0,201	-23104,214	1043597,808	2,768	90,692	86922585871,478	303900,062	4





Regresión Lineal

Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
965003,697	-4998,251	-0,199	160569,331	0,196	5,358	0,000	45523432975,626	217009,692	12

Media

MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
162735,240	0,197	7,053	0,000	47395039871,360	221425,725	4

Descomposición

Estacionalidad	Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	964159,092	-4943,761	-0,199	160506,695	0,196	5,328	-69,108	45111496401,196	216025,612	12,000
3	968552,438	-5227,202	-0,213	157922,606	0,194	5,352	130,664	44393872130,047	214300,479	11,000
4	957649,626	-4523,795	-0,196	151254,895	0,182	6,370	-63,238	38626106963,435	199895,077	10,000
6	970197,176	-5333,315	-0,236	147543,906	0,181	6,035	332,407	37796325032,076	197736,306	11,000
12	957961,273	-4543,901	-0,245	122381,272	0,143	7,148	283,205	24237912579,377	158346,780	3,000

Winters

Estacionalidad	Alpha	Beta	Gamma	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	0,850	0,890	0,860	289087,582	0,378	3,087	-25817,106	139044115205,808	379989,429	0
3	0,850	0,910	0,870	390364,192	0,507	4,538	-60247,286	405951976002,801	649761,537	0
4	0,800	0,800	0,800	418187,229	0,522	3,414	-40378,148	259476665352,317	519892,482	5
6	0,830	0,840	0,870	338115,640	0,459	4,847	-41410,378	272487314250,615	533735,048	4
12	0,790	0,780	0,780	419948,857	0,464	4,362	-47880,117	272422774581,074	538004,831	7

13. MEDIDAS DE DESEMPEÑO MODELOS DE PRONOSTICO
PF 52 GR

PMS

N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
1	529989,267	0,261	6,160	41570,867	446615455198,733	691748,913	3
2	487485,679	0,228	5,959	95157,179	410768158747,518	665105,788	1
3	464307,897	0,216	4,625	144512,923	382467898324,923	643692,647	0
4	474108,063	0,214	5,201	190819,646	429909019515,870	684829,656	0
5	521609,473	0,228	6,921	242670,018	487226484504,738	732085,468	1
6	571915,467	0,246	6,272	322406,500	563697446906,794	791410,448	0
7	610320,540	0,254	7,169	352464,127	620541189300,544	835529,077	1
8	637367,734	0,236	5,880	523730,766	700398646505,787	894681,841	0
9	630580,238	0,228	5,000	521268,206	711573672473,134	911136,260	0

PMD

N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	796390,192	0,378	4,059	-20831,192	985363624228,298	1033187,911	9
3	700142,323	0,335	3,254	-57084,545	653721620766,606	847993,976	6
4	753281,037	0,345	3,101	-127182,361	656250090998,693	859233,002	2
5	643226,643	0,257	3,821	-222320,294	633015318650,942	859370,625	1
6	612610,329	0,281	4,000	-612610,329	442228943386,277	743495,917	0
7	715743,283	0,344	2,000	-715743,283	688646678182,211	1016351,326	0

SE

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,880	1,000	510531,663	0,249	6,454	53128,776	410060692229,775	662835,381	3
0,880	2,000	544801,172	0,266	5,033	58785,499	439226576796,712	687759,578	3
0,860	3,000	577126,473	0,280	3,946	67130,480	465918721495,796	710454,278	2
0,880	4,000	623480,211	0,301	3,460	65843,427	510387557215,838	746181,229	2
0,890	5,000	662865,992	0,316	3,651	67639,056	558864726230,509	784060,711	3
0,760	6,000	686794,469	0,323	2,465	97374,760	565135663950,680	792419,406	2
0,690	7,000	630219,466	0,272	3,446	108249,450	535963860022,807	776504,567	1
0,760	8,000	641393,184	0,254	1,330	112878,287	504133014858,092	759046,782	0

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,880	1,000	510531,663	0,249	6,454	53128,776	410060692229,775	662835,381	3
		0%	0%	385%	0%	0%	0%	0%
0,880	2,000	544801,172	0,266	5,033	58785,499	439226576796,712	687759,578	3
		7%	6%	279%	11%	7%	4%	0%
0,860	3,000	577126,473	0,280	3,946	67130,480	465918721495,796	710454,278	2
		13%	12%	197%	26%	14%	7%	33%
0,880	4,000	623480,211	0,301	3,460	65843,427	510387557215,838	746181,229	2
		22%	21%	160%	24%	24%	13%	33%
0,890	5,000	662865,992	0,316	3,651	67639,056	558864726230,509	784060,711	3
		30%	27%	175%	27%	36%	18%	0%
0,760	6,000	686794,469	0,323	2,465	97374,760	565135663950,680	792419,406	2
		35%	29%	85%	83%	38%	20%	33%
0,690	7,000	630219,466	0,272	3,446	108249,450	535963860022,807	776504,567	1
		23%	9%	159%	104%	31%	17%	67%
0,760	8,000	641393,184	0,254	1,330	112878,287	504133014858,092	759046,782	0
		26%	2%	0%	112%	23%	15%	100%

MEJORES MEDIDAS DE DESEMPEÑO							
510531,663	0,249	1,330	53128,776	410060692229,775	662835,381	3,000	

% DE DESVIACIÓN RESPECTO LAS MEJORES MEDIDAS DE DESEMPEÑO

SED

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,780	1,000	760462,214	0,385	3,477	-36070,672	883655422582,687	978413,703	9,000
0,560	2,000	697239,022	0,341	4,375	-50717,528	644669626529,705	838615,500	8,000
0,520	3,000	731920,152	0,356	3,109	-55604,034	658339919805,256	850984,084	8,000
0,560	4,000	818721,488	0,396	2,378	-44831,787	772616716463,202	926532,794	7,000
0,560	5,000	827330,241	0,400	2,433	-129816,646	797793888452,427	947374,332	2,000
0,560	6,000	815089,305	0,333	2,185	-18893,622	805986510072,744	959753,843	1,000
0,610	7,000	737225,934	0,300	2,902	-200290,487	652653524974,641	872599,056	1,000
0,850	8,000	946594,247	0,400	1,739	-432139,122	1376172833635,960	1285070,971	0,000

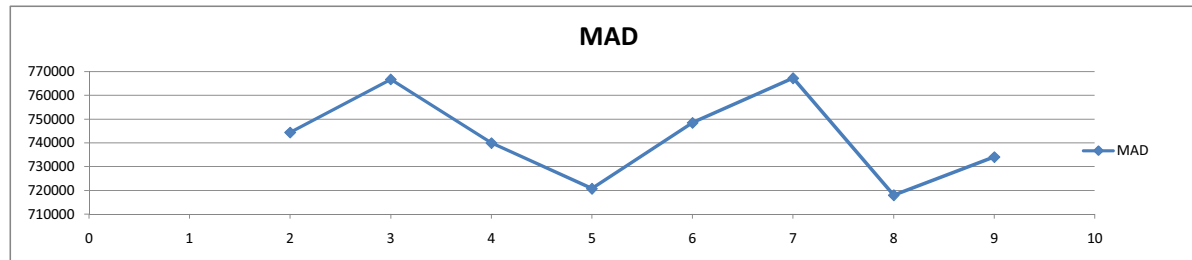
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,780	1,000	760462,214	0,385	3,477	-36070,672	883655422582,687	978413,703	9,000
		9%	28%	100%	92%	37%	17%	0%
0,560	2,000	697239,022	0,341	4,375	-50717,528	644669626529,705	838615,500	8,000
		0%	14%	152%	88%	0%	0%	11%
0,520	3,000	731920,152	0,356	3,109	-55604,034	658339919805,256	850984,084	8,000
		5%	19%	79%	87%	2%	1%	11%
0,560	4,000	818721,488	0,396	2,378	-44831,787	772616716463,202	926532,794	7,000
		17%	32%	37%	90%	20%	10%	22%
0,560	5,000	827330,241	0,400	2,433	-129816,646	797793888452,427	947374,332	2,000
		19%	33%	40%	70%	24%	13%	78%
0,560	6,000	815089,305	0,333	2,185	-18893,622	805986510072,744	959753,843	1,000
		17%	11%	26%	96%	25%	14%	89%
0,610	7,000	737225,934	0,300	2,902	-200290,487	652653524974,641	872599,056	1,000
		6%	0%	67%	54%	1%	4%	89%
0,850	8,000	946594,247	0,400	1,739	-432139,122	1376172833635,960	1285070,971	0,000
		36%	33%	0%	0%	113%	53%	100%

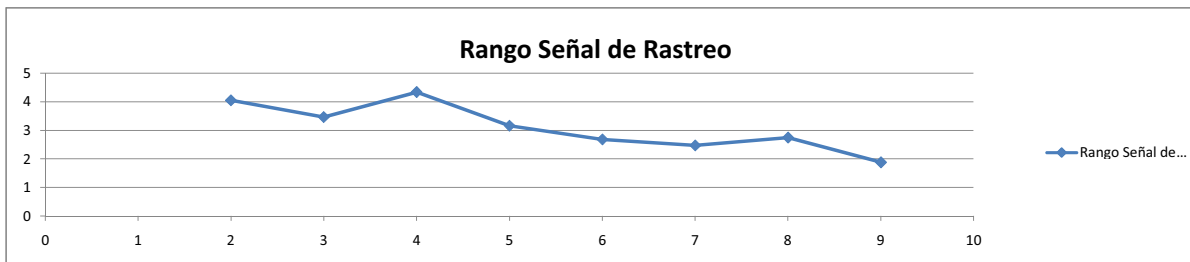
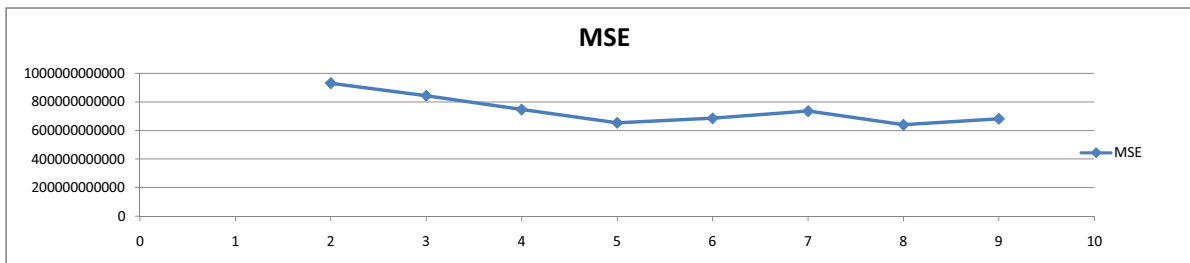
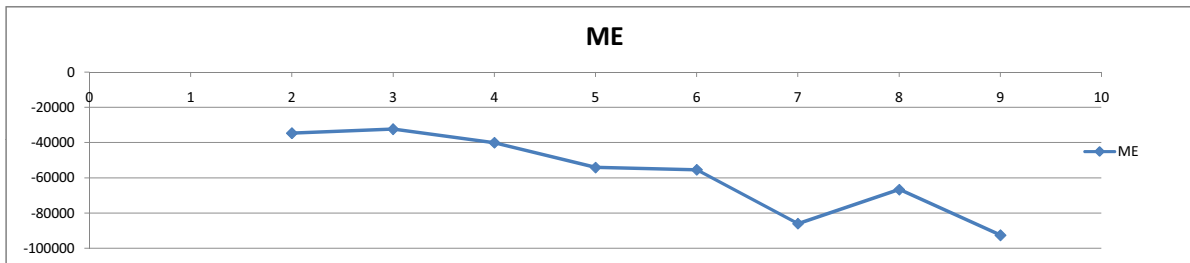
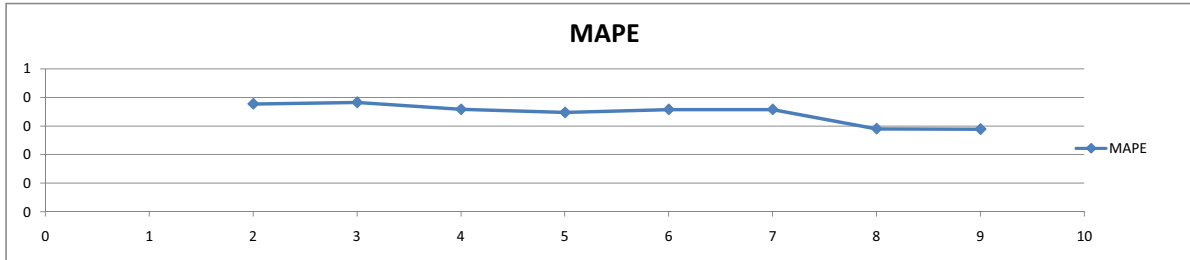
MEJORES MEDIDAS DE DESEMPEÑO							
697239,022	0,300	1,739	-432139,122	644669626529,705	838615,500	9,000	

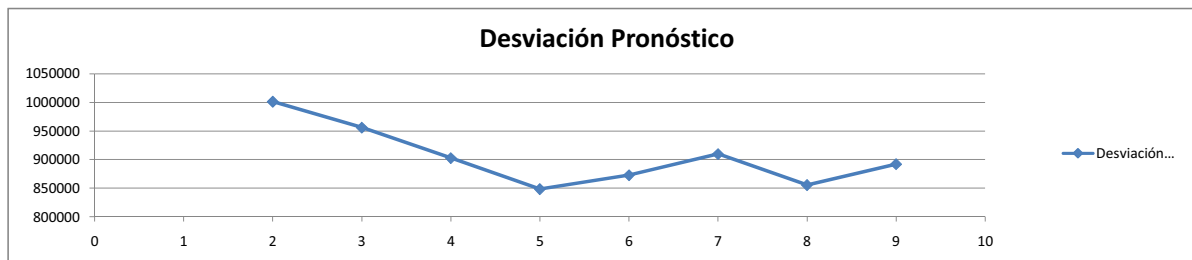
 % DE DESVIACIÓN RESPECTO LAS MEJORES MEDIDAS DE DESEMPEÑO

SET

Alpha	Beta	N (Periodos de Promedio)	MAD	MAPE	Pendiente	Intercepto	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,880	0,890	2	744377,707	0,378	-45875,000	1387603,000	4,048	-34645,326	930907637312,979	1001257,168	0
0,810	0,810	3	766786,484	0,383	-33133,500	1370614,333	3,463	-32351,325	843449157194,581	955895,699	9
0,720	0,720	4	739904,606	0,359	38795,300	1250733,000	4,337	-40039,994	746910734100,873	902669,214	6
0,610	0,580	5	720648,749	0,347	46490,200	1235343,200	3,161	-54123,547	654583109867,278	848552,545	4
0,580	0,580	6	748477,929	0,358	22559,571	1291181,333	2,684	-55406,073	685630281121,479	872818,093	3
0,590	0,550	7	767258,925	0,358	91626,607	1107002,571	2,472	-85973,161	735768669618,669	909802,041	2
0,610	0,590	8	717896,778	0,290	28004,821	1297867,929	2,747	-66655,455	640598116081,905	855635,514	1
0,650	0,600	9	733986,733	0,289	85280,267	1106949,778	1,883	-92583,702	682384292764,377	892252,771	1







Regresión Lineal

Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
1167223,575	92952,212	0,666	344569,000	0,183	7,762	0,000	230356670411,031	495695,251	3

Media

MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
550478,578	0,315	7,519	0,000	413959085939,984	664497,072	1

Descomposición

Estacionalidad	Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	1154845,755	94408,426	0,674	289400,055	0,153	8,443	2180,489	210594163617,676	473955,456	2,000
3	1183274,058	91063,920	0,689	315439,015	0,168	8,965	-1993,997	206209412852,613	468995,423	4,000
4	1135824,529	96646,217	0,732	312992,418	0,167	7,880	5064,956	173485171092,740	430175,370	2,000
6	1203102,754	88731,132	0,714	324598,983	0,173	8,103	-5384,187	189575167223,082	449681,567	3,000
12	1328249,575	74007,976	0,880	155748,228	0,080	5,760	-17347,642	33952836489,359	190305,961	2,000

Winters

Estacionalidad	Alpha	Beta	Gamma	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	0,860	0,840	0,860	900934,266	0,437	3,957	-62844,062	1620260120797,970	1324870,483	0
3	0,750	0,730	0,740	755692,507	0,385	3,750	-118237,220	821140995117,801	946461,926	6
4	0,680	0,650	0,670	809044,478	0,401	2,868	-50586,812	957139698214,954	1026086,579	4
6	0,850	0,840	0,880	804388,939	0,427	2,734	-238496,074	1105567365091,820	1115241,358	2
12	0,740	0,720	0,700	852955,281	0,415	2,000	-852955,281	1141876899466,180	1308745,716	0

14. MEDIDAS DE DESEMPEÑO MODELOS DE PRONOSTICO
PF 54 GR

PMS

N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
1	345002,375	0,190	5,326	19517,125	213302510212,625	467730,484	12
2	283786,321	0,160	7,513	21051,705	178498721486,365	428014,084	6
3	259907,351	0,143	10,964	19187,982	154074313237,158	397792,011	4
4	278280,858	0,152	12,167	22479,750	163643791325,681	410109,074	3
5	280499,594	0,148	11,848	40661,350	167631661051,559	415236,242	4
6	284279,657	0,149	13,687	44955,743	169210591377,335	417357,609	5
7	280381,319	0,146	14,010	58092,353	158034640674,276	403514,026	3
8	271578,504	0,139	14,746	75184,640	159711173818,170	405835,124	3
9	268580,111	0,137	15,183	90314,271	162593287751,090	409680,647	1
10	262229,035	0,133	15,529	104773,668	161564230038,624	408594,792	1
11	263653,358	0,131	16,247	124722,879	170026125103,465	419391,339	1
12	270651,414	0,133	16,738	141331,178	177718577116,650	429028,751	1
13	260258,008	0,122	17,108	168316,701	181076070290,942	433338,887	0
14	280010,349	0,131	18,231	178695,270	194299466544,663	449190,965	1
15	297165,092	0,139	15,999	194292,933	208612591636,253	465786,534	0
16	276929,888	0,131	18,071	174647,853	184622869017,217	438537,899	2
17	289363,105	0,137	18,130	188686,610	195260778585,014	451387,170	1
18	288334,242	0,129	19,036	225491,836	200959486893,913	458360,130	2
19	301286,584	0,134	19,639	241564,364	211541331833,610	470759,736	1
20	305154,452	0,130	20,481	283078,824	215810335145,254	476026,104	1

PMD

N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	465655,625	0,260	5,816	-8131,651	414873062943,916	652752,517	6
3	312827,852	0,173	8,542	11044,543	233410538022,866	489978,990	6
4	354688,903	0,201	7,832	5382,884	255403238999,137	512974,396	9
5	368521,114	0,199	6,043	6452,006	272215686549,528	530091,348	6
6	389872,209	0,204	6,054	3819,330	275920206216,225	534260,888	8
7	385689,944	0,200	5,258	14327,822	237687135807,957	496477,958	2
8	365929,985	0,185	5,155	2557,639	231581905091,555	490759,800	2
9	318477,932	0,166	5,188	-35420,622	176584761010,368	429257,917	2
10	277240,920	0,136	5,185	-16408,026	157935546011,558	406763,182	2
11	281229,874	0,131	3,139	5767,445	173329145753,211	427143,691	0
12	234755,255	0,116	7,494	-79578,990	90473977226,180	309509,250	1
13	214990,820	0,103	8,273	-96488,167	78531693771,983	289425,535	1
14	192759,966	0,098	10,243	-154695,302	51813869359,612	236219,287	0
15	195336,080	0,098	8,199	-149745,357	55124571261,101	245226,214	0

SE

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,850	1,000	321783,295	0,178	5,795	21806,644	189294028548,749	440621,971	12
0,830	2,000	322851,805	0,178	5,980	19634,800	191390424103,203	443200,873	8
0,910	3,000	336382,008	0,186	6,077	15281,687	204973209195,501	458816,985	8
0,880	4,000	334605,861	0,184	6,256	14967,399	203219444352,008	457016,880	7
0,830	5,000	319259,888	0,173	7,242	18454,872	193932019463,500	446623,929	6
0,840	6,000	322393,688	0,175	7,795	17971,887	199124112185,178	452747,947	5
0,840	7,000	330317,263	0,179	7,153	19117,215	205401657953,310	460028,206	5
0,830	8,000	333217,377	0,179	7,148	20873,411	208887921952,883	464128,936	5
0,850	9,000	344963,168	0,185	6,433	21652,181	218411344075,380	474822,989	0
0,870	10,000	359051,444	0,193	5,425	22225,340	229302601624,769	486771,016	7
0,850	11,000	362317,268	0,194	5,039	24105,728	232427821427,568	490349,441	7
0,860	12,000	375451,676	0,201	3,810	25099,858	243360807270,756	502048,070	7
0,860	13,000	366777,000	0,191	3,522	27167,596	241725607902,902	500677,949	4
0,840	14,000	369305,984	0,192	3,751	28264,003	246985490463,554	506443,415	5
0,820	15,000	379693,593	0,197	2,897	29864,074	252738410914,686	512686,988	4
0,850	16,000	334454,447	0,174	4,493	27458,539	209661379397,431	467329,937	0

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,850	1,000	321783,295	0,178	5,795	21806,644	189294028548,749	440621,971	12
		1%	3%	100%	46%	0%	0%	0%
0,830	2,000	322851,805	0,178	5,980	19634,800	191390424103,203	443200,873	8
		1%	3%	106%	31%	1%	1%	33%
0,910	3,000	336382,008	0,186	6,077	15281,687	204973209195,501	458816,985	8
		5%	7%	110%	2%	8%	4%	33%
0,880	4,000	334605,861	0,184	6,256	14967,399	203219444352,008	457016,880	7
		5%	6%	116%	0%	7%	4%	42%
0,830	5,000	319259,888	0,173	7,242	18454,872	193932019463,500	446623,929	6
		0%	0%	150%	23%	2%	1%	50%
0,840	6,000	322393,688	0,175	7,795	17971,887	199124112185,178	452747,947	5
		1%	1%	169%	20%	5%	3%	58%
0,840	7,000	330317,263	0,179	7,153	19117,215	205401657953,310	460028,206	5
		3%	3%	147%	28%	9%	4%	58%
0,830	8,000	333217,377	0,179	7,148	20873,411	208887921952,883	464128,936	5
		4%	3%	147%	39%	10%	5%	58%
0,850	9,000	344963,168	0,185	6,433	21652,181	218411344075,380	474822,989	0
		8%	7%	122%	45%	15%	8%	100%
0,870	10,000	359051,444	0,193	5,425	22225,340	229302601624,769	486771,016	7
		12%	11%	87%	48%	21%	10%	42%
0,850	11,000	362317,268	0,194	5,039	24105,728	232427821427,568	490349,441	7
		13%	12%	74%	61%	23%	11%	42%
0,860	12,000	375451,676	0,201	3,810	25099,858	243360807270,756	502048,070	7
		18%	16%	31%	68%	29%	14%	42%
0,860	13,000	366777,000	0,191	3,522	27167,596	241725607902,902	500677,949	4
		15%	10%	22%	82%	28%	14%	67%
0,840	14,000	369305,984	0,192	3,751	28264,003	246985490463,554	506443,415	5
		16%	11%	29%	89%	30%	15%	58%
0,820	15,000	379693,593	0,197	2,897	29864,074	252738410914,686	512686,988	4
		19%	14%	0%	100%	34%	16%	67%
0,850	16,000	334454,447	0,174	4,493	27458,539	209661379397,431	467329,937	0
		5%	0%	55%	83%	11%	6%	100%

MEJORES MEDIDAS DE DESEMPEÑO						
319259,888	0,173	2,897	14967,399	189294028548,749	440621,971	12,000

% DE DESVIACIÓN RESPECTO LAS MEJORES MEDIDAS DE DESEMPEÑO

SED

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,850	1,000	504074,032	0,274	4,123	-6577,453	455157636144,372	683709,876	6,000
0,770	2,000	470854,177	0,258	4,427	-1740,435	391203905007,832	634090,435	12,000
0,850	3,000	503749,849	0,270	4,463	15967,864	464430147728,109	691158,144	8,000
0,920	4,000	529922,156	0,284	4,189	5234,546	536821630251,746	743377,765	17,000
0,850	5,000	498608,395	0,265	4,666	9647,123	470388657578,844	696162,955	19,000
0,870	6,000	524085,877	0,278	4,253	14536,405	507044759622,803	723111,270	0,000
0,840	7,000	520223,467	0,276	4,026	11503,624	488200827458,192	709893,824	18,000
0,820	8,000	521884,860	0,276	3,732	9295,778	482252376111,632	705923,123	19,000
0,880	9,000	566340,180	0,298	3,281	15594,713	567075279464,548	765917,489	10,000
0,760	10,000	514875,299	0,271	3,392	11023,793	454892473444,232	686395,391	15,000
0,810	11,000	552394,959	0,287	3,120	21034,907	521233675462,079	735213,320	6,000
0,510	12,000	421898,022	0,222	3,376	-1072,522	303434158649,660	561341,877	0,000
0,650	13,000	485583,741	0,252	2,937	5151,807	399295447354,879	644412,341	12,000
0,810	14,000	541825,135	0,281	2,809	-29811,734	526174360312,708	740336,607	2,000
0,680	15,000	445908,213	0,231	3,474	714,430	355064411603,160	608688,750	9,000
0,880	16,000	550874,484	0,277	3,094	27709,729	550131383384,002	758378,108	6,000

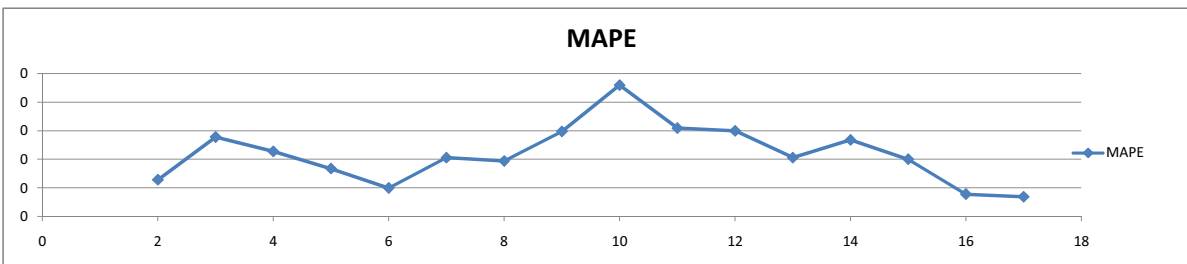
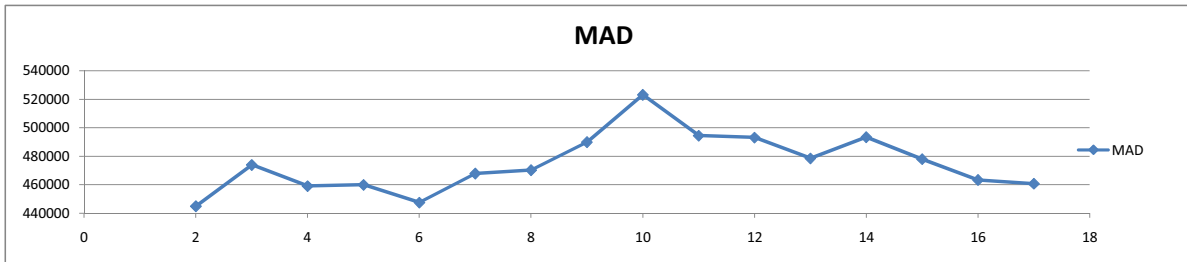
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,850	1,000	504074,032	0,274	4,123	-6577,453	455157636144,372	683709,876	6,000
		19%	23%	47%	78%	50%	22%	68%
0,770	2,000	470854,177	0,258	4,427	-1740,435	391203905007,832	634090,435	12,000
		12%	16%	58%	94%	29%	13%	37%
0,850	3,000	503749,849	0,270	4,463	15967,864	464430147728,109	691158,144	8,000
		19%	22%	59%	154%	53%	23%	58%
0,920	4,000	529922,156	0,284	4,189	5234,546	536821630251,746	743377,765	17,000
		26%	28%	49%	118%	77%	32%	11%
0,850	5,000	498608,395	0,265	4,666	9647,123	470388657578,844	696162,955	19,000
		18%	19%	66%	132%	55%	24%	0%
0,870	6,000	524085,877	0,278	4,253	14536,405	507044759622,803	723111,270	0,000
		24%	25%	51%	149%	67%	29%	100%
0,840	7,000	520223,467	0,276	4,026	11503,624	488200827458,192	709893,824	18,000
		23%	24%	43%	139%	61%	26%	5%
0,820	8,000	521884,860	0,276	3,732	9295,778	482252376111,632	705923,123	19,000
		24%	24%	33%	131%	59%	26%	0%
0,880	9,000	566340,180	0,298	3,281	15594,713	567075279464,548	765917,489	10,000
		34%	34%	17%	152%	87%	36%	47%
0,760	10,000	514875,299	0,271	3,392	11023,793	454892473444,232	686395,391	15,000
		22%	22%	21%	137%	50%	22%	21%
0,810	11,000	552394,959	0,287	3,120	21034,907	521233675462,079	735213,320	6,000
		31%	29%	11%	171%	72%	31%	68%
0,510	12,000	421898,022	0,222	3,376	-1072,522	303434158649,660	561341,877	0,000
		0%	0%	20%	96%	0%	0%	100%
0,650	13,000	485583,741	0,252	2,937	5151,807	399295447354,879	644412,341	12,000
		15%	13%	5%	117%	32%	15%	37%
0,810	14,000	541825,135	0,281	2,809	-29811,734	526174360312,708	740336,607	2,000
		28%	27%	0%	0%	73%	32%	89%
0,680	15,000	445908,213	0,231	3,474	714,430	355064411603,160	608688,750	9,000
		6%	4%	24%	102%	17%	8%	53%
0,880	16,000	550874,484	0,277	3,094	27709,729	550131383384,002	758378,108	6,000
		31%	25%	10%	193%	81%	35%	68%

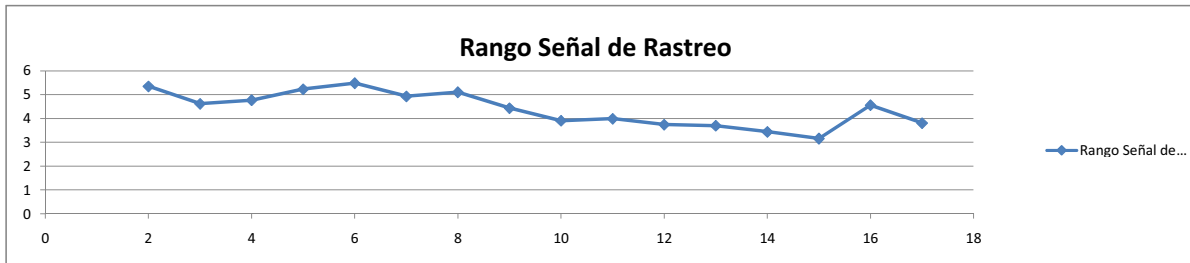
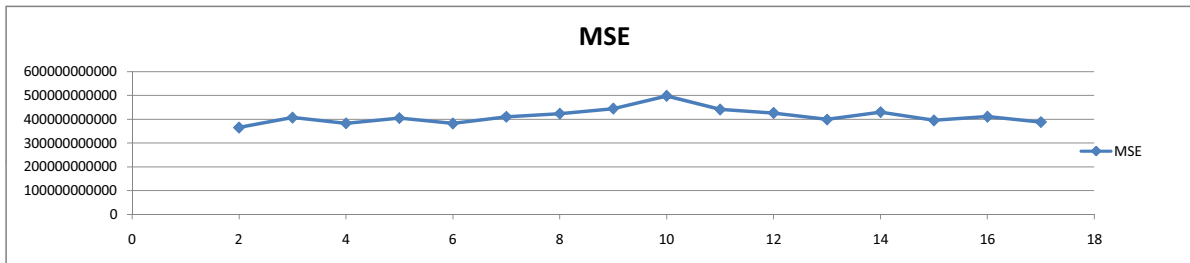
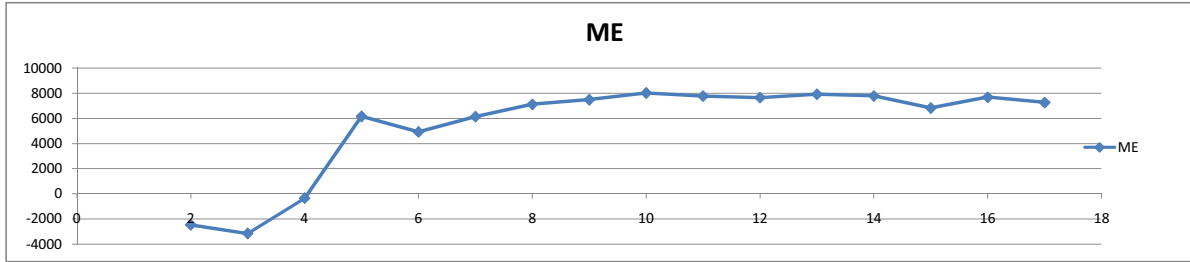
MEJORES MEDIDAS DE DESEMPEÑO							
421898,022	0,222	2,809	-29811,734	303434158649,660	561341,877	19,000	

% DE DESVIACIÓN RESPECTO LAS MEJORES MEDIDAS DE DESEMPEÑO

SET

Alpha	Beta	N (Periodos de Promedio)	MAD	MAPE	Pendiente	Intercepto	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Interseccion es con cero
0,820	0,840	2	444919,457	0,243	202661,000	1203354,000	5,352	-2466,067	365816269364,728	612734,048	10
0,840	0,870	3	473897,994	0,258	239971,000	1153607,333	4,621	-3157,785	407377040693,910	646828,595	10
0,810	0,820	4	459020,271	0,253	136356,300	1326298,500	4,771	-355,534	383372434003,150	627711,453	10
0,850	0,870	5	459972,891	0,247	-7518,700	1614048,500	5,238	6152,950	405314400930,781	645673,921	24
0,830	0,820	6	447467,505	0,240	17385,686	1555938,267	5,488	4920,444	382450506013,515	627454,421	19
0,840	0,850	7	467852,473	0,251	-2344,571	1608552,286	4,933	6135,495	410640275709,182	650449,014	23
0,840	0,860	8	470244,613	0,249	-20211,548	1662153,214	5,109	7116,176	423847007267,218	661129,508	23
0,850	0,860	9	489929,728	0,260	-21767,900	1667341,056	4,440	7487,053	445052775595,706	677797,401	22
0,890	0,870	10	523124,376	0,276	-18992,139	1657163,267	3,908	8010,072	498117655141,793	717440,992	21
0,810	0,860	11	494463,689	0,261	-24224,945	1678094,491	3,993	7767,567	441223604326,265	675602,110	18
0,800	0,800	12	493139,576	0,260	-22776,259	1671816,848	3,747	7647,746	426708302756,112	664791,610	17
0,760	0,770	13	478473,567	0,251	-29983,593	1705451,077	3,699	7915,890	399240579887,691	643449,507	16
0,780	0,770	14	493400,701	0,257	-20559,615	1658331,187	3,443	7778,660	430286471755,171	668457,891	16
0,690	0,730	15	477946,714	0,250	-16745,264	1637987,981	3,162	6820,784	395599312143,451	641422,859	10
0,830	0,850	16	463316,214	0,238	7358,396	1501400,575	4,565	7679,950	411216913983,486	654485,257	18
0,800	0,800	17	460703,131	0,237	7672,527	1499515,787	3,811	7258,683	388679184661,447	636850,280	15





Regresión Lineal

Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
1394152,130	20030,152	0,571	246462,949	0,139	11,278	0,000	116125736255,920	345005,623	5

Media

MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
338410,405	0,195	17,679	0,000	172294713289,875	420240,504	0

Descomposición

Estacionalidad	Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	1393108,462	20079,850	0,573	244010,464	0,138	11,702	0,000	115956191070,326	344753,674	4,000
3	1400188,155	19742,722	0,573	244585,214	0,139	11,004	-219,215	113448459547,547	341005,383	5,000
4	1390175,942	20219,494	0,588	254197,396	0,143	11,597	-145,007	111809729478,485	338533,562	5,000
6	1411159,320	19220,286	0,571	257182,593	0,146	10,734	-1303,599	110695553825,331	336842,608	5,000
12	1421721,317	18717,333	0,601	240743,601	0,134	11,790	-2206,391	93208460023,560	309093,306	5,000

Winters

Estacionalidad	Alpha	Beta	Gamma	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	0,820	0,810	0,800	499509,888	0,281	4,673	-30165,603	430508906526,838	664939,307	0
3	0,820	0,830	0,850	592689,882	0,313	5,830	-38542,030	625920819427,599	802064,529	4
4	0,830	0,810	0,790	507360,967	0,280	4,084	-1133,266	415515278819,984	653748,533	17
6	0,840	0,850	0,860	691713,647	0,364	5,799	-12221,922	802160699511,765	909103,184	12
12	0,830	0,840	0,830	731487,378	0,380	4,099	18546,092	774699579580,630	896321,458	0

15. MEDIDAS DE DESEMPEÑO MODELOS DE PRONOSTICO
PF 60 GR

PMS

N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
1	819298,000	0,736	3,593	-47437,034	1011764067566,480	1023669,135	2
2	761224,804	0,874	3,945	-21376,911	882699399668,098	956761,188	4
3	670961,864	0,784	3,872	-240,753	722285587519,716	866063,394	10
4	596163,413	0,676	4,811	-6008,529	586851410285,305	781233,299	9
5	597742,192	0,692	4,835	-29667,440	567419836748,429	768805,782	1
6	631876,590	0,755	3,956	-58702,188	631989680941,902	812076,039	0
7	589307,739	0,748	4,673	-37325,901	563819747212,320	767755,116	5
8	604836,392	0,765	4,340	-62505,074	606633510290,826	797195,597	0
9	568189,217	0,730	5,084	-24561,185	552423670033,220	761606,758	3
10	575033,095	0,746	4,869	-50639,115	558402347043,804	766675,906	3
11	588026,038	0,801	4,495	-92601,761	583431506409,086	784757,522	0
12	569298,394	0,808	4,479	-61778,301	599228919318,216	796541,072	2
13	541609,186	0,633	4,068	2754,489	541058192625,753	758204,675	5
14	539949,915	0,648	3,402	1382,129	517086726311,673	742670,300	4
15	479861,911	0,672	5,579	-122401,547	400134284383,429	654763,549	0

PMD

N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	1138906,019	1,095	4,022	48003,204	2087007462773,900	1472167,443	4
3	1017322,280	1,198	3,642	24509,178	1485068446222,820	1243762,959	10
4	761698,491	0,819	3,157	56693,946	904124466751,943	972224,785	8
5	700743,313	0,734	3,365	89604,247	757043962707,516	891569,493	4
6	748351,524	0,855	2,992	19405,748	899019031159,949	974148,106	5
7	665191,615	0,720	2,725	118883,181	683028688527,778	851890,827	0
8	532394,168	0,641	3,587	-30885,347	449882363170,581	694274,310	2
9	442691,529	0,285	3,210	133947,619	360045280117,042	624539,073	0
10	491863,282	0,316	2,488	124580,056	427617971469,192	685842,379	0
11	444219,303	0,262	2,460	155608,982	388812765636,402	661373,088	0

SE

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,870	1,000	793794,536	0,755	3,683	-49414,340	921706374147,376	977048,852	2
0,840	2,000	792955,753	0,775	3,564	-33682,108	926530156479,062	980227,570	4
0,830	3,000	780491,871	0,772	3,617	-19098,293	910906001700,814	972594,904	10
0,830	4,000	789506,510	0,790	4,178	-16031,484	938342867707,335	987864,658	0
0,730	5,000	791699,760	0,824	3,198	-17735,133	901822134295,984	969225,493	9
0,720	6,000	806974,202	0,848	2,977	-20957,933	919107303186,855	979320,423	0
0,670	7,000	768127,596	0,838	3,190	-13817,758	875874939541,504	956915,585	9
0,700	8,000	801140,127	0,867	2,830	-15561,340	928160151324,610	986082,275	8
0,770	9,000	765484,178	0,814	4,174	-9017,750	925481018215,994	985776,379	9
0,730	10,000	789281,210	0,855	2,886	-10505,904	944253097968,200	996970,726	7
0,760	11,000	785959,952	0,848	3,072	-14900,508	954243556229,707	1003621,984	0
0,690	12,000	784910,437	0,932	2,353	-9692,866	962483322287,038	1009504,823	6

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,870	1,000	793794,536	0,755	3,683	-49414,340	921706374147,376	977048,852	2
		4%	0%	57%	0%	5%	2%	80%
0,840	2,000	792955,753	0,775	3,564	-33682,108	926530156479,062	980227,570	4
		4%	3%	51%	32%	6%	2%	60%
0,830	3,000	780491,871	0,772	3,617	-19098,293	910906001700,814	972594,904	10
		2%	2%	54%	61%	4%	2%	0%
0,830	4,000	789506,510	0,790	4,178	-16031,484	938342867707,335	987864,658	0
		3%	5%	78%	68%	7%	3%	100%
0,730	5,000	791699,760	0,824	3,198	-17735,133	901822134295,984	969225,493	9
		3%	9%	36%	64%	3%	1%	10%
0,720	6,000	806974,202	0,848	2,977	-20957,933	919107303186,855	979320,423	0
		5%	12%	27%	58%	5%	2%	100%
0,670	7,000	768127,596	0,838	3,190	-13817,758	875874939541,504	956915,585	9
		0%	11%	36%	72%	0%	0%	10%
0,700	8,000	801140,127	0,867	2,830	-15561,340	928160151324,610	986082,275	8
		5%	15%	20%	69%	6%	3%	20%
0,770	9,000	765484,178	0,814	4,174	-9017,750	925481018215,994	985776,379	9
		0%	8%	77%	82%	6%	3%	10%
0,730	10,000	789281,210	0,855	2,886	-10505,904	944253097968,200	996970,726	7
		3%	13%	23%	79%	8%	4%	30%
0,760	11,000	785959,952	0,848	3,072	-14900,508	954243556229,707	1003621,984	0
		3%	12%	31%	70%	9%	5%	100%
0,690	12,000	784910,437	0,932	2,353	-9692,866	962483322287,038	1009504,823	6
		3%	24%	0%	80%	10%	5%	40%

MEJORES MEDIDAS DE DESEMPEÑO

765484,178	0,755	2,353	-49414,340	875874939541,504	956915,585	10,000
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	% DE DESVIACIÓN RESPECTO LAS MEJORES MEDIDAS DE DESEMPEÑO
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SED

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,850	1,000	1173210,904	1,039	3,243	29008,870	2199436668455,120	1511300,892	2,000
0,800	2,000	1095003,956	0,923	3,172	4638,514	2018666269108,980	1448935,099	10,000
0,750	3,000	1048284,839	0,854	3,550	-18770,942	1888921566720,750	1402721,153	13,000
0,650	4,000	1033363,292	0,933	2,969	-16448,006	1639369533642,670	1307916,844	12,000
0,810	5,000	1155085,511	0,992	2,841	13931,583	2213505294881,330	1521222,920	0,000
0,700	6,000	1046261,343	0,906	2,963	-12976,807	1813835271278,750	1378480,460	0,000
0,890	7,000	1254940,279	1,179	2,994	9834,948	2537781525832,690	1632381,880	4,000
0,740	8,000	1011764,908	0,815	4,047	-25065,310	1882427084114,040	1407658,408	9,000
0,760	9,000	1069400,368	0,870	3,255	-53394,015	2055419820970,090	1472959,542	10,000
0,860	10,000	1157865,590	1,048	3,601	2909,394	2386429800493,600	1589593,666	0,000
0,850	11,000	1241245,725	1,100	2,714	41307,136	2577784245165,990	1654960,954	2,000
0,740	12,000	1047933,430	0,806	2,557	-2456,639	1984871643097,460	1455058,906	7,000

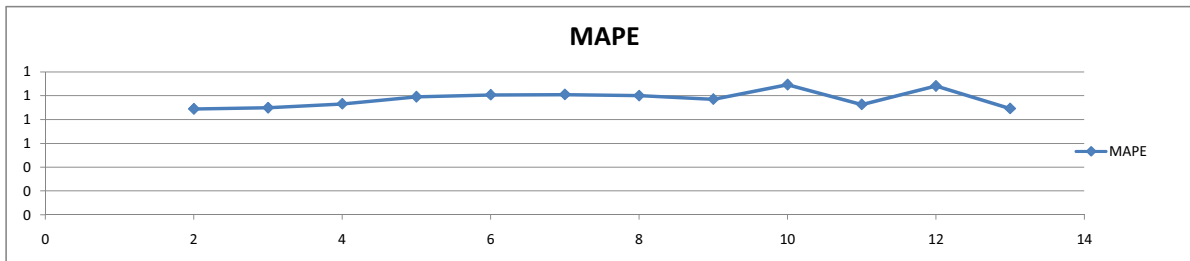
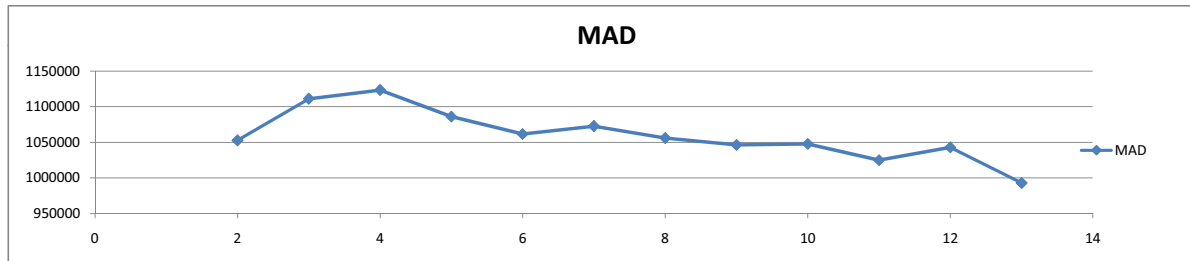
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,850	1,000	1173210,904	1,039	3,243	29008,870	2199436668455,120	1511300,892	2,000
		16%	29%	27%	154%	34%	16%	85%
0,800	2,000	1095003,956	0,923	3,172	4638,514	2018666269108,980	1448935,099	10,000
		8%	15%	24%	109%	23%	11%	23%
0,750	3,000	1048284,839	0,854	3,550	-18770,942	1888921566720,750	1402721,153	13,000
		4%	6%	39%	65%	15%	7%	0%
0,650	4,000	1033363,292	0,933	2,969	-16448,006	1639369533642,670	1307916,844	12,000
		2%	16%	16%	69%	0%	0%	8%
0,810	5,000	1155085,511	0,992	2,841	13931,583	2213505294881,330	1521222,920	0,000
		14%	23%	11%	126%	35%	16%	100%
0,700	6,000	1046261,343	0,906	2,963	-12976,807	1813835271278,750	1378480,460	0,000
		3%	12%	16%	76%	11%	5%	100%
0,890	7,000	1254940,279	1,179	2,994	9834,948	2537781525832,690	1632381,880	4,000
		24%	46%	17%	118%	55%	25%	69%
0,740	8,000	1011764,908	0,815	4,047	-25065,310	1882427084114,040	1407658,408	9,000
		0%	1%	58%	53%	15%	8%	31%
0,760	9,000	1069400,368	0,870	3,255	-53394,015	2055419820970,090	1472959,542	10,000
		6%	8%	27%	0%	25%	13%	23%
0,860	10,000	1157865,590	1,048	3,601	2909,394	2386429800493,600	1589593,666	0,000
		14%	30%	41%	105%	46%	22%	100%
0,850	11,000	1241245,725	1,100	2,714	41307,136	2577784245165,990	1654960,954	2,000
		23%	37%	6%	177%	57%	27%	85%
0,740	12,000	1047933,430	0,806	2,557	-2456,639	1984871643097,460	1455058,906	7,000
		4%	0%	0%	95%	21%	11%	46%

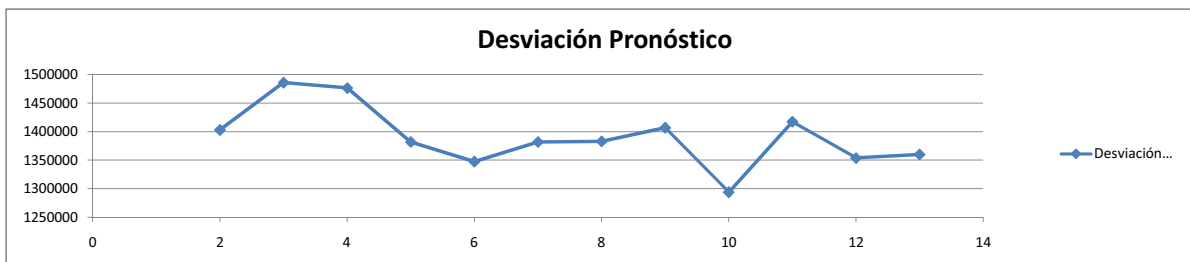
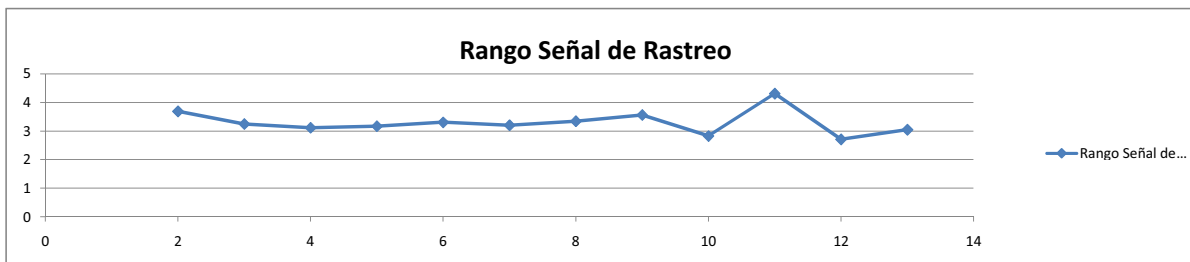
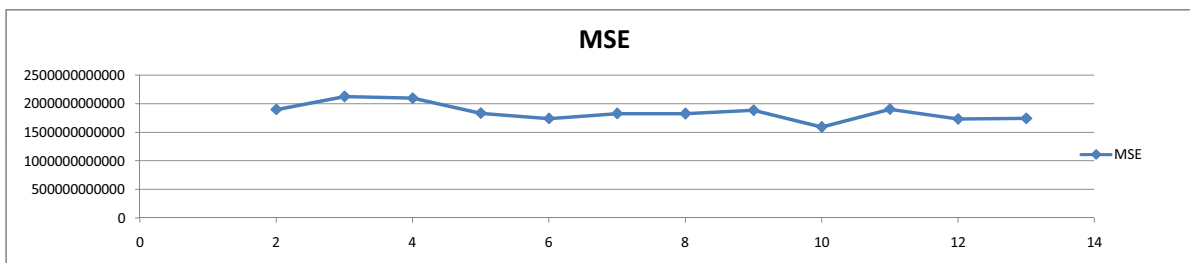
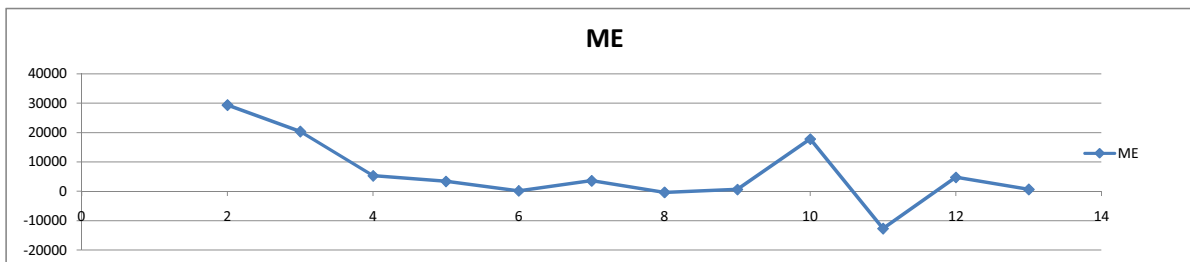
MEJORES MEDIDAS DE DESEMPEÑO							
1011764,908	0,806	2,557	-53394,015	1639369533642,670	1307916,844	13,000	

% DE DESVIACIÓN RESPECTO LAS MEJORES MEDIDAS DE DESEMPEÑO

SET

Alpha	Beta	N (Periodos de Promedio)	MAD	MAPE	Pendiente	Intercepto	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,820	0,850	2	1052868,683	0,889	-864800,000	3586400,000	3,689	29360,600	1897807570643,870	1402888,713	4
0,840	0,860	3	1111296,608	0,899	-752400,000	3436533,333	3,247	20364,926	2125149273775,080	1485559,081	6
0,830	0,840	4	1123501,531	0,932	-399400,000	2848200,000	3,117	5283,475	2095256226053,940	1476166,141	12
0,780	0,770	5	1086132,585	0,991	-171640,000	2392680,000	3,171	3405,276	1833159774203,900	1381861,582	12
0,760	0,740	6	1061632,162	1,007	-62217,143	2137360,000	3,307	148,075	1740254132187,130	1347559,778	11
0,770	0,760	7	1072939,589	1,010	-141571,429	2348971,429	3,202	3576,695	1826585626832,020	1381887,205	10
0,770	0,750	8	1056280,498	1,001	-80904,762	2166971,429	3,343	-343,575	1825374070319,200	1382858,144	10
0,780	0,770	9	1046499,539	0,971	-128293,333	2324933,333	3,564	617,127	1884951880878,280	1406840,245	8
0,670	0,710	10	1047934,108	1,093	-80206,061	2148613,333	2,828	17802,685	1590915140026,790	1294081,727	8
0,800	0,800	11	1025000,037	0,926	-35203,636	1968603,636	4,310	-12678,359	1902978974028,870	1417286,149	8
0,740	0,720	12	1043111,671	1,082	-59979,021	2075963,636	2,711	4774,466	1730803413674,040	1353741,253	0
0,770	0,750	13	993094,258	0,893	-91714,286	2224061,538	3,048	656,226	1741055165112,260	1360099,670	0





Regresion Lineal

Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
1747844,423	-17367,909	-0,218	526674,992	0,600	6,112	0,000	451543858109,185	683457,633	4

Media

MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
570840,333	0,629	7,149	0,000	474142040840,739	700351,174	2

Descomposición

Estacionalidad	Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	1749305,180	-17462,151	-0,217	523049,227	0,591	6,119	169,576	449954763480,683	682253,945	4,000
3	1753774,984	-17750,526	-0,223	497922,787	0,586	6,479	-47,167	438545711407,611	673548,794	3,000
4	1754552,801	-17800,708	-0,221	509454,957	0,547	5,695	172,864	423402306459,979	661817,487	4,000
6	1780481,880	-19473,551	-0,243	488983,495	0,576	5,965	1009,606	432415539527,417	668824,656	4,000
12	1770491,212	-18828,992	-0,290	396073,319	0,490	5,669	976,189	319257342285,930	574687,929	4,000

Winters

Estacionalidad	Alpha	Beta	Gamma	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	0,830	0,850	0,850	1326083,179	1,114	4,905	-88882,461	2901690602518,650	1735884,238	5
3	0,810	0,810	0,780	1533333,784	1,372	5,138	-162967,499	3550276735317,420	1921532,671	9
4	0,870	0,880	0,850	2094484,534	1,781	6,641	-313551,179	9236650974866,890	3101856,127	9
6	0,820	0,840	0,840	1645724,802	1,350	6,296	-168354,020	5553448035715,680	2409538,855	5
12	0,820	0,780	0,770	1674539,411	1,461	3,677	-165204,660	5315480142322,530	2376488,513	1

**16. MEDIDAS DE DESEMPEÑO MODELOS DE PRONOSTICO
RESINA**

PMS

N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
1	128287,941	0,084	4,238	28122,639	30658994343,893	183643,388	0
2	118968,005	0,077	4,470	38267,703	23505360784,623	161607,758	0
3	134731,514	0,088	3,959	38492,394	25890143462,423	170664,617	0
4	146854,596	0,095	2,775	42277,089	27845801877,498	178392,190	0
5	140768,665	0,091	2,209	31335,114	26861780860,485	177027,524	2
6	127226,079	0,083	2,248	11714,457	22480789665,760	164246,606	2
7	107296,928	0,070	3,121	-3072,732	20641058264,220	160627,902	2

PMD

N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	159211,735	0,102	4,065	-13316,403	42577692013,688	218860,466	2
3	158525,486	0,101	5,268	-2610,788	50396023074,284	242477,546	3
4	211125,832	0,139	2,221	-32905,130	58407097101,245	270201,538	0
5	186527,931	0,123	1,167	10367,334	51748617149,499	278608,912	1

SE

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,910	1,000	126986,181	0,083	4,587	32776,203	28768312406,727	177890,819	0
0,870	2,000	127127,891	0,082	4,134	26712,193	28293469219,574	177305,352	0
0,900	3,000	135961,664	0,087	3,747	22393,050	30982540270,056	186695,897	2
0,910	4,000	150209,422	0,096	3,035	21804,200	36468300918,354	204152,047	2
0,650	5,000	156304,982	0,100	2,380	31557,380	35116369535,693	202408,245	2
0,610	6,000	150191,857	0,096	2,610	28820,168	33625271437,637	200873,905	2

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,910	1,000	126986,181	0,083	4,587	32776,203	28768312406,727	177890,819	0
		0%	1%	93%	50%	2%	0%	100%
0,870	2,000	127127,891	0,082	4,134	26712,193	28293469219,574	177305,352	0
		0%	0%	74%	23%	0%	0%	100%
0,900	3,000	135961,664	0,087	3,747	22393,050	30982540270,056	186695,897	2
		7%	6%	57%	3%	10%	5%	0%
0,910	4,000	150209,422	0,096	3,035	21804,200	36468300918,354	204152,047	2
		18%	17%	28%	0%	29%	15%	0%
0,650	5,000	156304,982	0,100	2,380	31557,380	35116369535,693	202408,245	2
		23%	21%	0%	45%	24%	14%	0%
0,610	6,000	150191,857	0,096	2,610	28820,168	33625271437,637	200873,905	2
		18%	16%	10%	32%	19%	13%	0%

MEJORES MEDIDAS DE DESEMPEÑO							
126986,181	0,082	2,380	21804,200	28293469219,574	177305,352	2,000	

% DE DESVIACIÓN RESPECTO LAS MEJORES MEDIDAS DE DESEMPEÑO

SED

Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,880	1,000	198427,054	0,128	4,560	-43385,073	72551739799,981	285693,380	2,000
0,860	2,000	191821,210	0,123	5,180	-33075,194	73534856829,233	289896,251	3,000
0,920	3,000	236948,393	0,152	4,115	-54650,099	96186325014,617	334988,625	2,000
0,870	4,000	269853,361	0,173	3,251	-67146,151	107019503659,708	358362,113	2,000
0,840	5,000	284683,825	0,183	3,136	-64729,371	120323972398,904	387820,790	2,000
0,740	6,000	253454,866	0,160	3,737	-15503,850	101957636726,635	368705,188	2,000

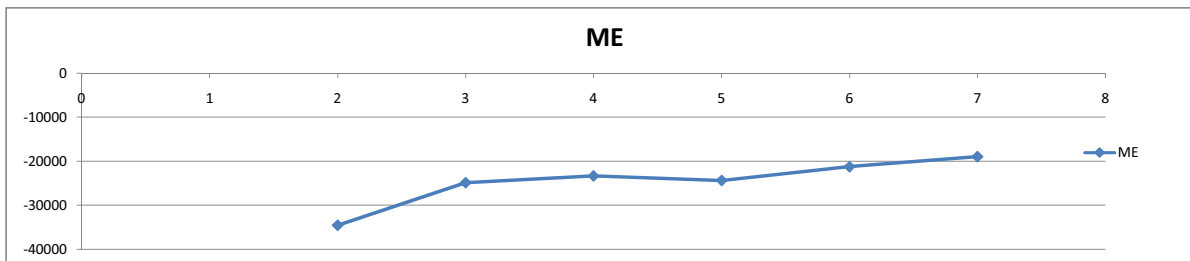
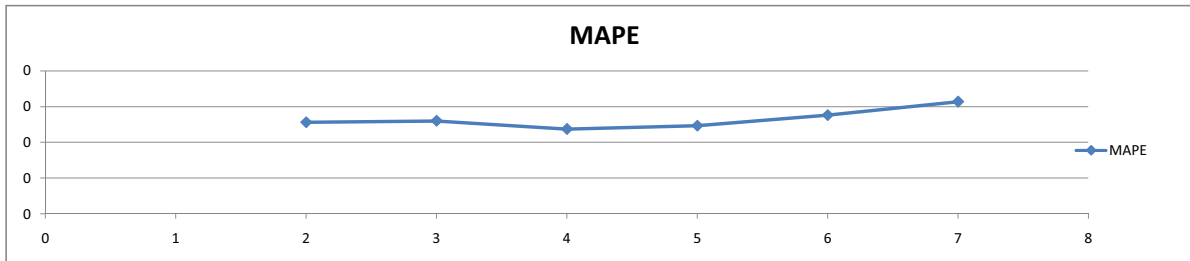
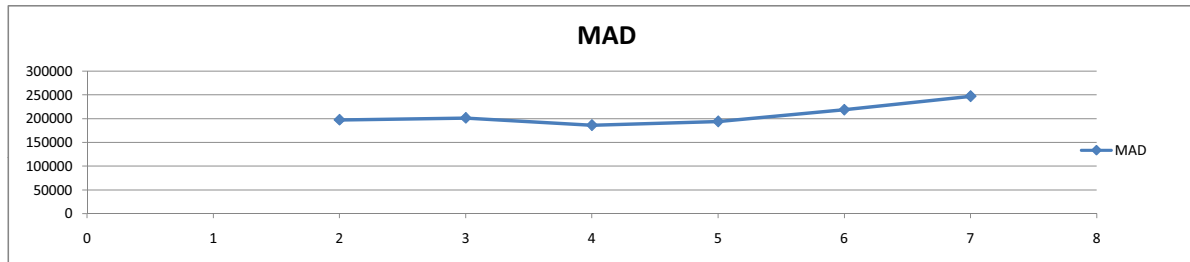
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,880	1,000	198427,054	0,128	4,560	-43385,073	72551739799,981	285693,380	2,000
		3%	5%	45%	35%	0%	0%	33%
0,860	2,000	191821,210	0,123	5,180	-33075,194	73534856829,233	289896,251	3,000
		0%	0%	65%	51%	1%	1%	0%
0,920	3,000	236948,393	0,152	4,115	-54650,099	96186325014,617	334988,625	2,000
		24%	24%	31%	19%	33%	17%	33%
0,870	4,000	269853,361	0,173	3,251	-67146,151	107019503659,708	358362,113	2,000
		41%	41%	4%	0%	48%	25%	33%
0,840	5,000	284683,825	0,183	3,136	-64729,371	120323972398,904	387820,790	2,000
		48%	49%	0%	4%	66%	36%	33%
0,740	6,000	253454,866	0,160	3,737	-15503,850	101957636726,635	368705,188	2,000
		32%	31%	19%	77%	41%	29%	33%

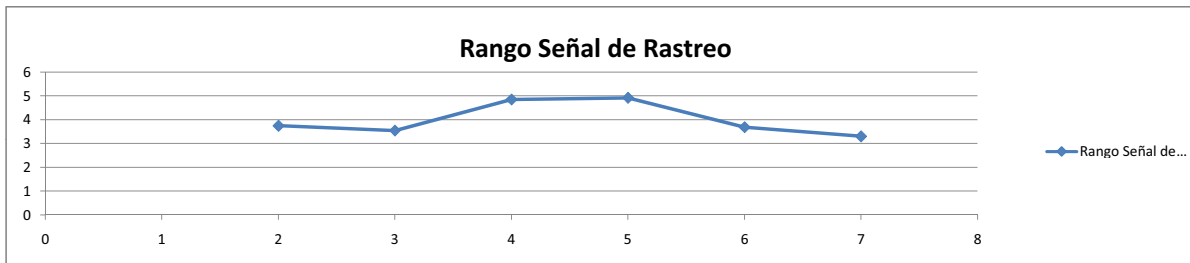
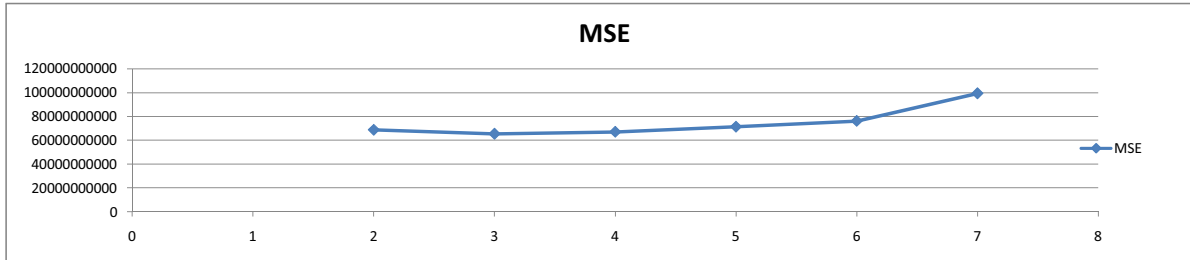
MEJORES MEDIDAS DE DESEMPEÑO							
191821,210	0,123	3,136	-67146,151	72551739799,981	285693,380	3,000	

% DE DESVIACIÓN RESPECTO LAS MEJORES MEDIDAS DE DESEMPEÑO

SET

Alpha	Beta	N (Periodos de Promedio)	MAD	MAPE	Pendiente	Intercepto	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersección con cero
0,850	0,870	2	197573,744	0,128	203937,141	987275,244	3,746	-34541,249	68808016587,615	276501,992	2
0,840	0,830	3	201606,589	0,130	120615,758	1098370,420	3,546	-24856,842	65482719700,360	271418,606	2
0,870	0,890	4	186303,238	0,119	73405,078	1177054,887	4,845	-23340,541	67104233673,105	276930,592	2
0,850	0,880	5	194197,129	0,123	73010,347	1177844,350	4,916	-24353,491	71431177268,117	288680,400	2
0,800	0,800	6	218823,592	0,138	73840,384	1175907,597	3,688	-21216,055	76287153604,424	302563,356	2
0,780	0,750	7	247228,546	0,157	63994,604	1202163,009	3,306	-18942,619	99395274427,197	352482,756	2





Regresion Lineal

Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
1345348,698	19451,293	0,483	100821,709	0,069	5,399	0,000	14815657932,261	127131,963	4

Media

MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
108685,537	0,075	4,000	0,000	19324362180,698	145193,396	0

Descomposición

Estacionalidad	Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	1341658,041	20019,087	0,506	97789,750	0,067	4,652	133,602	13917114593,428	123216,504	3,000
3	1365956,487	16280,864	0,447	98586,072	0,067	6,045	-415,137	12177291027,283	115257,614	4,000
4	1370808,825	15534,351	0,454	77891,083	0,054	5,171	-458,161	10649193590,905	107783,589	4,000
6	1410147,698	9482,216	0,323	75676,986	0,052	3,667	-769,868	8802347568,306	97992,658	2,000

Winters

Estacionalidad	Alpha	Beta	Gamma	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	0,860	0,840	0,870	234538,576	0,153	2,972	-48237,084	80072814673,617	300136,496	2
3	0,860	0,880	0,850	231158,154	0,150	3,860	-67213,605	90961141113,984	322421,448	2
4	0,880	0,890	0,870	269714,319	0,173	2,428	-84169,256	89634406183,516	323378,221	0
6	0,850	0,890	0,850	318038,930	0,208	2,100	-145681,034	138815843270,029	416557,084	0



ANEXO C SELECCIÓN MODELOS DE PRONOSTICO

1. RESUMEN

REFERENCIA	MODELO DE PRONOSTICO SELECCIONADO	PARAMETROS DEL MOLELO
PREFORMA 18 GR	Modelo Suavización Exponencial	Estacionalidad 2 Periodos / Alpha 0.84
PREFORMA 22 GR	Modelo Descomposición Multiplicativa	Estacionalidad 3 Periodos
PREFORMA 23 GR	Modelo Promedio Movil Simple	Estacionalidad 1 Periodos
PREFORMA 25 GR	Modelo Suavización Exponencial	Estacionalidad 2 Periodos / Alpha 0.83
PREFORMA 27 GR	Modelo Suavización Exponencial	Estacionalidad 2 Periodos / Alpha 0.77
PREFORMA 28 GR	Modelo Suavización Exponencial Doble	Estacionalidad 4 Periodos / Alpha 0.59
PREFORMA 30 GR	Modelo Descomposición Multiplicativa	Estacionalidad 3 Periodos
PREFORMA 30 GR Kerr	Modelo Suavización Exponencial Doble	Estacionalidad 2 Periodos / Alpha 0.76
PREFORMA 30.5 GR	Modelo Suavización Exponencial	Estacionalidad 4 Periodos / Alpha 0.58
PREFORMA 44 GR	Modelo Descomposición Multiplicativa	Estacionalidad 4 Periodos
PREFORMA 47.5 GR	Modelo Suavización Exponencial	Estacionalidad 4 Periodos / Alpha 0.82
PREFORMA 52 GR	Modelo Suavización Exponencial	Estacionalidad 3 Periodos / Alpha 0.86
PREFORMA 54 GR	Modelo Promedio Movil Simple	Estacionalidad 1 Periodos
PREFORMA 60 GR	Modelo Suavización Exponencial Doble	Estacionalidad 4 Periodos / Alpha 0.65

REFERENCIA	MODELO DE PRONOSTICO SELECCIONADO	PARAMETROS DEL MOLELO
RESINA PET	Modelo Descomposición Multiplicativa	Estacionalidad 6 Periodos

AJUSTES DE MODELO

REFERENCIA	MODELO DE PRONOSTICO SELECCIONADO	PARAMETROS DEL MOLELO
PREFORMA 18 GR	Modelo Suavización Exponencial	Estacionalidad 2 Periodos / Alpha 0.84
PREFORMA 22 GR	Modelo Descomposición Multiplicativa	Estacionalidad 3 Periodos
PREFORMA 23 GR	Modelo Promedio Movil Simple	Estacionalidad 1 Periodos
PREFORMA 25 GR	Modelo Suavización Exponencial	Estacionalidad 2 Periodos / Alpha 0.83
PREFORMA 27 GR	Modelo Suavización Exponencial	Estacionalidad 2 Periodos / Alpha 0.77
PREFORMA 28 GR	Modelo Suavización Exponencial Doble	Estacionalidad 4 Periodos / Alpha 0.59
PREFORMA 30 GR	Modelo Suavización Exponencial con Ajuste a la Tendencia	Estacionalidad 4 Periodos / Alpha 0.74 / Beta 0.71
PREFORMA 30 GR Kerr	Modelo Suavización Exponencial con Ajuste a la Tendencia	Estacionalidad 2 Periodos / Alpha 0.87 / Beta 0.89
PREFORMA 30.5 GR	Modelo Suavización Exponencial	Estacionalidad 4 Periodos / Alpha 0.58
PREFORMA 44 GR	Modelo Descomposición Multiplicativa	Estacionalidad 4 Periodos
PREFORMA 47.5 GR	Modelo Suavización Exponencial	Estacionalidad 4 Periodos / Alpha 0.82
PREFORMA 52 GR	Modelo Suavización Exponencial	Estacionalidad 3 Periodos / Alpha 0.86
PREFORMA 54 GR	Modelo Promedio Movil Simple	Estacionalidad 1 Periodos
PREFORMA 60 GR	Modelo Suavización Exponencial Doble	Estacionalidad 4 Periodos / Alpha 0.65
RESINA	Modelo Descomposición Multiplicativa	Estacionalidad 6 Periodos

REFERENCIA	MODELO DE PRONOSTICO SELECCIONADO	PARAMETROS DEL MOLELO
RESINA PET	Modelo Descomposición Multiplicativa	Estacionalidad 6 Periodos



2. PROYECCIÓN Y VENTAS

PROYECCIÓN DE PREFORMA EN UNIDADES MAYO 2012 EN ADELANTE

UNIDADES										
REFERENCIA	Demanda	May-12	Jun-12	Jul-12	Ago-12	Sep-12	Oct-12	TOTALES	VARIACION	DECISIÓN
PREFORMA 18 GR	Pronostico	4.383.638	3.498.542	3.675.664				11.557.845	1,60%	OK
	Real	3.329.952	3.709.402	4.333.491				11.372.845		
PREFORMA 22 GR	Pronostico	13.226.953	13.724.391	13.577.092				40.528.436	6,33%	OK
	Real	13.172.235	11.503.150	13.286.782				37.962.167		
PREFORMA 23 GR	Pronostico	3.087.810	2.867.810	2.419.846				8.375.466	10,97%	OK
	Real	2.867.810	2.419.846	2.169.365				7.457.021		
PREFORMA 25 GR	Pronostico	5.449.716	5.527.255	5.981.263				16.958.234	-9,77%	OK
	Real	5.543.136	6.074.253	6.997.076				18.614.465		
PREFORMA 27 GR	Pronostico	1.911.864	2.412.999	2.593.001				6.917.864	-3,68%	OK
	Real	2.562.688	2.646.768	1.962.720				7.172.176		
PREFORMA 28 GR	Pronostico	755.454	1.420.862	1.363.677				3.539.994	-6,07%	OK
	Real	1.420.000	1.277.000	1.058.000				3.755.000		
PREFORMA 30 GR	Pronostico	2.329.402	2.511.440	2.504.647				7.345.489	-12,81%	Ajuste
	Real	2.924.736	2.399.648	2.962.000				8.286.384		
PREFORMA 30 GR Kerr	Pronostico	5.959.079	5.685.059	7.354.216				18.998.353	-11,00%	Ajuste
	Real	5.848.200	6.894.720	8.344.800				21.087.720		
PREFORMA 30.5 GR	Pronostico	4.285.464	3.911.280	3.536.220				11.732.964	2,73%	OK
	Real	3.640.320	3.264.624	4.508.048				11.412.992		
PREFORMA 44 GR	Pronostico	4.318.472	4.042.332	3.931.180				12.291.984	4,74%	OK
	Real	3.515.493	3.878.870	4.314.689				11.709.052		
PREFORMA 47.5 GR	Pronostico	798.754	837.338	882.042				2.518.134	-7,31%	OK
	Real	845.000	892.000	965.239				2.702.239		
PREFORMA 52 GR	Pronostico	2.054.866	2.173.733	1.717.042				5.945.641	-2,89%	OK
	Real	2.193.083	1.642.697	2.281.687				6.117.467		
PREFORMA 54 GR	Pronostico	2.186.700	2.511.680	2.161.080				6.859.460	0,18%	OK
	Real	2.511.680	2.161.080	2.174.240				6.847.000		
PREFORMA 60 GR	Pronostico	1.497.464	759.192	861.677				3.118.333	-0,21%	OK
	Real	967.149	1.047.966	1.109.837				3.124.952		
TOTALES	Pronostico	52.245.636	51.883.912	52.558.647	0	0	0	156.688.195	-0,60%	
	Real	51.341.482	49.812.024	56.467.974	0	0	0	157.621.480		
	% Variación	1,73%	3,99%	-7,44%	0,00%	0,00%	0,00%			

KILOS										
REFERENCIA	Demanda	May-12	Jun-12	Jul-12	Ago-12	Sep-12	Oct-12	TOTALES	VARIACION	DECISIÓN
RESINA PET	Pronostico	1.533.417	1.561.670	1.564.699				4.659.785	-1,37%	OK
	Real	1.539.956	1.491.009	1.692.793				4.723.758		



3. PROYECCIÓN Y VENTA AJUSTE

PROYECCIÓN DE PREFORMA EN UNIDADES MAYO 2012 EN ADELANTE

UNIDADES										
REFERENCIA	Demanda	May-12	Jun-12	Jul-12	Ago-12	Sep-12	Oct-12	TOTALES	VARIACION	DECISIÓN
PREFORMA 18 GR	Pronostico	4.383.638	3.498.542	3.675.664				11.557.845	1,60%	OK
	Real	3.329.952	3.709.402	4.333.491				11.372.845		
PREFORMA 22 GR	Pronostico	13.226.953	13.724.391	13.577.092				40.528.436	6,33%	OK
	Real	13.172.235	11.503.150	13.286.782				37.962.167		
PREFORMA 23 GR	Pronostico	3.087.810	2.867.810	2.419.846				8.375.466	10,97%	OK
	Real	2.867.810	2.419.846	2.169.365				7.457.021		
PREFORMA 25 GR	Pronostico	5.449.716	5.527.255	5.981.263				16.958.234	-9,77%	OK
	Real	5.543.136	6.074.253	6.997.076				18.614.465		
PREFORMA 27 GR	Pronostico	1.911.864	2.412.999	2.593.001				6.917.864	-3,68%	OK
	Real	2.562.688	2.646.768	1.962.720				7.172.176		
PREFORMA 28 GR	Pronostico	755.454	1.420.862	1.363.677				3.539.994	-6,07%	OK
	Real	1.420.000	1.277.000	1.058.000				3.755.000		
PREFORMA 30 GR	Pronostico	2.858.546	3.264.689	2.527.228				8.650.463	4,21%	OK
	Real	2.924.736	2.399.648	2.962.000				8.286.384		
PREFORMA 30 GR Kerr	Pronostico	6.031.499	5.623.545	7.465.254				19.120.297	-10,29%	OK
	Real	5.848.200	6.894.720	8.344.800				21.087.720		
PREFORMA 30.5 GR	Pronostico	4.285.464	3.911.280	3.536.220				11.732.964	2,73%	OK
	Real	3.640.320	3.264.624	4.508.048				11.412.992		
PREFORMA 44 GR	Pronostico	4.318.472	4.042.332	3.931.180				12.291.984	4,74%	OK
	Real	3.515.493	3.878.870	4.314.689				11.709.052		
PREFORMA 47.5 GR	Pronostico	798.754	837.338	882.042				2.518.134	-7,31%	OK
	Real	845.000	892.000	965.239				2.702.239		
PREFORMA 52 GR	Pronostico	2.054.866	2.173.733	1.717.042				5.945.641	-2,89%	OK
	Real	2.193.083	1.642.697	2.281.687				6.117.467		
PREFORMA 54 GR	Pronostico	2.186.700	2.511.680	2.161.080				6.859.460	0,18%	OK
	Real	2.511.680	2.161.080	2.174.240				6.847.000		
PREFORMA 60 GR	Pronostico	1.497.464	759.192	861.677				3.118.333	-0,21%	OK
	Real	967.149	1.047.966	1.109.837				3.124.952		
TOTALES	Pronostico	52.847.200	52.575.647	52.692.267	0	0	0	158.115.114	0,31%	
	Real	51.341.482	49.812.024	56.467.974	0	0	0	157.621.480		
	% Variación	2,85%	5,26%	-7,17%	0,00%	0,00%	0,00%			

KILOS										
REFERENCIA	Demanda	May-12	Jun-12	Jul-12	Ago-12	Sep-12	Oct-12	TOTALES	VARIACION	DECISIÓN
RESINA PET	Pronostico	1.533.417	1.561.670	1.564.699				4.659.785	-1,37%	OK
	Real	1.539.956	1.491.009	1.692.793				4.723.758		

4. SELECCIÓN MODELOS DE PRONOSTICO

PF 18 GRS

Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	Intersecciones con cero (%)
Promedio Móvil Simple	387515,042	8	13,5328732	17,31%	873086101674,125	954487,489	32,00%
Suavización Exponencial	358778,500	8	13,415	15,95%	856314856301,026	946170,312	32,00%
Suavización Exp. con Ajuste a la Tendencia	652780,411	9	10,454835	29,29%	1666791981825,200	1324582,151	36,00%
Regresión Lineal	590565,217	2	21,8476549	37,21%	837235755530,835	933873,963	8,00%
Suavización Exponencial Doble	661838,742	10	10,8687056	29,37%	1886125368460,760	1407278,095	40,00%
Promedio Móvil Doble	539358,477	9	11,7137337	25,61%	1133723853852,770	1089821,409	36,00%
Descomposición	507386,24	4	16,4059792	30,78%	581872950719,261	778535,5849	16,00%
Winters	566566,288	11	11,4409771	27,95%	1132443381919,720	1089205,792	44,00%
Media	568460,912	1	20,9273351	31,28%	1058525651156,040	1050062,325	4,00%

Datos Normalizados						
Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico
Promedio Móvil Simple	1,095	1,300	1,270	1,064	1,223	1,280
Suavización Exponencial	1,000	1,300	1,260	1,000	1,210	1,267
Suavización Exp. con Ajuste a la Tendencia	1,970	1,200	1,000	1,628	1,832	1,868
Regresión Lineal	1,765	1,900	2,000	2,000	1,196	1,247
Suavización Exponencial Doble	2,000	1,100	1,036	1,631	2,000	2,000
Promedio Móvil Doble	1,596	1,200	1,110	1,455	1,423	1,495
Descomposición	1,490	1,700	1,522	1,698	1,000	1,000
Winters	1,686	1,000	1,087	1,565	1,422	1,494
Media	1,692	2,000	1,919	1,721	1,365	1,432

5. SELECCIÓN MODELOS DE PRONOSTICO
PF 22 GRS

Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	Intersecciones con cero (%)
Promedio Móvil Simple	1414980,786	0	6,7816604	0,14339996	3783470322095,390	2018540,686	0,000000000
Suavización Exponencial	1788781,223	0	4,251	0,173	4113193975583,290	2118282,488	0,000000000
Suavización Exp. con Ajuste a la Tendencia	2153965,43	4	4,50560796	0,21025741	6802351583675,750	2724104,841	0,25
Regresión Lineal	1158660,48	3	9,37586535	0,13546022	2226896552351,590	1541219,103	0,1875
Suavización Exponencial Doble	2185976,19	4	3,95740899	0,21199349	7849734531171,810	2916141,127	0,25
Promedio Móvil Doble	2331016,24	1	4,61066062	0,21419708	7416891305210,020	2888598,747	0,0625
Descomposición	1118923,51	2	8,37644253	0,13635871	1683076358653,790	1339881,133	0,125
Winters	1846459,45	0	3,33809251	0,19655227	4700779659140,750	2264535,993	0
Media	2410798,13	1	7,34885152	0,34048293	7966319655415,730	2915031,326	0,0625

Datos Normalizados							
Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	
Promedio Móvil Simple	1,229	2,000	1,570	1,039	1,334	1,431	
Suavización Exponencial	1,519	2,000	1,151	1,184	1,387	1,494	
Suavización Exp. con Ajuste a la Tendencia	1,801	1,000	1,193	1,365	1,815	1,878	
Regresión Lineal	1,031	1,250	2,000	1,000	1,087	1,128	
Suavización Exponencial Doble	1,826	1,000	1,103	1,373	1,981	2,000	
Promedio Móvil Doble	1,938	1,750	1,211	1,384	1,913	1,983	
Descomposición	1,000	1,500	1,834	1,004	1,000	1,000	
Winters	1,563	2,000	1,000	1,298	1,480	1,587	
Media	2,000	1,750	1,664	2,000	2,000	1,999	

6. SELECCIÓN MODELOS DE PRONOSTICO

PF 23 GRS

Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	Intersecciones con cero (%)
Promedio Móvil Simple	489209,455	1	5,1806386	23,25%	432161203981,091	689476,123	8,33%
Suavización Exponencial	538911,603	1	4,466	22,42%	512577474347,752	759374,518	8,33%
Suavización Exp. con Ajuste a la Tendencia	788620,704	2	2,99460406	33,52%	1024152260454,110	1081877,87	16,67%
Regresión Lineal	445652,389	4	5,01692592	22,40%	305007994026,849	576832,7257	33,33%
Suavización Exponencial Doble	637838,047	2	2,56672498	25,18%	826043150625,911	981690,8928	16,67%
Promedio Móvil Doble	710687,194	2	3,85646469	30,34%	996006596139,896	1058540,231	16,67%
Descomposición	456584,163	3	4,40550656	24,01%	305361870947,316	577167,2557	25,00%
Winters	881344,104	4	3,71432214	35,46%	999771622642,779	1060539,049	33,33%
Media	623691,639	1	5	35,21%	555218560992,639	778262,7934	8,33%

Datos Normalizados						
Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico
Promedio Móvil Simple	1,100	2,000	2,000	1,065	1,177	1,223
Suavización Exponencial	1,214	2,000	1,727	1,002	1,289	1,361
Suavización Exp. con Ajuste a la Tendencia	1,787	1,667	1,164	1,851	2,000	2,000
Regresión Lineal	1,000	1,000	1,937	1,000	1,000	1,000
Suavización Exponencial Doble	1,441	1,667	1,000	1,213	1,725	1,802
Promedio Móvil Doble	1,608	1,667	1,493	1,608	1,961	1,954
Descomposición	1,025	1,333	1,703	1,123	1,000	1,001
Winters	2,000	1,000	1,439	2,000	1,966	1,958
Media	1,409	2,000	1,931	1,980	1,348	1,399

7. SELECCIÓN MODELOS DE PRONOSTICO
PF 25 GRS

Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	Intersecciones con cero (%)
Promedio Móvil Simple	1298724,700	12	5,2046701	20,97%	2581001114131,350	1627015,867	29,27%
Suavización Exponencial	1145879,026	13	6,394	18,60%	2223819895501,800	1510742,027	31,71%
Suavización Exp. con Ajuste a la Tendencia	1777527,2	18	3,80070141	28,77%	4577437877860,590	2171669,431	43,90%
Regresión Lineal	883281,967	9	10,2570286	14,42%	1374427317611,920	1186923,755	21,95%
Suavización Exponencial Doble	1881480,03	22	3,34771792	30,02%	4997535750337,050	2269135,568	53,66%
Promedio Móvil Doble	1276943,85	9	5,93310652	20,42%	2768960429186,270	1690645,36	21,95%
Descomposición	859215,624	10	7,91883899	13,91%	1139272806690,380	1080626,96	24,39%
Winters	1853223,09	17	4,51191623	29,64%	5086032865147,280	2285496,273	41,46%
Media	942077,839	5	9,3994733	15,35%	1436426000691,330	1213398,801	12,20%

Datos Normalizados						
Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico
Promedio Móvil Simple	1,430	1,588	1,269	1,438	1,365	1,453
Suavización Exponencial	1,280	1,529	1,441	1,291	1,275	1,357
Suavización Exp. con Ajuste a la Tendencia	1,898	1,235	1,066	1,923	1,871	1,906
Regresión Lineal	1,024	1,765	2,000	1,031	1,060	1,088
Suavización Exponencial Doble	2,000	1,000	1,000	2,000	1,978	1,986
Promedio Móvil Doble	1,409	1,765	1,374	1,404	1,413	1,506
Descomposición	1,000	1,706	1,662	1,000	1,000	1,000
Winters	1,972	1,294	1,168	1,977	2,000	2,000
Media	1,081	2,000	1,876	1,089	1,075	1,110

8. SELECCIÓN MODELOS DE PRONOSTICO
PF 27 GRS

Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	Intersecciones con cero (%)
Promedio Móvil Simple	687559,867	5	4,8664525	34,83%	708382279610,933	871195,164	29,41%
Suavización Exponencial	797280,556	5	4,303	39,51%	930083801574,031	998257,662	29,41%
Suavización Exp. con Ajuste a la Tendencia	758233,111	7	2,00136663	40,21%	762778526056,504	916000,2067	41,18%
Regresión Lineal	510745,399	7	5,12994626	23,74%	382031753216,496	637109,6749	41,18%
Suavización Exponencial Doble	899027,777	4	1,70925037	46,31%	1096240776706,260	1093571,684	23,53%
Promedio Móvil Doble	642209,556	8	2,4530573	30,55%	706795903963,030	878094,5718	47,06%
Descomposición	519436,462	6	3,37554747	22,48%	361608482166,074	619845,9585	35,29%
Winters	1124312,87	5	2,6634563	59,53%	1979427908237,270	1460031,367	29,41%
Media	685990,727	0	6,9441367	32,65%	658341270897,163	836353,7531	0,00%

Datos Normalizados						
Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico
Promedio Móvil Simple	1,288	1,375	1,603	1,333	1,214	1,299
Suavización Exponencial	1,467	1,375	1,496	1,460	1,351	1,450
Suavización Exp. con Ajuste a la Tendencia	1,403	1,125	1,056	1,478	1,248	1,352
Regresión Lineal	1,000	1,125	1,653	1,034	1,013	1,021
Suavización Exponencial Doble	1,633	1,500	1,000	1,643	1,454	1,564
Promedio Móvil Doble	1,214	1,000	1,142	1,218	1,213	1,307
Descomposición	1,014	1,250	1,318	1,000	1,000	1,000
Winters	2,000	1,375	1,182	2,000	2,000	2,000
Media	1,286	2,000	2,000	1,275	1,183	1,258

9. SELECCIÓN MODELOS DE PRONOSTICO
PF 28 GRS

Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	Intersecciones con cero (%)
Promedio Móvil Simple	268539,571	2	3,6844894	20,71%	94142123604,143	318408,268	13,33%
Suavización Exponencial	221202,131	2	4,372	17,97%	62819708839,773	262871,984	13,33%
Suavización Exp. con Ajuste a la Tendencia	313322,028	8	2,34778651	24,22%	133671854450,383	381868,8796	53,33%
Regresión Lineal	138226,499	5	4,23252443	10,51%	32322250720,545	186094,0163	33,33%
Suavización Exponencial Doble	267939,846	6	2,27163866	21,10%	95846818230,977	328371,2389	40,00%
Promedio Móvil Doble	259047,836	5	1,55794796	21,03%	96582377367,345	332234,6458	33,33%
Descomposición	147264,9	6	3,50479432	11,00%	29911808620,044	179020,5753	40,00%
Winters	349609,742	4	2,12256262	26,54%	163730371663,989	422628,6205	26,67%
Media	241351,653	1	7,19213265	18,92%	87328987898,693	305886,8627	6,67%

Datos Normalizados							
Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	
Promedio Móvil Simple	1,616	1,857	1,377	1,636	1,480	1,572	
Suavización Exponencial	1,393	1,857	1,499	1,466	1,246	1,344	
Suavización Exp. con Ajuste a la Tendencia	1,828	1,000	1,140	1,856	1,775	1,833	
Regresión Lineal	1,000	1,429	1,475	1,000	1,018	1,029	
Suavización Exponencial Doble	1,614	1,286	1,127	1,661	1,493	1,613	
Promedio Móvil Doble	1,572	1,429	1,000	1,657	1,498	1,629	
Descomposición	1,043	1,286	1,346	1,031	1,000	1,000	
Winters	2,000	1,571	1,100	2,000	2,000	2,000	
Media	1,488	2,000	2,000	1,525	1,429	1,521	

10. SELECCIÓN MODELOS DE PRONOSTICO

PF 30 GRS

Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	Intersecciones con cero (%)
Promedio Móvil Simple	276721,111	3	4,7880044	11,74%	112266889069,769	355387,465	21,43%
Suavización Exponencial	283810,722	4	4,388	11,78%	139384680486,430	393537,631	28,57%
Suavización Exp. con Ajuste a la Tendencia	346146,391	6	3,26906303	14,25%	205189734880,649	477481,512	42,86%
Regresión Lineal	291297,203	6	3,65526109	14,38%	161207373405,780	416662,862	42,86%
Suavización Exponencial Doble	390421,82	3	2,99526679	16,08%	238891349370,261	522511,8994	21,43%
Promedio Móvil Doble	357710,667	2	3,37314583	15,03%	212032223239,553	488401,7313	14,29%
Descomposición	276213,94	6	3,94120787	13,33%	118137001342,413	356685,3838	42,86%
Winters	1324728,04	2	4,03387089	53,62%	3170027800161,280	1888460,027	14,29%
Media	303777,214	4	3,40642531	14,85%	162001078941,781	417687,3237	28,57%

Datos Normalizados						
Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico
Promedio Móvil Simple	1,000	1,750	2,000	1,000	1,000	1,000
Suavización Exponencial	1,007	1,500	1,777	1,001	1,009	1,025
Suavización Exp. con Ajuste a la Tendencia	1,067	1,000	1,153	1,060	1,030	1,080
Regresión Lineal	1,014	1,000	1,368	1,063	1,016	1,040
Suavización Exponencial Doble	1,109	1,750	1,000	1,104	1,041	1,109
Promedio Móvil Doble	1,078	2,000	1,211	1,078	1,033	1,087
Descomposición	1,000	1,000	1,528	1,038	1,002	1,001
Winters	2,000	2,000	1,579	2,000	2,000	2,000
Media	1,026	1,500	1,229	1,074	1,016	1,041

11. SELECCIÓN MODELOS DE PRONOSTICO
PF 30 GRS KERR

Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	Intersecciones con cero (%)
Promedio Móvil Simple	1179830,000	4	4,8389483	23,53%	2246108042940,250	1517794,636	9,76%
Suavización Exponencial	1155458,706	8	4,772	22,91%	2199199008137,050	1504005,740	19,51%
Suavización Exp. con Ajuste a la Tendencia	1705231,61	17	4,3318461	33,91%	4276554080452,580	2095016,701	41,46%
Regresión Lineal	949900,543	10	7,78003805	18,72%	1394748845637,200	1195666,16	24,39%
Suavización Exponencial Doble	1587330,75	13	4,55370213	31,67%	3783958517273,600	1972072,128	31,71%
Promedio Móvil Doble	1653764,04	6	4,38312339	31,03%	4106121801149,370	2055100,865	14,63%
Descomposición	885483,266	12	7,97900681	17,37%	1257441992216,330	1135287,647	29,27%
Winters	1653560,76	5	3,48562674	30,70%	4063157421126,330	2046040,91	12,20%
Media	1023633,64	0	11,4788877	20,53%	1670317440154,640	1308462,982	0,00%

Datos Normalizados							
Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	
Promedio Móvil Simple	1,359	1,765	1,169	1,373	1,327	1,399	
Suavización Exponencial	1,329	1,529	1,161	1,335	1,312	1,384	
Suavización Exp. con Ajuste a la Tendencia	2,000	1,000	1,106	2,000	2,000	2,000	
Regresión Lineal	1,079	1,412	1,537	1,082	1,045	1,063	
Suavización Exponencial Doble	1,856	1,235	1,134	1,865	1,837	1,872	
Promedio Móvil Doble	1,937	1,647	1,112	1,826	1,944	1,958	
Descomposición	1,000	1,294	1,562	1,000	1,000	1,000	
Winters	1,937	1,706	1,000	1,806	1,929	1,949	
Media	1,169	2,000	2,000	1,191	1,137	1,180	

12. SELECCIÓN MODELOS DE PRONOSTICO
PF 30.5 GRS

Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	Intersecciones con cero (%)
Promedio Móvil Simple	459757,167	2	4,6333854	12,34%	489451247427,917	747912,331	14,29%
Suavización Exponencial	693204,791	3	3,258	16,06%	1001861461776,570	1055073,174	21,43%
Suavización Exp. con Ajuste a la Tendencia	946328,83	4	2,73940962	21,93%	1587005532571,810	1336181,584	28,57%
Regresión Lineal	748364,451	3	3,67076511	19,82%	891672137995,427	979929,7436	21,43%
Suavización Exponencial Doble	1100181,65	7	2,56022498	25,29%	2128175124734,540	1547319,3	50,00%
Promedio Móvil Doble	831231,851	0	2,51781175	20,49%	854250472377,610	998311,3498	0,00%
Descomposición	751209,759	3	3,70038991	19,99%	889094902777,697	978512,554	21,43%
Winters	2115847,78	8	1,65330058	48,84%	6758571901983,420	2726614,951	57,14%
Media	758013,265	4	3,32221761	20,36%	910204778719,265	990060,8723	28,57%

Datos Normalizados							
Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	
Promedio Móvil Simple	1,000	1,750	2,000	1,000	1,000	1,000	
Suavización Exponencial	1,141	1,625	1,538	1,102	1,082	1,155	
Suavización Exp. con Ajuste a la Tendencia	1,294	1,500	1,364	1,263	1,175	1,297	
Regresión Lineal	1,174	1,625	1,677	1,205	1,064	1,117	
Suavización Exponencial Doble	1,387	1,125	1,304	1,355	1,261	1,404	
Promedio Móvil Doble	1,224	2,000	1,290	1,223	1,058	1,127	
Descomposición	1,176	1,625	1,687	1,209	1,064	1,117	
Winters	2,000	1,000	1,000	2,000	2,000	2,000	
Media	1,180	1,500	1,560	1,220	1,067	1,122	

13. SELECCIÓN MODELOS DE PRONOSTICO

PF 44 GRS

Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	Intersecciones con cero (%)
Promedio Móvil Simple	683499,050	3	2,8128534	18,70%	858889473769,775	976893,872	25,00%
Suavización Exponencial	490903,786	3	2,383	11,32%	346232565639,518	629042,416	25,00%
Suavización Exp. con Ajuste a la Tendencia	1014707,676	4	1,150	27,22%	2138998639950,680	1551249,003	33,33%
Regresión Lineal	490434,644	5	2,82270515	13,19%	418457818047,185	675647,4213	41,67%
Suavización Exponencial Doble	661990,574	2	2,453962	15,93%	728638422295,941	921996,8326	16,67%
Promedio Móvil Doble	670087,698	3	3,19853847	15,65%	583717486288,242	825229,5038	25,00%
Descomposición	357557,227	5	3,58388207	9,20%	230666517284,016	501633,5322	41,67%
Winters	1204657,26	2	1,68366681	31,99%	2538918789899,030	1690054,33	16,67%
Media	503793,528	3	2,99089313	13,45%	424707552474,472	680674,1731	25,00%

Datos Normalizados						
Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico
Promedio Móvil Simple	1,385	1,667	1,683	1,417	1,272	1,400
Suavización Exponencial	1,157	1,667	1,506	1,093	1,050	1,107
Suavización Exp. con Ajuste a la Tendencia	1,776	1,333	1,000	1,791	1,827	1,883
Regresión Lineal	1,157	1,000	1,687	1,175	1,081	1,146
Suavización Exponencial Doble	1,359	2,000	1,536	1,295	1,216	1,354
Promedio Móvil Doble	1,369	1,667	1,842	1,283	1,153	1,272
Descomposición	1,000	1,000	2,000	1,000	1,000	1,000
Winters	2,000	2,000	1,219	2,000	2,000	2,000
Media	1,173	1,667	1,756	1,187	1,084	1,151

14. SELECCIÓN MODELOS DE PRONOSTICO
PF 47.5 GRS

Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	Intersecciones con cero (%)
Promedio Móvil Simple	200878,848	5	4,3375948	24,89%	66456994061,878	263108,410	16,67%
Suavización Exponencial	198328,689	6	4,396	23,63%	74267336061,587	277917,307	20,00%
Suavización Exp. con Ajuste a la Tendencia	252678,68	9	4,50482683	31,49%	137127232103,140	377942,9412	30,00%
Regresión Lineal	160569,331	12	5,35786905	19,61%	45523432975,626	217009,6922	40,00%
Suavización Exponencial Doble	270664,157	13	3,82668402	33,29%	132076087564,300	370916,7803	43,33%
Promedio Móvil Doble	246041,074	8	3,93960538	29,85%	111460373479,567	341360,1531	26,67%
Descomposición	160506,695	12	5,32800387	19,58%	45111496401,196	216025,6125	40,00%
Winters	418187,229	5	3,4138798	52,21%	259476665352,317	519892,4822	16,67%
Media	162735,24	4	7,05319157	19,71%	47395039871,360	221425,7248	13,33%

Datos Normalizados						
Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico
Promedio Móvil Simple	1,157	1,889	1,254	1,163	1,100	1,155
Suavización Exponencial	1,147	1,778	1,270	1,124	1,136	1,204
Suavización Exp. con Ajuste a la Tendencia	1,358	1,444	1,300	1,365	1,429	1,533
Regresión Lineal	1,000	1,111	1,534	1,001	1,002	1,003
Suavización Exponencial Doble	1,427	1,000	1,113	1,420	1,406	1,510
Promedio Móvil Doble	1,332	1,556	1,144	1,315	1,310	1,412
Descomposición	1,000	1,111	1,526	1,000	1,000	1,000
Winters	2,000	1,889	1,000	2,000	2,000	2,000
Media	1,009	2,000	2,000	1,004	1,011	1,018

15. SELECCIÓN MODELOS DE PRONOSTICO
PF 52 GRS

Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	Intersecciones con cero (%)
Promedio Móvil Simple	487485,679	1	5,9587852	22,83%	410768158747,518	665105,788	6,25%
Suavización Exponencial	577126,481	2	3,946	27,96%	465918732509,359	710454,287	12,50%
Suavización Exp. con Ajuste a la Tendencia	720648,607	4	3,16077047	34,75%	654582905433,796	848552,412	25,00%
Regresión Lineal	344569	3	7,76226525	18,27%	230356670411,031	495695,2509	18,75%
Suavización Exponencial Doble	731919,977	8	3,10901049	35,62%	658339628764,027	850983,8962	50,00%
Promedio Móvil Doble	700142,323	6	3,25378665	33,45%	653721620766,606	847993,9757	37,50%
Descomposición	312992,418	2	7,87991699	16,70%	173485171092,740	430175,3702	12,50%
Winters	755692,484	6	3,75038107	38,50%	821140946097,142	946461,8973	37,50%
Media	550478,578	1	7,51929671	31,46%	413959085939,984	664497,0717	6,25%

Datos Normalizados						
Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico
Promedio Móvil Simple	1,394	2,000	1,597	1,281	1,366	1,455
Suavización Exponencial	1,597	1,857	1,175	1,517	1,452	1,543
Suavización Exp. con Ajuste a la Tendencia	1,921	1,571	1,011	1,828	1,743	1,810
Regresión Lineal	1,071	1,714	1,975	1,072	1,088	1,127
Suavización Exponencial Doble	1,946	1,000	1,000	1,868	1,749	1,815
Promedio Móvil Doble	1,875	1,286	1,030	1,768	1,741	1,809
Descomposición	1,000	1,857	2,000	1,000	1,000	1,000
Winters	2,000	1,286	1,134	2,000	2,000	2,000
Media	1,536	2,000	1,924	1,677	1,371	1,454

16. SELECCIÓN MODELOS DE PRONOSTICO
PF 54 GRS

Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	Intersecciones con cero (%)
Promedio Móvil Simple	345002,375	12	5,3264737	19,01%	213302510212,625	467730,484	29,27%
Suavización Exponencial	321783,299	12	5,79546857	17,80%	189294032208,728	440621,9756	29,27%
Suavización Exp. con Ajuste a la Tendencia	459020,266	10	4,77076581	25,28%	383372425585,857	627711,4462	24,39%
Regresión Lineal	246462,949	5	11,277759	13,95%	116125736255,920	345005,6227	12,20%
Suavización Exponencial Doble	470854,162	12	4,42711472	25,78%	391203879836,341	634090,4149	29,27%
Promedio Móvil Doble	281229,874	0	3,13944972	13,10%	173329145753,211	427143,6905	0,00%
Descomposición	257182,593	5	10,7339176	14,62%	110695553825,331	336842,6082	12,20%
Winters	507360,967	17	4,08354064	28,04%	415515277170,828	653748,5313	41,46%
Media	338410,405	0	17,6793643	19,50%	172294713289,875	420240,5039	0,00%

Datos Normalizados						
Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico
Promedio Móvil Simple	1,378	1,294	1,150	1,396	1,337	1,413
Suavización Exponencial	1,289	1,294	1,183	1,315	1,258	1,327
Suavización Exp. con Ajuste a la Tendencia	1,815	1,412	1,112	1,815	1,895	1,918
Regresión Lineal	1,000	1,706	1,560	1,057	1,018	1,026
Suavización Exponencial Doble	1,860	1,294	1,089	1,849	1,920	1,938
Promedio Móvil Doble	1,133	2,000	1,000	1,000	1,205	1,285
Descomposición	1,041	1,706	1,522	1,101	1,000	1,000
Winters	2,000	1,000	1,065	2,000	2,000	2,000
Media	1,352	2,000	2,000	1,428	1,202	1,263

17. SELECCIÓN MODELOS DE PRONOSTICO

PF 60 GRS

Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	Intersecciones con cero (%)
Promedio Móvil Simple	670961,864	10	3,8724062	78,39%	722285587519,716	866063,394	33,33%
Suavización Exponencial	793794,545	2	3,683	75,46%	921706403397,104	977048,867	6,67%
Suavización Exp. con Ajuste a la Tendencia	1061632,14	11	3,30722874	100,70%	1740253952502,940	1347559,708	36,67%
Regresión Lineal	526674,992	4	6,11246655	59,96%	451543858109,185	683457,6329	13,33%
Suavización Exponencial Doble	1033363,2	12	2,9694095	93,28%	1639369099696,770	1307916,671	40,00%
Promedio Móvil Doble	761698,491	8	3,15650713	81,94%	904124466751,943	972224,7854	26,67%
Descomposición	509454,957	4	5,69512006	54,74%	423402306459,979	661817,4869	13,33%
Winters	1326083,2	5	4,90481629	111,40%	2901690674357,590	1735884,259	16,67%
Media	570840,333	2	7,14940796	62,93%	474142040840,739	700351,1736	6,67%

Datos Normalizados						
Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico
Promedio Móvil Simple	1,198	1,200	1,216	1,417	1,121	1,190
Suavización Exponencial	1,348	2,000	1,171	1,366	1,201	1,293
Suavización Exp. con Ajuste a la Tendencia	1,676	1,100	1,081	1,811	1,531	1,638
Regresión Lineal	1,021	1,800	1,752	1,092	1,011	1,020
Suavización Exponencial Doble	1,642	1,000	1,000	1,680	1,491	1,602
Promedio Móvil Doble	1,309	1,400	1,045	1,480	1,194	1,289
Descomposición	1,000	1,800	1,652	1,000	1,000	1,000
Winters	2,000	1,700	1,463	2,000	2,000	2,000
Media	1,075	2,000	2,000	1,145	1,020	1,036

18. SELECCIÓN MODELOS DE PRONOSTICO

RESINA

Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	Intersecciones con cero (%)
Promedio Móvil Simple	118968,005	0	4,4702692	7,71%	23505360784,623	161607,758	0,00%
Suavización Exponencial	127127,891	0	4,134	8,22%	28293470120,357	177305,355	0,00%
Suavización Exp. con Ajuste a la Tendencia	197573,752	2	3,74643081	12,82%	68808020725,573	276502,0006	16,67%
Regresión Lineal	100821,709	4	5,39880014	6,90%	14815657932,261	127131,9626	33,33%
Suavización Exponencial Doble	198427,069	2	4,55980623	12,84%	72551748876,103	285693,3977	16,67%
Promedio Móvil Doble	159211,735	2	4,06463823	10,17%	42577692013,688	218860,4659	16,67%
Descomposición	75676,9857	2	3,6666995	5,22%	8802347568,306	97992,6578	16,67%
Winters	231158,16	2	3,86008423	14,97%	90961146094,386	322421,4564	16,67%
Media	108685,537	0	4	7,50%	19324362180,698	145193,3965	0,00%

Datos Normalizados						
Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico
Promedio Móvil Simple	1,278	2,000	1,464	1,255	1,179	1,283
Suavización Exponencial	1,331	2,000	1,270	1,308	1,237	1,353
Suavización Exp. con Ajuste a la Tendencia	1,784	1,500	1,046	1,780	1,730	1,795
Regresión Lineal	1,162	1,000	2,000	1,173	1,073	1,130
Suavización Exponencial Doble	1,789	1,500	1,516	1,782	1,776	1,836
Promedio Móvil Doble	1,537	1,500	1,230	1,508	1,411	1,539
Descomposición	1,000	1,500	1,000	1,000	1,000	1,000
Winters	2,000	1,500	1,112	2,000	2,000	2,000
Media	1,212	2,000	1,192	1,234	1,128	1,210

**ANEXO D
MODELOS DE PRONOSTICO FOR TSM**

1. PF 18 GR

Periodo	Demanda
1	1.126.000
2	1.184.000
3	1.168.000
4	1.182.000
5	1.156.000
6	1.170.000
7	1.320.000
8	1.224.000
9	1.114.000
10	1.196.000
11	1.670.000
12	1.576.000
13	1.362.000
14	1.098.000
15	1.262.500
16	1.289.500
17	1.027.892
18	1.677.984
19	944.781
20	1.082.124
21	1.072.800
22	1.201.452
23	1.304.564
24	5.535.904
25	4.293.717

FOR TSM

NÚMERO DE PERIODOS DE DEMANDA

25

Elegir Modelos



Datos	25,000
Desviación Estándar	1.050.062,325
Promedio	1.529.568,720
Coefficiente Correlación	0,457
Coefficiente de Variación	0,687

Creado por:
Rosana Builes Palacio
María Cristina Bravo Gómez

[Comparaciones](#)

Modelos Pronosticados

[PM Simple](#)

[SE](#)

[SET](#)

[Reg Lineal](#)

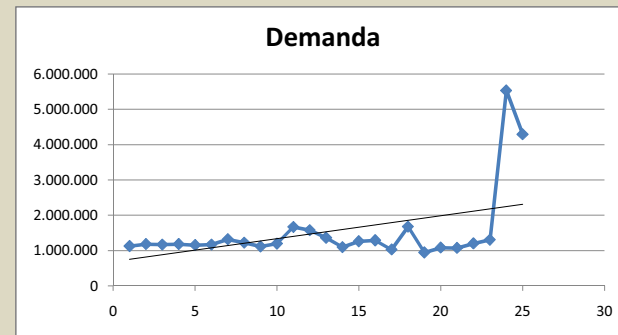
[SE Doble](#)

[PM Doble](#)

[Descomposicion](#)

[Winters](#)

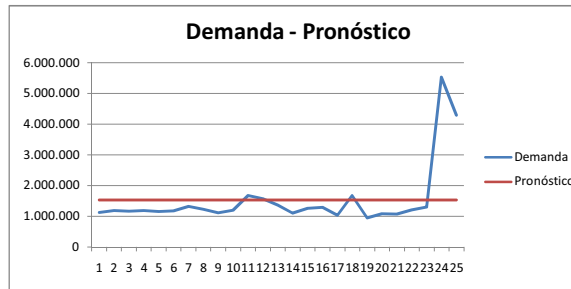
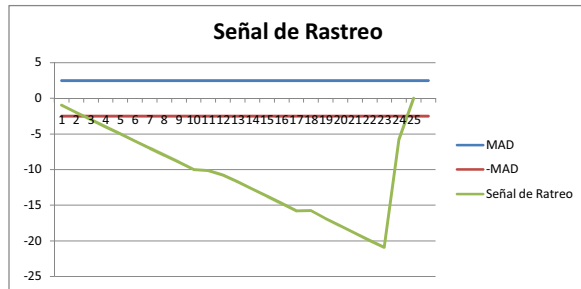
[Media](#)



MODELO MEDIA

Datos Iniciales <i>Media</i>		Análisis del Error								
Periodo	Demanda	Pronóstico	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et ² (Error Cuadrático)	Fracción Abs. del Error
1	1.126.000	1529568,720	-403568,720	-403568,720	403568,720	403568,720	403568,720	-1,000	162867711762,438	0,358
2	1.184.000	1529568,720	-345568,720	-749137,440	345568,720	749137,440	374568,720	-2,000	119417740242,438	0,292
3	1.168.000	1529568,720	-361568,720	-1110706,160	361568,720	1110706,160	370235,387	-3,000	130731939282,438	0,310
4	1.182.000	1529568,720	-347568,720	-1458274,880	347568,720	1458274,880	364568,720	-4,000	120804015122,438	0,294
5	1.156.000	1529568,720	-373568,720	-1831843,600	373568,720	1831843,600	366368,720	-5,000	139553588562,438	0,323
6	1.170.000	1529568,720	-359568,720	-2191412,320	359568,720	2191412,320	365235,387	-6,000	129289664402,438	0,307
7	1.320.000	1529568,720	-209568,720	-2400981,040	209568,720	2400981,040	342997,291	-7,000	43919048402,438	0,159
8	1.224.000	1529568,720	-305568,720	-2706549,760	305568,720	2706549,760	338318,720	-8,000	93372242642,438	0,250
9	1.114.000	1529568,720	-415568,720	-3122118,480	415568,720	3122118,480	346902,053	-9,000	172697361042,438	0,373
10	1.196.000	1529568,720	-333568,720	-3455687,200	333568,720	3455687,200	345568,720	-10,000	111268090962,438	0,279
11	1.670.000	1529568,720	140431,280	-3315255,920	140431,280	3596118,480	326919,862	-10,141	19720944402,438	0,084
12	1.576.000	1529568,720	46431,280	-3268824,640	46431,280	3642549,760	303545,813	-10,769	2155863762,438	0,029
13	1.362.000	1529568,720	-167568,720	-3436393,360	167568,720	3810118,480	293086,037	-11,725	28079275922,438	0,123
14	1.098.000	1529568,720	-431568,720	-3867962,080	431568,720	4241687,200	302977,657	-12,766	186251560082,438	0,393
15	1.262.500	1529568,720	-267068,720	-4135030,800	267068,720	4508755,920	300583,728	-13,757	71325701202,438	0,212
16	1.289.500	1529568,720	-240068,720	-4375099,520	240068,720	4748824,640	296801,540	-14,741	57632990322,438	0,186
17	1.027.892	1529568,720	-501676,720	-4876776,240	501676,720	5250501,360	308853,021	-15,790	251679531389,958	0,488
18	1.677.984	1529568,720	148415,280	-4728360,960	148415,280	5398916,640	299939,813	-15,764	22027095337,478	0,088
19	944.781	1529568,720	-584787,720	-5313148,680	584787,720	5983704,360	314931,808	-16,871	341976677462,798	0,619
20	1.082.124	1529568,720	-447444,720	-5760593,400	447444,720	6431149,080	321557,454	-17,915	200206777455,878	0,413
21	1.072.800	1529568,720	-456768,720	-6217362,120	456768,720	6887917,800	327996,086	-18,956	208637663570,438	0,426
22	1.201.452	1529568,720	-328116,720	-6545478,840	328116,720	7216034,520	328001,569	-19,956	107660581943,558	0,273
23	1.304.564	1529568,720	-225004,720	-6770483,560	225004,720	7441039,240	323523,445	-20,927	50627124022,278	0,172
24	5.535.904	1529568,720	4006335,280	-2764148,280	4006335,280	11447374,520	476973,938	-5,795	16050722375772,700	0,724
25	4.293.717	1529568,720	2764148,280	0,000	2764148,280	14211522,800	568460,912	0,000	7640515713826,960	0,644

Medidas de Desempeño Finales				
MAD	MAPE	Rango Señal de Rastreo	ME	MSE
568460,912	0,313	20,927	0,000	1058525651156,040
			Desviación Pronóstico	1050062,325
			Intersecciones con cero	1



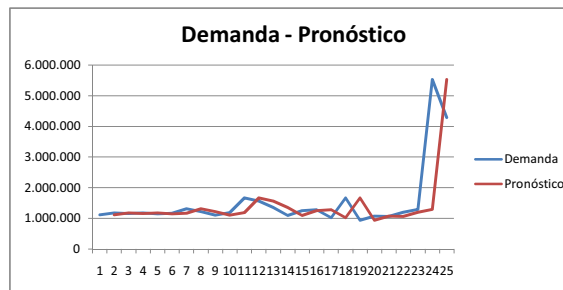
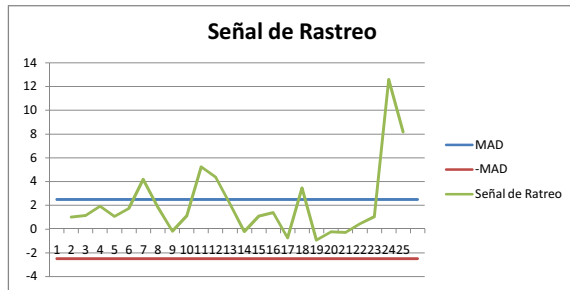
MODELO PMS

Datos Iniciales PMS		Análisis del Error								
Periodo	Demanda	Pronóstico	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	1.126.000									
2	1.184.000									
3	1.168.000									
4	1.182.000									
5	1.156.000									
6	1.170.000									
7	1.320.000									
8	1.224.000									
9	1.114.000									
10	1.196.000									
11	1.670.000									
12	1.576.000									
13	1.362.000									
14	1.098.000									
15	1.262.500									
16	1.289.500									
17	1.027.892									
18	1.677.984									
19	944.781									
20	1.082.124									
21	1.072.800									
22	1.201.452									
23	1.304.564									
24	5.535.904									
25	4.293.717									
		1126000,000	58000,000	58000,000	58000,000	58000,000	58000,000	1,000	3364000000,000	0,049
		1184000,000	-16000,000	42000,000	16000,000	74000,000	37000,000	1,135	256000000,000	0,014
		1168000,000	14000,000	56000,000	14000,000	88000,000	29333,333	1,909	196000000,000	0,012
		1182000,000	-26000,000	30000,000	26000,000	114000,000	28500,000	1,053	676000000,000	0,022
		1156000,000	14000,000	44000,000	14000,000	128000,000	25600,000	1,719	196000000,000	0,012
		1170000,000	150000,000	194000,000	150000,000	278000,000	46333,333	4,187	2250000000,000	0,114
		1320000,000	-96000,000	98000,000	96000,000	374000,000	53428,571	1,834	921600000,000	0,078
		1224000,000	-110000,000	-12000,000	110000,000	484000,000	60500,000	-0,198	1210000000,000	0,099
		1114000,000	82000,000	70000,000	82000,000	566000,000	62888,889	1,113	672400000,000	0,069
		1196000,000	474000,000	544000,000	474000,000	1040000,000	104000,000	5,231	22467600000,000	0,284
		1670000,000	-94000,000	450000,000	94000,000	1134000,000	103090,909	4,365	883600000,000	0,060
		1576000,000	-214000,000	236000,000	214000,000	1348000,000	112333,333	2,101	4579600000,000	0,157
		1362000,000	-264000,000	-28000,000	264000,000	1612000,000	124000,000	-0,226	6969600000,000	0,240
		1098000,000	164500,000	136500,000	164500,000	1776500,000	126892,857	1,076	27060250000,000	0,130
		1262500,000	27000,000	163500,000	27000,000	1803500,000	120233,333	1,360	729000000,000	0,021
		1289500,000	-261608,000	-98108,000	261608,000	2065108,000	129069,250	-0,760	68438745664,000	0,255
		1027892,000	650092,000	551984,000	650092,000	2715200,000	159717,647	3,456	422619608464,000	0,387
		944781,000	-733203,000	-181219,000	733203,000	3448403,000	191577,944	-0,946	537586639209,000	0,776
		1082124,000	137343,000	-43876,000	137343,000	3585746,000	188723,474	-0,232	18863099649,000	0,127
		1082124,000	-9324,000	-53200,000	9324,000	3595070,000	179753,500	-0,296	86936976,000	0,009
		1072800,000	128652,000	75452,000	128652,000	3723722,000	177320,095	0,426	16551337104,000	0,107
		1201452,000	103112,000	178564,000	103112,000	3826834,000	173947,000	1,027	10632084544,000	0,079
		1304564,000	4231340,000	4409904,000	4231340,000	8058174,000	350355,391	12,587	17904238195600,000	0,764
		5535904,000	-1242187,000	3167717,000	1242187,000	9300361,000	387515,042	8,174	1543028542969,000	0,289
		4293717,000								
		4293717,000								
		4293717,000								
		4293717,000								
		4293717,000								
		4293717,000								



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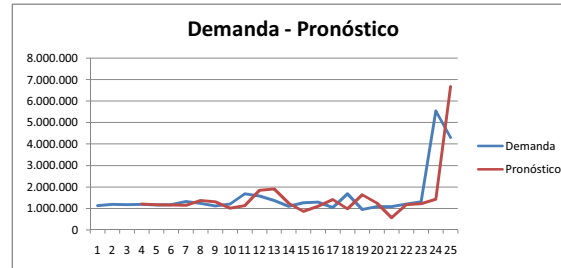
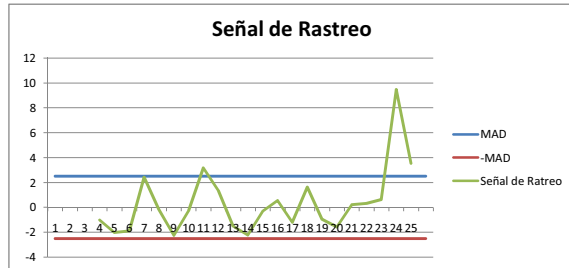
Valores Iniciales	Medidas de Desempeño Finales						
N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
1	387515,042	0,173	13,533	131988,208	873086101674,125	954487,489	8



MODELO PMD

Datos Iniciales PMD		Pronóstico					Análisis del Error							
Periodo	Demanda	St'	St''	a	b	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	1.126.000													
2	1.184.000													
3	1.168.000													
4	1.182.000													
5	1.156.000													
6	1.170.000													
7	1.320.000													
8	1.224.000													
9	1.114.000													
10	1.196.000													
11	1.670.000													
12	1.576.000													
13	1.362.000													
14	1.098.000													
15	1.262.500													
16	1.289.500													
17	1.027.892													
18	1.677.984													
19	944.781													
20	1.082.124													
21	1.072.800													
22	1.201.452													
23	1.304.564													
24	5.535.904													
25	4.293.717													
26														
27														
28														
29														
30														
31														

Valores Iniciales	Medidas de Desempeño Finales						
N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	539358,477	0,256	11,714	86537,182	1133723853852,770	1089821,409	9



MODELO SE

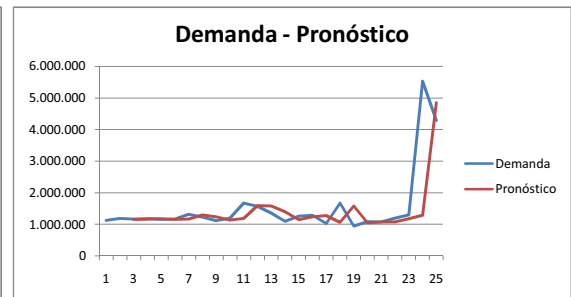
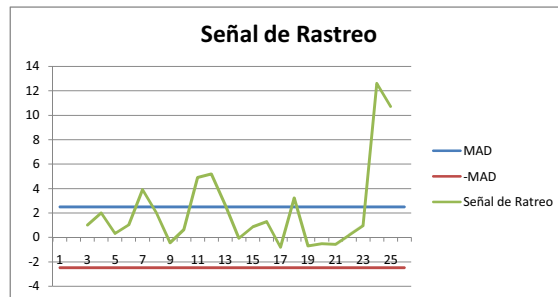
Datos Iniciales SE	
Periodo	Demanda
1	1.126.000
2	1.184.000
3	1.168.000
4	1.182.000
5	1.156.000
6	1.170.000
7	1.320.000
8	1.224.000
9	1.114.000
10	1.196.000
11	1.670.000
12	1.576.000
13	1.362.000
14	1.098.000
15	1.262.500
16	1.289.500
17	1.027.892
18	1.677.984
19	944.781
20	1.082.124
21	1.072.800
22	1.201.452
23	1.304.564
24	5.535.904
25	4.293.717



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Periodo	Demanda	Análisis del Error								
		Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	1.126.000									
2	1.184.000									
3	1.168.000									
4	1.182.000									
5	1.156.000									
6	1.170.000									
7	1.320.000									
8	1.224.000									
9	1.114.000									
10	1.196.000									
11	1.670.000									
12	1.576.000									
13	1.362.000									
14	1.098.000									
15	1.262.500									
16	1.289.500									
17	1.027.892									
18	1.677.984									
19	944.781									
20	1.082.124									
21	1.072.800									
22	1.201.452									
23	1.304.564									
24	5.535.904									
25	4.293.717									

Valores Iniciales		Medidas de Desempeño Finales						
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,840	2,000	358778,500	0,159	13,415	167113,785	856314856301,026	946170,312	8



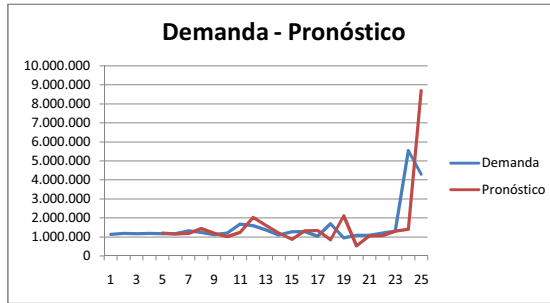
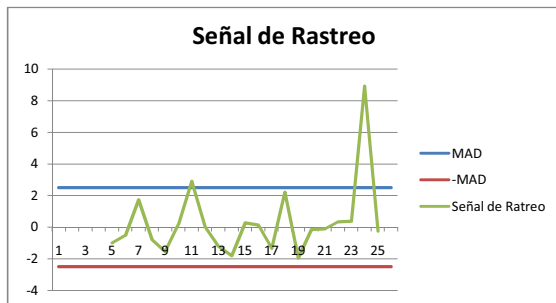
MODELO SED

Datos Iniciales SED		Pronóstico				Análisis del Error									
Periodo	Demanda	St*	St**	a	b	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error	
1	1.126.000														
2	1.184.000														
3	1.168.000														
4	1.182.000														
5	1.156.000	1155000,000	1155000,000												
6	1.170.000	1178490,000	1175436,300	1181543,700		20436,300									
7	1.320.000	1158923,700	1161070,338	1156777,062		-14365,962	1201980,000	-45980,000	-45980,000	45980,000	45980,000	-1,000	2114160400,000	0,040	
8	1.224.000	1168560,081	1167586,414	1169533,748		6516,076	1142411,100	27588,900	-18391,100	27588,900	73568,900	36784,450	-0,500	761147403,210	0,024
9	1.114.000	1300312,811	1283058,379	1317567,242		115471,965	1176049,824	143950,176	125559,076	143950,176	217519,076	72506,359	1,732	20721653170,431	0,109
10	1.196.000	1233920,665	1240308,568	1227532,763		-42749,811	1433039,207	-209039,207	-83480,131	209039,207	426558,283	106639,571	-0,783	43697389916,861	0,171
11	1.670.000	1129589,686	1143983,141	1115196,232		-96325,427	1184782,952	-70782,952	-154263,082	70782,952	497341,234	99468,247	-1,551	5010226251,846	0,064
12	1.576.000	1187366,659	1181726,802	1193006,517		37743,661	1018870,805	177129,195	22866,113	177129,195	674470,430	112411,738	0,203	31374751774,310	0,148
13	1.362.000	1607257,666	1551938,653	1662576,678		370211,852	1230750,177	439249,823	462115,935	439249,823	1113720,252	159102,893	2,905	192940406674,036	0,263
14	1.098.000	1580063,497	1576407,267	1583719,726		24468,614	2032788,530	-456788,530	5327,406	456788,530	1570508,782	196313,598	0,027	208655760697,514	0,290
15	1.262.500	1390348,255	1414535,926	1366160,583		-161871,341	1608188,340	-246188,340	-240860,934	246188,340	1816697,121	201855,236	-1,193	60608698592,681	0,181
16	1.289.500	1136005,273	1172214,258	1099796,288		-242321,668	1204289,242	-106289,242	-347150,176	106289,242	1922986,363	192298,636	-1,805	11297403000,450	0,097
17	1.027.892	1246055,686	1236456,300	1255655,071		64242,042	857474,620	405025,380	57875,204	405025,380	2328011,743	211637,431	0,273	164045558425,590	0,321
18	1.677.984	1283852,239	1277690,767	1290013,711		41234,467	1319897,113	-30397,113	27478,091	30397,113	2358408,856	196534,071	0,140	923984479,545	0,024
19	944.781	1061166,831	1089314,943	1033018,719		-188375,824	1331248,178	-303356,178	-275878,087	303356,178	2661765,035	204751,157	-1,347	92024970915,864	0,295
20	1.082.124	1597797,768	1531695,001	1663900,535		442380,058	844642,895	833341,105	557463,018	833341,105	3495106,140	249650,439	2,233	694457397033,627	0,497
21	1.072.800	1029673,180	1094936,017	964410,343		-436758,984	2106280,593	-1161499,593	-604036,576	1161499,593	4656605,733	310440,382	-1,946	1349081305295,270	1,229
22	1.201.452	1075305,393	1077857,374	1072753,412		-17078,642	527651,359	554472,641	-49563,935	554472,641	5211078,374	325692,398	-0,152	307439909687,820	0,512
23	1.304.564	1073125,701	1073740,819	1072510,584		-4116,556	1055674,770	17125,230	-32438,705	17125,230	5228203,604	307541,388	-0,105	293273495,829	0,016
24	5.535.904	1184769,581	1170335,842	1199203,320		96595,023	1068394,028	133057,972	100619,267	133057,972	5361261,576	297847,865	0,338	17704423943,352	0,111
25	4.293.717	1288990,726	1273565,591	1304415,860		103229,749	1295798,344	8765,656	109384,924	8765,656	5370027,232	282633,012	0,387	76836731,531	0,007
26		4983805,274	4501474,115	5466136,433		3227908,525	1407645,609	4128258,391	4237643,315	4128258,391	9498285,623	474914,281	8,923	17042517342254,800	0,746
27		4383428,476	4398774,409	4368082,542		-102699,707	8694044,958	-4400327,958	-162684,643	4400327,958	13898613,581	661838,742	-0,246	19362886137531,400	1,025
28						4265382,836									
29						4162683,129									
30						4059983,423									
31						3957283,716									
						3854584,009									
						3751884,303									



PM Simple
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Valores Iniciales		Medidas de Desempeño Finales						Desviación Intersección	
Alpha	Promedio	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Pronóstico	s con cero	
0,870	2,000	661838,742	0,294	10,869	-7746,888	1886125368460,760	1407278,095	10,000	



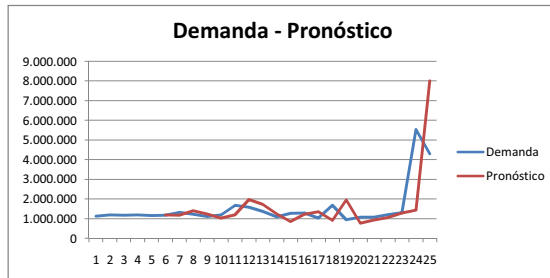
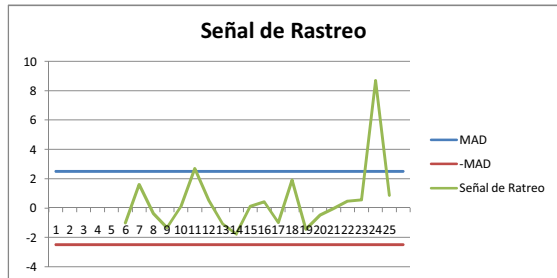
MODELO SET

Datos Iniciales SET		Pronóstico			Análisis del Error							
Período	Demanda	St	Tt	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	1.126.000											
2	1.184.000											
3	1.168.000											
4	1.182.000											
5	1.156.000											
6	1.170.000	1180600,000	5800,000	1186400,000	-16400,000	-16400,000	16400,000	16400,000	16400,000	-1,000	268960000,000	0,014
7	1.320.000	1172624,000	-6185,120	1166438,880	153561,120	137161,120	153561,120	169961,120	84980,560	1,614	23581017575,654	0,116
8	1.224.000	1295430,221	106037,346	1401467,567	-177467,567	-40306,447	177467,567	347428,687	115809,562	-0,348	31494737441,960	0,145
9	1.114.000	1252394,811	-23655,952	1228738,859	-114738,859	-155045,306	114738,859	462167,546	115541,887	-1,342	13165005783,770	0,103
10	1.196.000	1132358,217	-107507,110	1024851,108	171148,892	16103,586	171148,892	633316,439	126663,288	0,127	29291943386,432	0,143
11	1.670.000	1168616,177	17568,501	1186184,678	483815,322	499918,908	483815,322	1117131,761	186188,627	2,685	234077265891,327	0,290
12	1.576.000	1592589,548	371140,738	1963730,287	-387730,287	112188,622	387730,287	1504862,047	214980,292	0,522	150334775107,960	0,246
13	1.362.000	1638036,846	87787,445	1725824,291	-363824,291	-251635,669	363824,291	1868686,338	233585,792	-1,077	132368114373,789	0,267
14	1.098.000	1420211,886	-178095,347	1242116,540	-144116,540	-395752,209	144116,540	2012802,878	223644,764	-1,770	20769576998,976	0,131
15	1.262.500	1121058,646	-283415,714	837642,932	424857,068	29104,859	424857,068	2437659,945	243765,995	0,119	180503527947,691	0,337
16	1.289.500	1194522,869	27069,831	1221592,700	67907,300	97012,159	67907,300	2505567,245	227778,840	0,426	4611401364,263	0,053
17	1.027.892	1278634,832	76696,486	1355331,318	-327439,318	-230427,159	327439,318	2833006,563	236083,880	-0,976	107216506814,254	0,319
18	1.677.984	1080282,291	-162596,168	917686,123	760297,877	529870,718	760297,877	3593304,440	276408,034	1,917	578052861545,934	0,453
19	944.781	1556336,340	393029,521	1949365,860	-1004584,860	-474714,142	1004584,860	4597889,300	328420,664	-1,445	1009190741772,330	1,063
20	1.082.124	1105514,578	-341121,095	764393,482	317730,518	-156983,625	317730,518	4915619,818	327707,988	-0,479	100952681823,329	0,294
21	1.072.800	1031287,117	-108923,633	922363,484	150436,516	-6547,109	150436,516	5066056,334	316628,521	-0,021	22631145293,915	0,140
22	1.201.452	1048730,157	1015,373	1049745,530	151706,470	145159,361	151706,470	5217762,803	306927,224	0,473	23014852971,390	0,126
23	1.304.564	1177178,965	111882,461	1289061,426	15502,574	160661,935	15502,574	523265,378	290736,965	0,553	240329809,771	0,012
24	5.535.904	1302083,588	123211,742	1425295,330	4110608,670	4271270,605	4110608,670	9343874,047	491782,845	8,685	16897103635606,000	0,743
25	4.293.717	4878206,613	3127244,558	8005451,171	-3711734,171	559536,434	3711734,171	13055608,218	652780,411	0,857	13776970554995,100	0,864
		4887594,467	414709,226	5302303,693								
				5302303,693								
				5302303,693								
				5302303,693								
				5302303,693								
				5302303,693								



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- [SE](#)
- [Reg Lineal](#)
- [SE Doble](#)
- [PM Doble](#)
- [Descomposicion](#)
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Valores Iniciales			Medidas de Desempeño Finales								
Alpha	Beta	N (Períodos de Promedio)	MAD	MAPE	Pendiente	Intercepto	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,84	0,87	5	652780,411	0,293	5800,000	1145800,000	10,455	27976,822	1666791981825,200	1324582,151	9



MODELO REGRESION

Datos Iniciales Reg. Lineal	
Periodo	Demanda
1	1.126.000
2	1.184.000
3	1.168.000
4	1.182.000
5	1.156.000
6	1.170.000
7	1.320.000
8	1.224.000
9	1.114.000
10	1.196.000
11	1.670.000
12	1.576.000
13	1.362.000
14	1.098.000
15	1.262.500
16	1.289.500
17	1.027.892
18	1.677.984
19	944.781
20	1.082.124
21	1.072.800
22	1.201.452
23	1.304.564
24	5.535.904
25	4.293.717
26	
27	
28	
29	
30	
31	

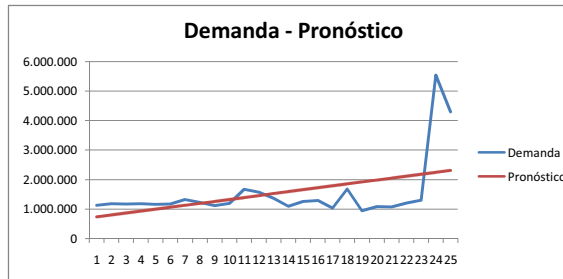
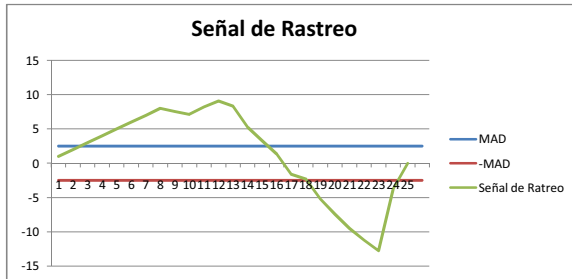


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- [SET](#)
- [SE Doble](#)
- [PM Doble](#)
- [Descomposicion](#)
- [Winters](#)
- [Media](#)
- [Comparaciones](#)


Pronóstico		Análisis del Error							
Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letI (Error Absoluto)	letI acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error	
746751,508	379248,492	379248,492	379248,492	379248,492	379248,492	1,000	143829418917,658	0,337	
811986,275	372013,725	751262,217	372013,725	751262,217	375631,108	2,000	138394211302,211	0,314	
877221,043	290778,957	1042041,174	290778,957	1042041,174	347347,058	3,000	84552401789,273	0,249	
942455,811	239544,189	1281585,363	239544,189	1281585,363	320396,341	4,000	57381418594,227	0,203	
1007690,578	148309,422	1429894,785	148309,422	1429894,785	285978,957	5,000	21995684517,073	0,128	
1072925,346	97074,654	1526969,438	97074,654	1526969,438	254494,906	6,000	9423488419,351	0,083	
1138160,114	181839,886	1708809,325	181839,886	1708809,325	244115,618	7,000	33065744196,444	0,138	
1203394,882	20605,118	1729414,443	20605,118	1729414,443	216176,805	8,000	424570906,814	0,017	
1268629,649	-154629,649	1574784,794	154629,649	1884044,092	209338,232	7,523	23910328421,231	0,139	
1333864,417	-137864,417	1436920,377	137864,417	2021908,509	202190,851	7,107	19006597453,540	0,115	
1399099,185	270900,815	1707821,192	270900,815	2292809,325	208437,211	8,193	73387251776,050	0,162	
1464333,952	111666,048	1819487,240	111666,048	2404475,372	200372,948	9,081	12469306207,221	0,071	
1529568,720	-167568,720	1651918,520	167568,720	2572044,092	197849,546	8,349	28079275922,438	0,123	
1594803,488	-496803,488	1155115,032	496803,488	3068847,580	219203,399	5,270	246813705383,241	0,452	
1660038,255	-397538,255	757576,777	397538,255	3466385,835	231092,389	3,278	158036664494,244	0,315	
1725273,023	-435773,023	321803,754	435773,023	3902158,858	243884,929	1,319	189898127641,601	0,338	
1790507,791	-762615,791	-440812,037	762615,791	4664774,649	274398,509	-1,606	581582844330,579	0,742	
1855742,558	-177758,558	-618570,595	177758,558	4842533,208	269029,623	-2,299	31598105106,324	0,106	
1920977,326	-976196,326	-1594766,922	976196,326	5818729,534	306248,923	-5,207	952959267196,266	1,033	
1986212,094	-904088,094	-2498855,015	904088,094	6722817,628	336140,881	-7,434	81737521434,372	0,835	
2051446,862	-978646,862	-3477501,877	978646,862	7701464,489	366736,404	-9,482	957749679599,080	0,912	
2116681,629	-915229,629	-4392731,506	915229,629	8616694,118	391667,914	-11,215	837645274221,891	0,762	
2181916,397	-877352,397	-5270083,903	877352,397	9494046,515	412784,631	-12,767	769747228386,668	0,673	
2247151,165	3288752,835	-1981331,068	3288752,835	12782799,351	532616,640	-3,720	10815895212250,300	0,594	
2312385,932	1981331,068	0,000	1981331,068	14764130,418	590565,217	0,000	3925672799802,740	0,461	
2377620,700									
2442855,468									
2508090,235									
2573325,003									
2638559,771									
2703794,538									

Medidas de Desempeño Finales

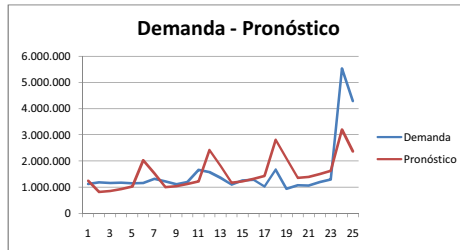
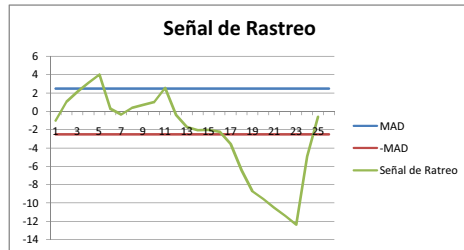
Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
681516,740	65234,768	0,457	590565,217	0,372	21,848	0,000	83723575530,835	933873,963	2



MODELO DESCOMPOSICION

Datos Iniciales Descomp.			Pronóstico						Análisis del Error							
Periodo	Demanda		Promedio	Razón	Índice Estacional	Suavización	Ft sin ajuste	Ft ajustado	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	1.126.000		1529568,720	0,736	1,183	951912,209	1048095,873	1239773,944	-113773,944	-113773,944	113773,944	113773,944	113773,944	-1,000	12944510331,765	0,101
2	1.184.000	PM Simple	1529568,720	0,774	0,750	1578866,974	1088218,611	816060,413	367939,587	254165,643	367939,587	481713,531	240856,766	1,055	135379539750,747	0,311
3	1.168.000	SE	1529568,720	0,764	0,755	1547689,139	1128341,348	851529,329	316470,671	570636,314	316470,671	798184,202	266061,401	2,145	100153685359,369	0,271
4	1.182.000	SET	1529568,720	0,773	0,796	1485289,013	1168464,085	929869,229	252130,771	822767,085	252130,771	1050314,973	262578,743	3,133	63569925804,069	0,213
5	1.156.000	Reg Lineal	1529568,720	0,756	0,843	1371093,552	1208586,822	1018986,899	137013,101	959780,186	137013,101	1187328,074	237465,615	4,042	18772589942,858	0,119
6	1.170.000	SE Doble	1529568,720	0,765	1,628	178721,095	1248709,560	2032763,745	-862763,745	97016,441	862763,745	2050091,819	341681,970	0,284	744361279486,798	0,737
7	1.320.000	PM Doble	1529568,720	0,863	1,183	1115918,398	1288832,297	1524536,772	-204536,772	-107520,331	204536,772	2254628,591	322089,799	-0,334	41835291098,786	0,155
8	1.224.000	Winters	1529568,720	0,800	0,750	1632207,075	1328955,034	996589,824	227410,176	119889,845	227410,176	2482038,767	310254,846	0,386	51715388126,393	0,186
9	1.114.000	Media	1529568,720	0,728	0,755	1476135,018	1369077,771	1033206,732	80793,268	200683,114	80793,268	2562832,035	284759,115	0,705	6527552193,856	0,073
10	1.196.000	Comparaciones	1529568,720	0,782	0,796	1502881,268	1409200,508	1121448,410	74551,590	275234,704	74551,590	2637383,626	263738,363	1,044	5557939632,959	0,062
11	1.670.000		1529568,720	1,092	0,843	1980732,035	1449323,246	1221957,225	448042,775	723277,479	448042,775	3085426,401	280493,309	2,579	200742328533,203	0,268
12	1.576.000		1529568,720	1,030	1,628	968123,458	1489445,983	2424656,535	-848656,535	-125379,056	848656,535	3934082,936	327840,245	-0,382	720217914370,155	0,538
13	1.362.000		1529568,720	0,890	1,183	1151424,892	1529568,720	1809299,600	-447299,600	-572678,656	447299,600	4381382,536	337029,426	-1,699	200076932160,160	0,328
14	1.098.000		1529568,720	0,718	0,750	1464185,758	1569691,457	1177119,235	-79119,235	-651797,891	79119,235	4460501,771	318607,269	-2,046	6259853377,105	0,072
15	1.262.500		1529568,720	0,825	0,755	1672908,851	1609814,194	1214884,134	47615,866	-604182,025	47615,866	4508117,637	300541,176	-2,010	2267270683,221	0,038
16	1.289.500		1529568,720	0,843	0,796	1620372,404	1649936,932	1313027,590	-23527,590	-627709,615	23527,590	4531645,228	283227,827	-2,216	553547510,595	0,018
17	1.027.892		1529568,720	0,672	0,843	1219148,870	1690059,669	1424927,551	-397035,551	-1024745,166	397035,551	4928680,778	289922,399	-3,535	157637228501,702	0,386
18	1.677.984		1529568,720	1,097	1,628	1030771,325	1730182,406	2816549,325	-1138565,325	-2163310,491	1138565,325	6067246,103	337069,228	-6,418	129630999480,530	0,679
19	944.781		1529568,720	0,618	1,183	798710,985	1770305,143	2094062,428	-1149281,428	-3312591,919	1149281,428	7216527,531	379817,238	-8,722	1320847800753,550	1,216
20	1.082.124		1529568,720	0,707	0,750	1443015,072	1810427,880	1357648,646	-275524,646	-3588116,565	275524,646	7492052,178	374602,609	-9,578	75913830736,600	0,255
21	1.072.800		1529568,720	0,701	0,755	1425184,873	1850550,618	1396561,536	-323761,536	-3911878,102	323761,536	7815813,714	372181,605	-10,511	104821532511,547	0,302
22	1.201.452		1529568,720	0,785	0,796	1509732,195	1890673,355	1504606,771	-303154,771	-4215032,873	303154,771	8118968,485	369044,022	-11,421	91902815323,162	0,252
23	1.304.564		1529568,720	0,853	0,843	1547300,423	1930796,092	1627897,877	-323333,877	-4538366,750	323333,877	8442302,362	367056,624	-12,364	104544795817,639	0,248
24	5.535.904		1529568,720	3,619	1,628	3400658,961	1970918,829	3208442,115	2327461,885	-2210904,865	2327461,885	10769764,247	448740,177	-4,927	5417078825281,500	0,420
25	4.293.717		1529568,720	2,807	1,183	3629877,117	2011041,567	2378825,256	1914891,744	-296013,121	1914891,744	12684655,991	507386,240	-0,583	3666810391213,270	0,446
26					0,750		2051164,304	1538178,057								
27					0,755		2091287,041	1578238,939								
28					0,796		2131409,778	1696185,952								
29					0,843		2171532,515	1830868,203								
30					1,628		2211655,253	3600334,905								
31					1,295		2251777,990	2915070,574								

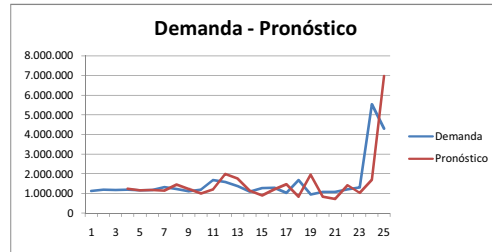
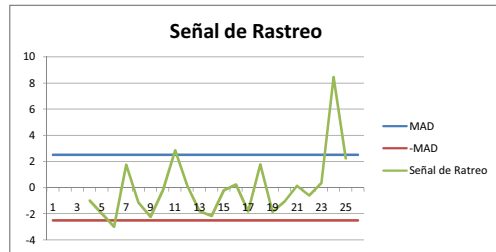
Valores Iniciales	Medidas de Desempeño Finales									
	Estacionalidad	Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico
6	1007973,136	40122,737	0,442	507386,240	0,308	16,406	-11840,525	581872950719,261	778535,585	4,000



MODELO WINTERS

Datos Iniciales Winters		Pronóstico				Análisis del Error							
Periodo	Demanda	St	It	Tt	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et*2 (Error Cuadrático)	Fracción Abs. del Error
1	1.126.000				0,975								
2	1.184.000				1,025								
3	1.168.000	1168000,000	0,996	42000,000									
4	1.182.000	1162161,149	1,018	858,588	1240380,952	-58380,952	-58380,952	58380,952	58380,952	58380,952	-1,000	3408335600,907	0,049
5	1.156.000	1161285,711	0,995	-632,674	1158055,505	-2055,505	-60436,457	2055,505	60436,457	30218,229	-2,000	4225101,040	0,002
6	1.170.000	1150712,591	1,017	-9181,457	1182052,045	-12052,045	-72488,502	12052,045	72488,502	24162,834	-3,000	145251777,545	0,010
7	1.320.000	1296461,005	1,014	124058,232	1136390,297	183609,703	111121,201	183609,703	256098,205	64024,551	1,736	33712522935,018	0,139
8	1.224.000	1238210,651	0,993	-32727,152	1444733,626	-220733,626	-109612,425	220733,626	476831,831	95366,366	-1,149	48723333712,648	0,180
9	1.114.000	1115440,846	1,001	-110163,833	1222726,951	-108726,951	-218339,376	108726,951	585558,782	97593,130	-2,237	11821549890,742	0,098
10	1.196.000	1172187,370	1,016	33379,074	998614,170	197385,830	-20953,546	197385,830	782944,612	111849,230	-0,187	38961166031,954	0,165
11	1.670.000	1593786,006	1,040	367247,898	1207205,503	462794,497	441840,951	462794,497	1245739,109	155717,389	2,837	214178746211,754	0,277
12	1.576.000	1617098,187	0,982	71463,181	1991889,715	-415889,715	25951,236	415889,715	1661628,824	184625,425	0,141	172964254874,179	0,264
13	1.362.000	1370330,012	1,002	-202215,785	1755970,905	-393970,905	-368019,669	393970,905	2055599,729	205559,973	-1,790	155213074151,964	0,289
14	1.098.000	1126525,653	0,976	-237981,958	1146598,257	-48598,257	-416617,927	48598,257	2104197,986	191290,726	-2,178	2361790601,409	0,044
15	1.262.500	1200823,675	1,043	30578,824	890090,814	372409,186	-44208,740	372409,186	2476607,172	206383,931	-0,214	138688601946,056	0,295
16	1.289.500	1307008,735	0,985	95600,187	1201666,111	87833,889	43625,148	87833,889	2564441,061	197264,697	0,221	7714791977,860	0,068
17	1.027.892	1052308,491	0,988	-205658,183	1462817,590	-434925,590	-391300,442	434925,590	2999366,651	214240,475	-1,826	189160268746,090	0,423
18	1.677.984	1566760,575	1,056	413636,646	833760,959	844223,041	452922,599	844223,041	3843589,692	256239,313	1,768	712712542963,101	0,503
19	944.781	1120086,837	0,868	-326230,284	1956709,966	-1011928,966	-559006,366	1011928,966	485518,658	303469,916	-1,842	1024000231650,550	1,071
20	1.082.124	987526,027	1,089	-159674,536	838576,994	243547,006	-315459,360	243547,006	5099065,664	299945,039	-1,052	59315144372,962	0,225
21	1.072.800	1170574,944	0,908	135067,633	718626,900	354173,100	38713,740	354173,100	5453238,764	302957,709	0,128	125438585030,291	0,330
22	1.201.452	1135570,543	1,063	-11194,316	1421955,400	-220503,400	-181789,659	220503,400	5673742,164	298618,009	-0,609	48621749357,192	0,184
23	1.304.564	1386442,683	0,935	214182,836	1021206,831	283357,169	101567,509	283357,169	5957099,333	297854,967	0,341	80291285151,782	0,217
24	5.535.904	4629436,731	1,173	2818960,479	1701941,637	3833962,363	3935529,872	3833962,363	9791061,696	466241,033	8,441	14699267398619,700	0,693
25	4.293.717	5047615,811	0,865	754288,476	6967113,632	-2673396,632	1262133,240	2673396,632	12464458,328	566566,288	2,228	7147049551529,020	0,623

Valores Iniciales			Medidas de Desempeño Finales							
Alpha	Beta	Gamma	MAD	MAPE	de Rastreo	ME	MSE	Pronóstico	s con cero	
0,84	0,86	0,83	566566,288	0,280	11,441	57369,693	1132443381919,720	1089205,792	11	

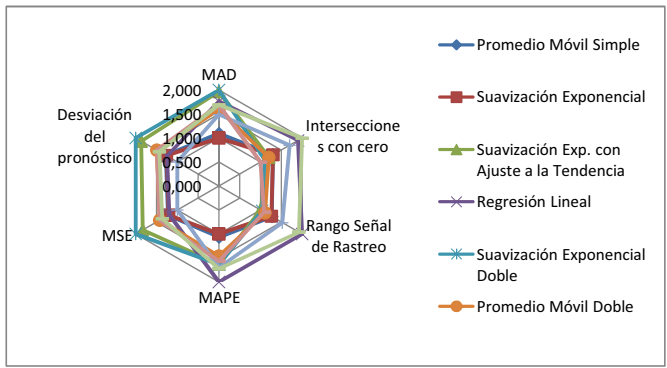
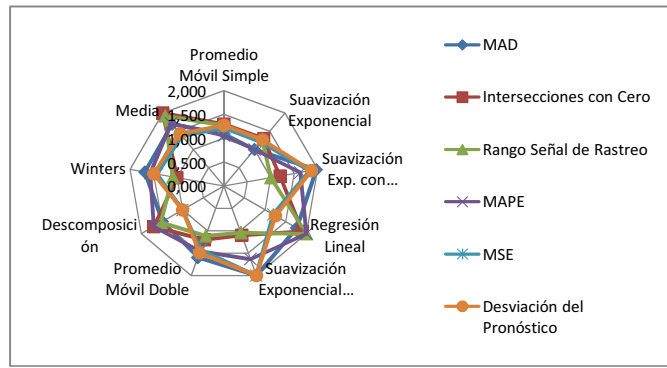


COMPARACIONES

Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	Intersecciones con cero (%)
Promedio Móvil Simple	387515,042	8	13,533	0,173	873086101674,125	954487,489	0,320
Suavización Exponencial	358778,500	8	13,415	0,159	856314856301,026	946170,312	0,320
Suavización Exp. con Ajuste a la Tendencia	652780,411	9	10,455	0,293	1666791981825,200	1324582,151	0,360
Regresión Lineal	590565,217	2	21,848	0,372	837235755530,835	933873,963	0,080
Suavización Exponencial Doble	661838,742	10	10,869	0,294	1886125368460,760	1407278,095	0,400
Promedio Móvil Doble	539358,477	9	11,714	0,256	1133723853852,770	1089821,409	0,360
Descomposición	507386,240	4	16,406	0,308	581872950719,261	778535,585	0,160
Winters	566566,288	11	11,441	0,280	1132443381919,720	1089205,792	0,440
Media	568460,912	1	20,927	0,313	1058525651156,040	1050062,325	0,040



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Datos Normalizados							
Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	
Promedio Móvil Simple	1,095	1,300	1,270	1,064	1,223	1,280	
Suavización Exponencial	1,000	1,300	1,260	1,000	1,210	1,267	
Suavización Exp. con Ajuste a la Tendencia	1,970	1,200	1,000	1,628	1,832	1,868	
Regresión Lineal	1,765	1,900	2,000	2,000	1,196	1,247	
Suavización Exponencial Doble	2,000	1,100	1,036	1,631	2,000	2,000	
Promedio Móvil Doble	1,596	1,200	1,110	1,455	1,423	1,495	
Descomposición	1,490	1,700	1,522	1,698	1,000	1,000	
Winters	1,686	1,000	1,087	1,565	1,422	1,494	
Media	1,692	2,000	1,919	1,721	1,365	1,432	

2. PF 22 GR

Periodo	Demanda
1	3.407.616
2	5.787.736
3	5.763.307
4	6.166.325
5	6.330.399
6	7.186.824
7	8.485.169
8	9.657.733
9	12.761.833
10	10.357.513
11	11.565.419
12	10.365.303
13	8.443.084
14	9.956.547
15	13.952.876
16	11.526.006

FOR TSM

NÚMERO DE PERIODOS DE DEMANDA

16

Elegir Modelos



Datos	16,000
Desviación Estándar	2.915.031,326
Promedio	8.857.105,625
Coefficiente Correlación	0,849
Coefficiente de Variación	0,329

Creado por:
Rosana Builes Palacio
María Cristina Bravo Gómez



[Comparaciones](#)

Modelos Pronosticados

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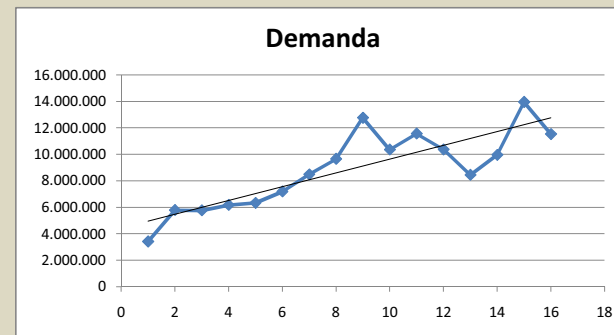
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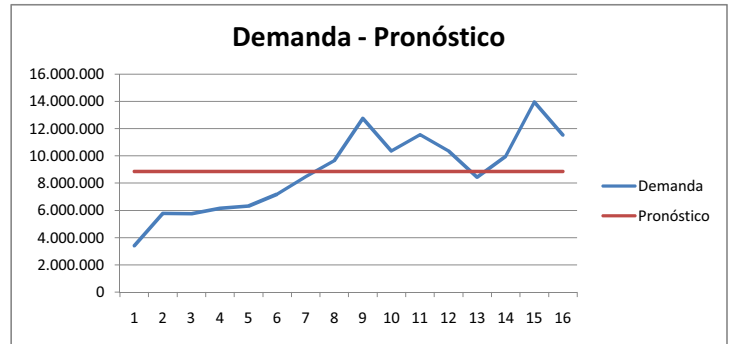
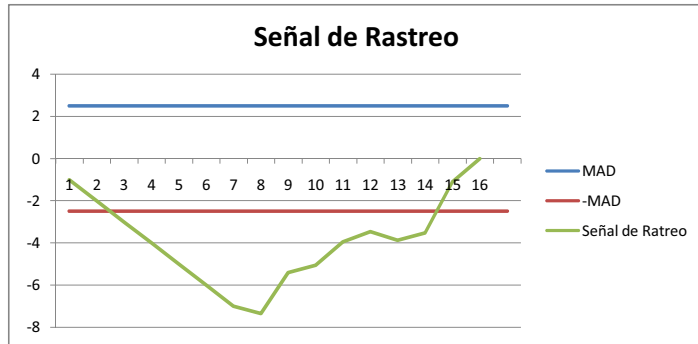
MODELO MEDIA

Datos Iniciales <i>Media</i>		Pronóstico	Análisis del Error							
Periodo	Demanda		Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)
1	3.407.616	8857105,625	-5449489,625	-5449489,625	5449489,625	5449489,625	5449489,625	-1,000	29696937172982,600	1,599
2	5.787.736	8857105,625	-3069369,625	-8518859,250	3069369,625	8518859,250	4259429,625	-2,000	9421029894872,640	0,530
3	5.763.307	8857105,625	-3093798,625	-11612657,875	3093798,625	11612657,875	3870885,958	-3,000	9571589932051,890	0,537
4	6.166.325	8857105,625	-2690780,625	-14303438,500	2690780,625	14303438,500	3575859,625	-4,000	7240300371875,390	0,436
5	6.330.399	8857105,625	-2526706,625	-16830145,125	2526706,625	16830145,125	3366029,025	-5,000	6384246368818,890	0,399
6	7.186.824	8857105,625	-1670281,625	-18500426,750	1670281,625	18500426,750	3083404,458	-6,000	2789840706812,640	0,232
7	8.485.169	8857105,625	-371936,625	-18872363,375	371936,625	18872363,375	2696051,911	-7,000	138336853016,391	0,044
8	9.657.733	8857105,625	800627,375	-18071736,000	800627,375	19672990,750	2459123,844	-7,349	641004193599,391	0,083
9	12.761.833	8857105,625	3904727,375	-14167008,625	3904727,375	23577718,125	2619746,458	-5,408	15246895873074,400	0,306
10	10.357.513	8857105,625	1500407,375	-12666601,250	1500407,375	25078125,500	2507812,550	-5,051	2251222290954,390	0,145
11	11.565.419	8857105,625	2708313,375	-9958287,875	2708313,375	27786438,875	2526039,898	-3,942	7334961337203,890	0,234
12	10.365.303	8857105,625	1508197,375	-8450090,500	1508197,375	29294636,250	2441219,688	-3,461	2274659321956,890	0,146
13	8.443.084	8857105,625	-414021,625	-8864112,125	414021,625	29708657,875	2285281,375	-3,879	171413905967,641	0,049
14	9.956.547	8857105,625	1099441,375	-7764670,750	1099441,375	30808099,250	2200578,518	-3,528	1208771337061,890	0,110
15	13.952.876	8857105,625	5095770,375	-2668900,375	5095770,375	35903869,625	2393591,308	-1,115	25966875714727,600	0,365
16	11.526.006	8857105,625	2668900,375	0,000	2668900,375	38572770,000	2410798,125	0,000	7123029211675,140	0,232
		8857105,625								
		8857105,625								
		8857105,625								
		8857105,625								
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		8857105,625								
		8857105,625								



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Medidas de Desempeño Finales						
MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2410798,125	0,340	7,349	0,000	7966319655415,730	2915031,326	1



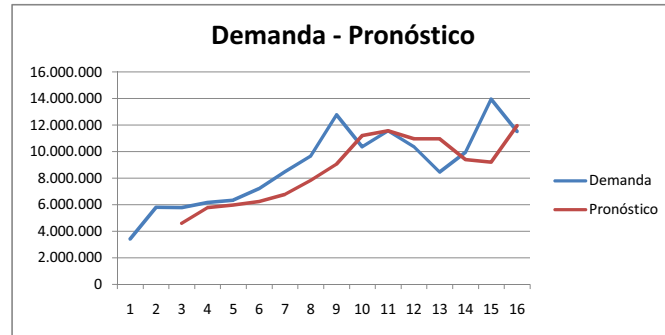
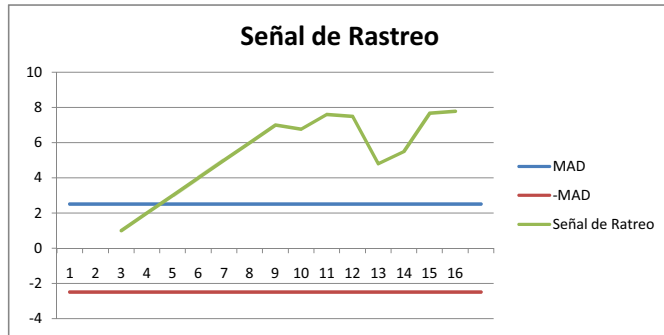
MODELO PMS

Datos Iniciales PMS		Pronóstico								
Periodo	Demanda	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	3.407.616									
2	5.787.736									
3	5.763.307									
4	6.166.325	4597676,000	1165631,000	1165631,000	1165631,000	1165631,000	1165631,000	1,000	1358695628161,000	0,202
5	6.330.399	5775521,500	390803,500	1556434,500	390803,500	1556434,500	778217,250	2,000	152727375612,250	0,063
6	7.186.824	5964816,000	365583,000	1922017,500	365583,000	1922017,500	640672,500	3,000	133650929889,000	0,058
7	8.485.169	6248362,000	938462,000	2860479,500	938462,000	2860479,500	715119,875	4,000	880710925444,000	0,131
8	9.657.733	6758611,500	1726557,500	4587037,000	1726557,500	4587037,000	917407,400	5,000	2981000800806,250	0,203
9	12.761.833	7835996,500	1821736,500	6408773,500	1821736,500	6408773,500	1068128,917	6,000	3318723875432,250	0,189
10	10.357.513	9071451,000	3690382,000	10099155,500	3690382,000	10099155,500	1442736,500	7,000	13618919305924,000	0,289
11	11.565.419	11209783,000	-852270,000	9246885,500	852270,000	10951425,500	1368928,188	6,755	726364152900,000	0,082
12	10.365.303	11559673,000	5746,000	9252631,500	5746,000	10957171,500	1217463,500	7,600	33016516,000	0,000
13	8.443.084	10961466,000	-596163,000	8656468,500	596163,000	11553334,500	1155333,450	7,493	355410322569,000	0,058
14	9.956.547	10965361,000	-2522277,000	6134191,500	2522277,000	14075611,500	1279601,045	4,794	6361881264729,000	0,299
15	13.952.876	9404193,500	552353,500	6686545,000	552353,500	14627965,000	1218997,083	5,485	305094388962,250	0,055
16	11.526.006	9199815,500	4753060,500	11439605,500	4753060,500	19381025,500	1490848,115	7,673	22591584116660,200	0,341
		11954711,500	-428705,500	11010900,000	428705,500	19809731,000	1414980,786	7,782	183788405730,250	0,037
		12739441,000								
		12739441,000								
		12739441,000								
		12739441,000								
		12739441,000								
		12739441,000								



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Valores Iniciales	Medidas de Desempeño Finales						
N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	1414980,786	0,143	6,782	786492,857	3783470322095,390	2018540,686	0



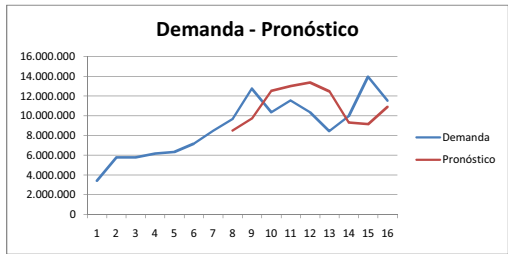
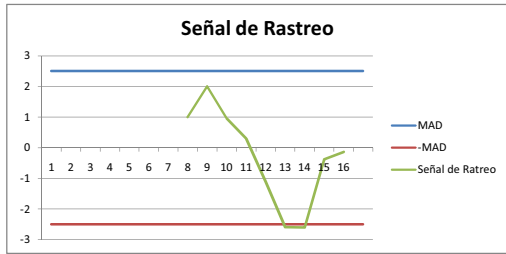
MODELO PMD

Datos Iniciales PMD		Pronóstico					Análisis del Error							
Periodo	Demanda	St'	St''	a	b	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et*2 (Error Cuadrático)	Fracción Abs. del Error
1	3.407.616													
2	5.787.736													
3	5.763.307													
4	6.166.325													
5	6.330.399													
6	7.186.824													
7	8.485.169													
8	9.657.733													
9	12.761.833													
10	10.357.513													
11	11.565.419													
12	10.365.303													
13	8.443.084													
14	9.956.547													
15	13.952.876													
16	11.526.006													
17														
18														
19														
20														
21														
22														



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Valores Iniciales N (Periodos de Promedio)	Medidas de Desempeño Finales					Desviación Pronóstico	Intersecciones con cero
	MAD	MAPE	Rango Señal de Rastreo	ME	MSE		
4	2331016,241	0,214	4,611	-37118,407	7416891305210,020	2888598,747	1



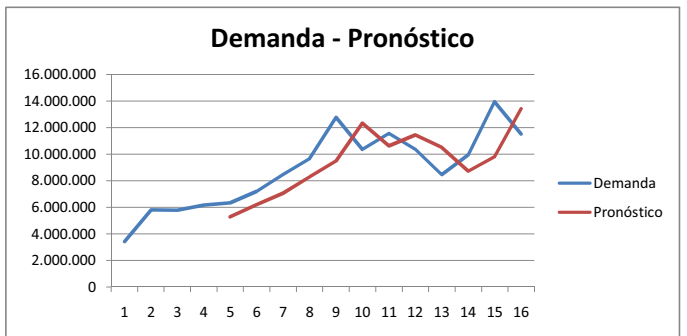
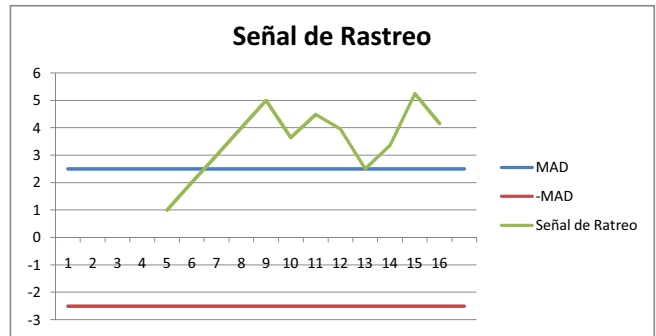
MODELO SE

Datos Iniciales SE		Análisis del Error								
Período	Demanda	Pronóstico Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	3.407.616									
2	5.787.736									
3	5.763.307									
4	6.166.325									
5	6.330.399									
6	7.186.824									
7	8.485.169									
8	9.657.733									
9	12.761.833									
10	10.357.513									
11	11.565.419									
12	10.365.303									
13	8.443.084									
14	9.956.547									
15	13.952.876									
16	11.526.006									
		5281246,000	1049153,000	1049153,000	1049153,000	1049153,000	1049153,000	1,000	1100722017409,000	0,166
		6194009,110	992814,890	2041967,890	992814,890	2041967,890	1020983,945	2,000	985681405805,713	0,138
		7057758,064	1427410,936	3469378,826	1427410,936	3469378,826	1156459,609	3,000	2037501979355,950	0,168
		8299605,578	1358127,422	4827506,247	1358127,422	4827506,247	1206876,562	4,000	1844510093413,230	0,141
		9481176,435	3280656,565	8108162,812	3280656,565	8108162,812	1621632,562	5,000	10762707496252,800	0,257
		12335347,647	-1977834,647	6130328,166	1977834,647	10085997,459	1680999,576	3,647	3911829889189,550	0,191
		10614631,504	950787,496	7081115,662	950787,496	11036784,955	1576683,565	4,491	903996862446,021	0,082
		11441816,626	-1076513,626	6004602,036	1076513,626	12113298,580	1514162,323	3,966	1158881585945,510	0,104
		10505249,771	-2062165,771	3942436,265	2062165,771	14175464,352	1575051,595	2,503	4252527668397,720	0,244
		8711165,550	1245381,450	5187817,714	1245381,450	15420845,801	1542084,580	3,364	1550974955328,090	0,125
		9794647,412	4158228,588	9346046,303	4158228,588	19579074,390	1779915,854	5,251	17290864993925,300	0,298
		13412306,283	-1886300,283	7459746,019	1886300,283	21465374,673	1788781,223	4,170	3558128759530,620	0,164
		11771225,037								
		11771225,037								
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- [PM Simple](#)
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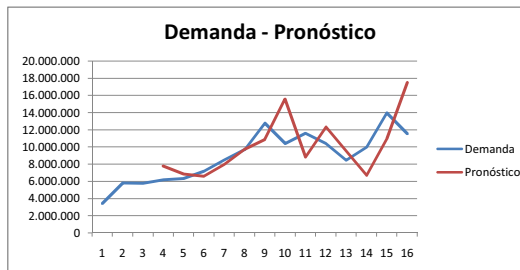
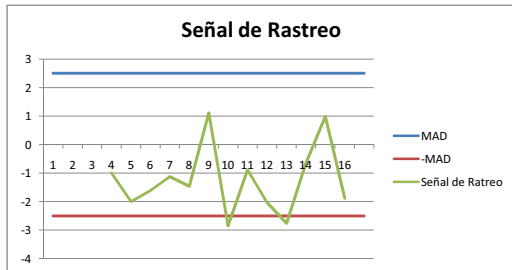
Valores Iniciales		Medidas de Desempeño Finales						
Alpha	N (Períodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,870	4,000	1788781,223	0,173	4,251	621645,502	4113193975583,290	2118282,488	0



MODELO SED

Datos Iniciales SED		Pronóstico					Análisis del Error								
Periodo	Demanda	St'	St''	a	b	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et*2 (Error Cuadrático)	Fracción Abs. del Error	
1	3.407.616														
2	5.787.736														
3	5.763.307	PM Simple	3407616,000	3407616,000											
4	6.166.325	SE	5574851,720	5401472,862	5748230,578	1993856,862									
5	6.330.399	SET	6119007,138	6061604,396	6176409,880	660131,533	7742087,440	-1575762,440	-1575762,440	1575762,440	1575762,440	1575762,440	-1,000	2483027267314,750	0,256
6	7.186.824	Reg Lineal	6313487,651	6293336,991	6333638,311	231732,595	6836541,413	-506142,413	-2081904,853	506142,413	2081904,853	1040952,426	-2,000	256180142035,003	0,080
7	8.485.169	PM Doble	7116957,092	7051067,484	7182846,700	757730,493	6565370,906	621453,094	-1460451,759	621453,094	2703357,946	901119,315	-1,621	386203947505,236	0,086
8	9.657.733	Descomposicion	8375712,047	8269740,482	8481683,612	1218672,998	7940577,194	544591,806	-915859,953	544591,806	3247949,753	811987,438	-1,128	296580235611,950	0,064
9	12.761.833	Winters	9555171,324	9452336,856	9658005,791	1182596,374	9700356,611	-42623,611	-958483,564	42623,611	3290573,364	658114,673	-1,456	1816772195,310	0,004
10	10.357.513	Media	12505300,066	12261063,009	12749537,123	2808726,153	10840602,165	1921230,835	962747,271	1921230,835	5211804,198	868634,033	1,108	3691127920260,870	0,151
11	11.565.419	Comparaciones	10529335,965	10667874,129	10390797,802	-1593188,880	15558263,275	-5200750,275	-4238003,004	5200750,275	10412554,474	1487507,782	-2,849	27047803426413,800	0,502
12	8.443.084		11482532,357	11417359,699	11547705,015	749485,570	8797608,921	2767810,079	-1470192,926	2767810,079	13180364,552	1647545,569	-0,892	7660772631221,680	0,239
13	10.365.303		10454681,349	10531695,617	10377667,081	-885664,082	12297190,586	-1931887,586	-3402080,511	1931887,586	15112252,138	1679139,126	-2,026	3732189643631,860	0,186
14	9.956.547		8604011,788	8758226,494	8449797,082	-1773469,122	9492002,998	-1048918,998	-4450999,509	1048918,998	16161171,136	1616117,114	-2,754	1100231064803,510	0,124
15	13.952.876		9848344,183	9761134,768	9935553,598	1002908,274	6676327,959	3280219,041	-1170780,469	3280219,041	19441390,177	1767399,107	-0,662	10759836955855,300	0,329
16	11.526.006		13624513,455	13315443,160	13933583,750	3554308,392	10938461,872	3014414,128	1843633,659	3014414,128	22455804,305	1871317,025	0,985	9086692535822,220	0,216
17			11693886,596	11823611,121	11564162,071	-1491832,038	17487892,141	-5961886,141	-4118252,482	5961886,141	28417690,446	2185976,188	-1,884	35544086362562,100	0,517
18							10072330,033								
19							8580497,995								
20							7088665,957								
21							5596833,918								
22							4105001,880								
							2613169,842								

Valores Iniciales		Medidas de Desempeño Finales						
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,920	1,000	2185976,188	0,212	3,957	-316788,652	7849734531171,810	2916141,127	4,000



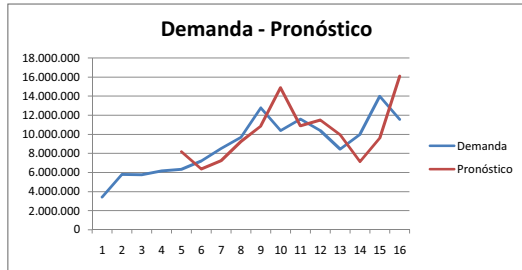
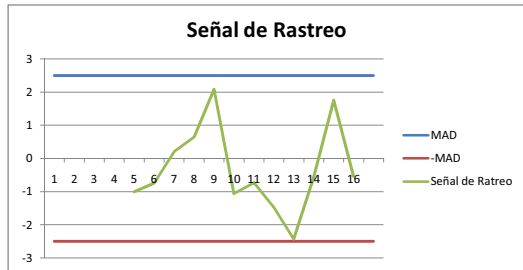
MODELO SET

Datos Iniciales SET		Pronóstico			Análisis del Error							
Periodo	Demanda	St	Tt	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	3.407.616											
2	5.787.736											
3	5.763.307											
4	6.166.325											
5	6.330.399											
6	7.186.824											
7	8.485.169											
8	9.657.733											
9	12.761.833											
10	10.357.513											
11	11.565.419											
12	10.365.303											
13	8.443.084											
14	9.956.547											
15	13.952.876											
16	11.526.006											




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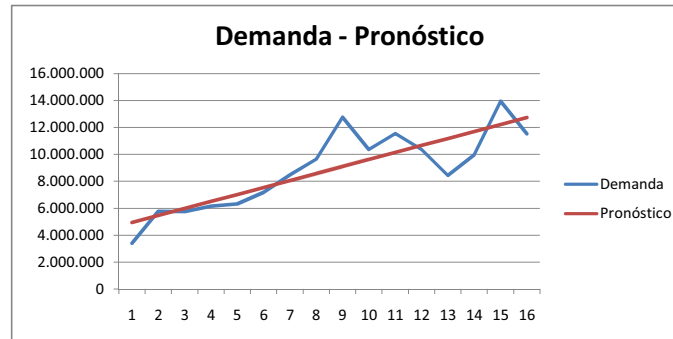
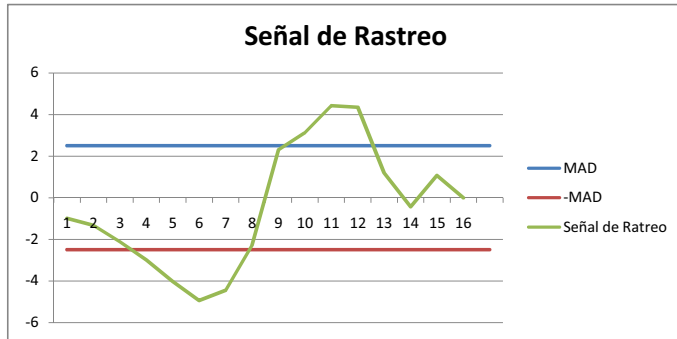
Valores Iniciales			Medidas de Desempeño Finales									
Alpha	Beta	N (Periodos de Promedio)	MAD	MAPE	Pendiente	Intercepto	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero	
0,8	0,8	4	2153965,429	0,210	825169,800	3218321,500	4,506	-96763,340	6802351583675,750	2724104,841	4	



MODELO REGRESION

Datos Iniciales Reg. Lineal		 PM Simple SE SET SF Doble PM Doble Descomposicion Winters Media Comparaciones	Pronóstico			Análisis del Error					
Periodo	Demanda		Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	3.407.616		4959338,243	-1551722,243	-1551722,243	1551722,243	1551722,243	1551722,243	-1,000	2407841918325,620	0,455
2	5.787.736		5479040,560	308695,440	-1243026,803	308695,440	1860417,682	930208,841	-1,336	95292874495,208	0,053
3	5.763.307		5998742,878	-235435,878	-1478462,681	235435,878	2095853,560	698617,853	-2,116	55430052621,933	0,041
4	6.166.325		6518445,196	-352120,196	-1830582,876	352120,196	2447973,756	611993,439	-2,991	123988632141,097	0,057
5	6.330.399		7038147,513	-707748,513	-2538331,390	707748,513	3155722,269	631144,454	-4,022	500907957986,768	0,112
6	7.186.824		7557849,831	-371025,831	-2909357,221	371025,831	3526748,100	587791,350	-4,950	137660167181,940	0,052
7	8.485.169		8077552,149	407616,851	-2501740,369	407616,851	3934364,951	562052,136	-4,451	166151497602,796	0,048
8	9.657.733		8597254,466	1060478,534	-1441261,835	1060478,534	4994843,485	624355,436	-2,308	1124614720700,500	0,110
9	12.761.833		9116956,784	3644876,216	2203614,381	3644876,216	8639719,701	959968,856	2,296	13285122631248,900	0,286
10	10.357.513		9636659,101	720853,899	2924468,279	720853,899	9360573,600	936057,360	3,124	519630343025,052	0,070
11	11.565.419		10156361,419	1409057,581	4333525,860	1409057,581	10769631,181	979057,380	4,426	1985443266242,030	0,122
12	10.365.303		10676063,737	-310760,737	4022765,124	310760,737	11080391,918	923365,993	4,357	96572235514,543	0,030
13	8.443.084		11195766,054	-2752682,054	1270083,069	2752682,054	13833073,972	1064082,613	1,194	7577258492680,580	0,326
14	9.956.547		11715468,372	-1758921,372	-488838,303	1758921,372	15591995,344	1113713,953	-0,439	3093804393085,290	0,177
15	13.952.876		12235170,690	1717705,310	1228867,007	1717705,310	17309700,654	1153980,044	1,065	2950511533012,610	0,123
16	11.526.006		12754873,007	-1228867,007	0,000	1228867,007	18538567,662	1158660,479	0,000	1510114121760,570	0,107
17			13274575,325								
18			13794277,643								
19			14313979,960								
20			14833682,278								
21			15353384,596								
22			15873086,913								

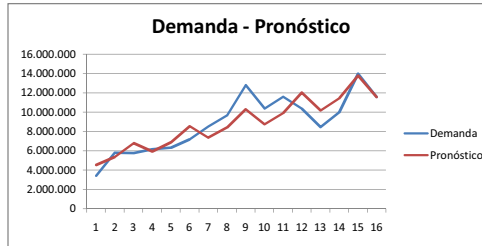
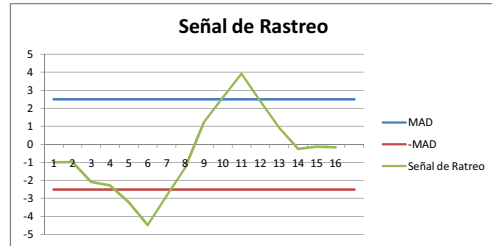
Medidas de Desempeño Finales									
Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
4439635,925	519702,318	0,849	1158660,479	0,135	9,376	0,000	2226896552351,590	1541219,103	3



MODELO DESCOMPOSICION

Datos Iniciales Descomp.		Pronóstico							Análisis del Error						
Periodo	Demanda	Promedio	Razón	Índice Estacional	Suavización	Ft sin ajuste	Ft ajustado	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et ² (Error Cuadrático)	Fracción Abs. del Error
1	3.407.616	8857105,625	0,385	0,910	3742627,272	5001358,100	4553674,903	-1146058,903	-1146058,903	1146058,903	1146058,903	1146058,903	-1,000	1313451010270,210	0,336
2	5.787.736	8857105,625	0,653	0,978	5919763,686	5515457,770	5392447,263	395288,737	-750770,167	395288,737	1541347,640	770673,820	-0,974	156253185373,245	0,068
3	5.763.307	8857105,625	0,651	1,130	5101546,367	6029557,440	6811697,494	-1048390,494	-1799160,660	1048390,494	2589738,134	863246,045	-2,084	1099122627064,200	0,182
4	6.166.325	8857105,625	0,696	0,910	6772551,870	6543657,110	5957919,142	208405,858	-1590754,802	208405,858	2798143,992	699535,998	-2,274	43433001609,371	0,034
5	6.330.399	8857105,625	0,715	0,978	6474805,713	7057756,780	6900348,588	-569949,588	-2160704,390	569949,588	3368093,580	673618,716	-3,208	324842532773,632	0,090
6	7.186.824	8857105,625	0,811	1,130	6361610,767	7571856,450	8554059,915	-1367235,915	-3527940,306	1367235,915	4735329,495	789221,582	-4,470	1869334048007,720	0,190
7	8.485.169	8857105,625	0,958	0,910	9319367,237	8085956,120	7362163,381	1123005,619	-2404934,686	1123005,619	5858335,114	836905,016	-2,874	1261141620983,570	0,132
8	9.657.733	8857105,625	1,090	0,978	9878041,622	8600055,790	8408249,913	1249483,087	-1155451,599	1249483,087	7107818,202	888477,275	-1,300	1561207985797,510	0,129
9	12.761.833	8857105,625	1,441	1,130	11296480,089	9114155,460	10296422,337	2465410,663	1309959,064	2465410,663	9573228,865	1063692,096	1,232	6078249737501,620	0,193
10	10.357.513	8857105,625	1,169	0,910	11375786,070	9628255,130	8766407,619	1591105,381	2901064,445	1591105,381	11164334,245	1116433,425	2,599	2531616332486,550	0,154
11	11.565.419	8857105,625	1,306	0,978	11829245,047	10142354,800	9916151,237	1649267,763	4550332,208	1649267,763	12813602,008	1164872,910	3,906	2720084153418,460	0,143
12	10.365.303	8857105,625	1,170	1,130	9175127,034	10656454,470	12038784,759	-1673481,759	2876850,449	1673481,759	14487083,767	1207256,981	2,383	2800541196434,570	0,161
13	8.443.084	8857105,625	0,953	0,910	9273144,755	11170554,140	10170651,858	-1727567,858	1149282,591	1727567,858	16214651,625	1247280,894	0,921	2984490703668,570	0,205
14	9.956.547	8857105,625	1,124	0,978	10183672,056	11684653,810	11424052,562	-1467505,562	-318222,971	1467505,562	17682157,187	1263011,228	-0,252	2153572574017,360	0,147
15	13.952.876	8857105,625	1,575	1,130	12350763,869	12198753,480	13781147,180	171728,820	-146494,151	171728,820	17853886,006	1190259,067	-0,123	29490787517,388	0,012
16	11.526.006	8857105,625	1,301	0,910	12659156,546	12712853,150	11574896,097	-48890,097	-195384,248	48890,097	17902776,103	1118923,506	-0,175	2390241536,693	0,004
17				0,978		13226952,821	12931953,886								
18				1,130		13741052,491	15523509,602								
19				1,016		14255152,161	14478084,462								
20				1,059		14769251,831	15637051,962								
21				1,249		15283351,501	19096125,841								
22				1,095		15797451,171	17306078,842								

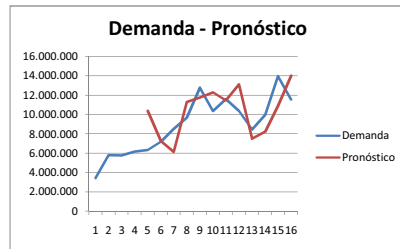
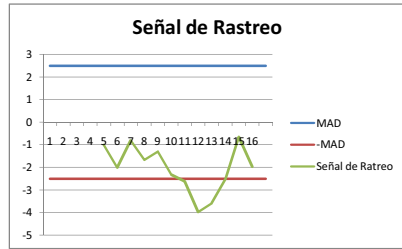
Valores Iniciales		Medidas de Desempeño Finales									
Estacionalidad	Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero	
3	4487258,429	514099,670	0,879	1118923,506	0,136	8,376	-12211,515	1683076358653,790	1339881,133	2,000	



MODELO WINTERS

Datos Iniciales Winters		Pronóstico				Análisis del Error										
Periodo	Demanda	St	It	Tt	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et*2 (Error Cuadrático)	Fracción Abs. del Error			
1	3.407.616				0,683											
2	5.787.736				1,161											
3	5.763.307				1,156											
4	6.166.325				0,949	2758709,000										
5	6.330.399	6166325,000			1,071	251040,306	10359700,141	-4029301,141	-4029301,141	4029301,141	4029301,141	-1,000	16235267683571,500	0,637		
6	7.186.824	6009140,169			1,155	220423,761	7235810,767	-48986,767	-4078287,908	48986,767	4078287,908	2039143,954	-2,000	2399703348,392	0,007	
7	8.485.169	6224579,842			0,987	2021305,557	6118532,425	2366636,575	-1711651,332	2366636,575	6444924,483	2148308,161	-0,797	5600968680111,490	0,279	
8	9.657.733	8539052,203			1,047	909006,809	11306206,603	-1648473,603	-3360124,935	1648473,603	8093398,086	2023349,521	-1,661	2717465218523,430	0,171	
9	12.761.833	9266987,122			1,167	1541271,770	11751128,684	1010704,316	-2349420,619	1010704,316	9104102,402	1820820,480	-1,290	1021523214493,530	0,079	
10	10.357.513	10911185,746			0,963	129549,227	12285527,796	-1928014,796	-4277435,415	1928014,796	11032117,198	1838686,200	-2,326	3717241053322,400	0,186	
11	11.565.419	10810919,676			1,048	208102,457	11451599,539	113819,461	-4163615,954	113819,461	11145936,658	1592276,665	-2,615	12954869601,730	0,010	
12	10.365.303	11031809,867			1,127	-1496560,334	13119661,374	-2754358,374	-6917974,329	2754358,374	13900295,033	1737536,879	-3,981	7586490054600,420	0,266	
13	8.443.084	9257746,288			0,978	-767150,870	7471117,822	971966,178	-5946008,151	971966,178	14872261,211	1652473,468	-3,598	944718251072,627	0,115	
14	9.956.547	8609336,494			1,073	430137,712	8219441,172	1737105,828	-4208902,322	1737105,828	16609367,039	1660936,704	-2,534	3017536659358,850	0,174	
15	13.952.876	9234381,650			1,162	2390195,057	10894350,403	3058525,597	-1150376,726	3058525,597	19667892,636	1787990,240	-0,643	9354578824625,480	0,219	
16	11.526.006	11943655,809			0,950	550858,100	14015626,794	-2489620,794	-3639997,520	2489620,794	22157513,430	1846459,452	-1,971	6198211697059,070	0,216	
		12195086,963					13681348,124									
							13681348,124									
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							13681348,124									
							13681348,124									

Valores Iniciales			Medidas de Desempeño Finales						
Alpha	Beta	Gamma	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,84	0,85	0,84	1846459,452	0,197	3,338	-303333,127	4700779659140,750	2264535,993	0



COMPARACIONES

Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	Intersecciones con cero (%)
Promedio Móvil Simple	1414980,786	0	6,782	0,143	3783470322095,390	2018540,686	0,000
Suavización Exponencial	1788781,223	0	4,251	0,173	4113193975583,290	2118282,488	0,000
Suavización Exp. con Ajuste a la Tendencia	2153965,429	4	4,506	0,210	6802351583675,750	2724104,841	0,250
Regresión Lineal	1158660,479	3	9,376	0,135	2226896552351,590	1541219,103	0,188
Suavización Exponencial Doble	2185976,188	4	3,957	0,212	7849734531171,810	2916141,127	0,250
Promedio Móvil Doble	2331016,241	1	4,611	0,214	7416891305210,020	2888598,747	0,063
Descomposición	1118923,506	2	8,376	0,136	1683076358653,790	1339881,133	0,125
Winters	1846459,452	0	3,338	0,197	4700779659140,750	2264535,993	0,000
Media	2410798,125	1	7,349	0,340	7966319655415,730	2915031,326	0,063



[PM Simple](#)

[SE](#)

[SET](#)

[Reg Lineal](#)

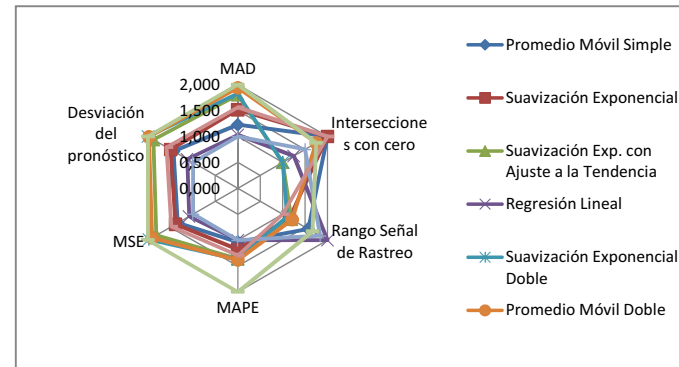
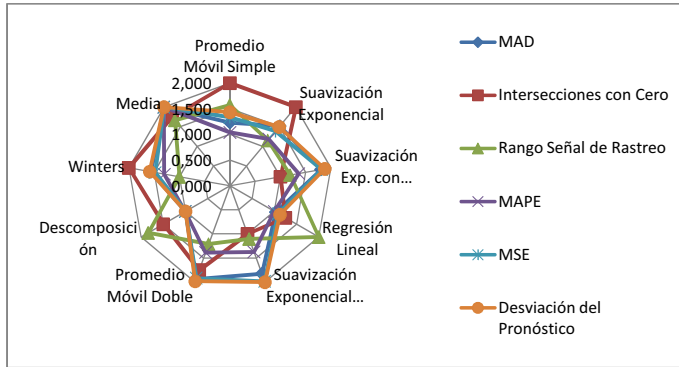
[SE Doble](#)

[PM Doble](#)

[Descomposición](#)

[Winters](#)

[Media](#)



Datos Normalizados						
Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico
Promedio Móvil Simple	1,229	2,000	1,570	1,039	1,334	1,431
Suavización Exponencial	1,519	2,000	1,151	1,184	1,387	1,494
Suavización Exp. con Ajuste a la Tendencia	1,801	1,000	1,193	1,365	1,815	1,878
Regresión Lineal	1,031	1,250	2,000	1,000	1,087	1,128
Suavización Exponencial Doble	1,826	1,000	1,103	1,373	1,981	2,000
Promedio Móvil Doble	1,938	1,750	1,211	1,384	1,913	1,983
Descomposición	1,000	1,500	1,834	1,004	1,000	1,000
Winters	1,563	2,000	1,000	1,298	1,480	1,587
Media	2,000	1,750	1,664	2,000	2,000	1,999

3. PF 23 GR

Periodo	Demanda
1	1.636.944
2	1.119.074
3	1.295.624
4	1.113.387
5	1.705.847
6	2.985.227
7	3.454.354
8	2.189.242
9	2.267.432
10	2.306.423
11	2.309.898
12	3.087.810

FOR TSM

NÚMERO DE PERIODOS DE DEMANDA

12

Elegir Modelos



Datos	12,000
Desviación Estándar	778.262,793
Promedio	2.122.605,167
Coefficiente Correlación	0,671
Coefficiente de Variación	0,367

Creado por:
 Rosana Builes Palacio
 María Cristina Bravo Gómez

[Comparaciones](#)

Modelos Pronosticados

[PM Simple](#)

[SE](#)

[SET](#)

[Reg Lineal](#)

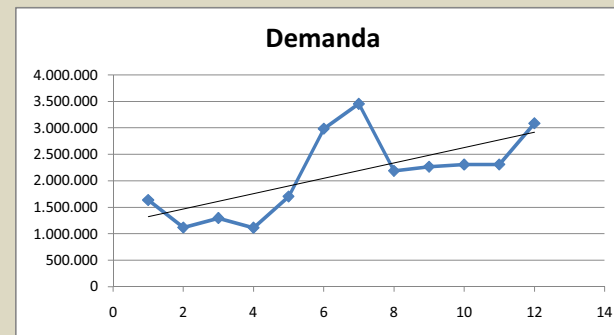
[SE Doble](#)

[PM Doble](#)

[Descomposicion](#)

[Winters](#)

[Media](#)



MODELO MEDIA

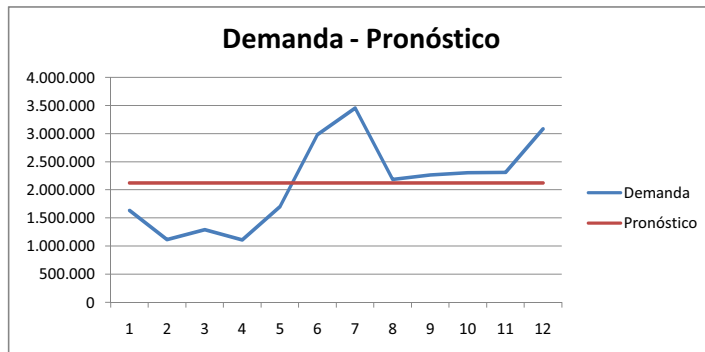
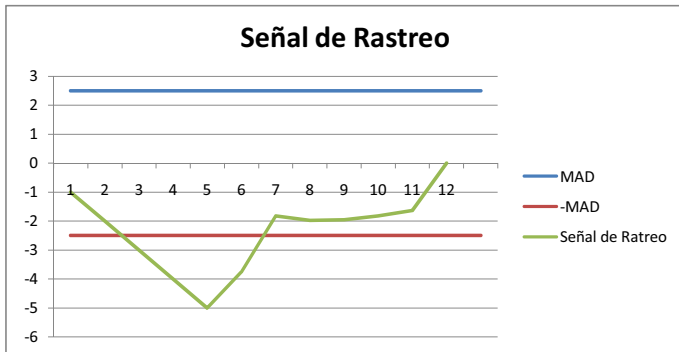
Datos Iniciales Media	
Periodo	Demanda
1	1.636.944
2	1.119.074
3	1.295.624
4	1.113.387
5	1.705.847
6	2.985.227
7	3.454.354
8	2.189.242
9	2.267.432
10	2.306.423
11	2.309.898
12	3.087.810




- [PM Simple](#)
- [SE](#)
- [SET](#)
- [Reg Lineal](#)
- [SE Doble](#)
- [PM Doble](#)
- [Descomposicion](#)
- [Winters](#)
- [Comparaciones](#)

Periodo	Ft (Pronóstico)	Análisis del Error							
		et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluta)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	2122605,167	-485661,167	-485661,167	485661,167	485661,167	485661,167	-1,000	235866768808,028	0,297
2	2122605,167	-1003531,167	-1489192,333	1003531,167	1489192,333	744596,167	-2,000	1007074802471,360	0,897
3	2122605,167	-826981,167	-2316173,500	826981,167	2316173,500	772057,833	-3,000	683897850021,361	0,638
4	2122605,167	-1009218,167	-3325391,667	1009218,167	3325391,667	831347,917	-4,000	1018521307930,030	0,906
5	2122605,167	-416758,167	-3742149,833	416758,167	3742149,833	748429,967	-5,000	173687369483,361	0,244
6	2122605,167	862621,833	-2879528,000	862621,833	4604771,667	767461,944	-3,752	744116427343,361	0,289
7	2122605,167	1331748,833	-1547779,167	1331748,833	5936520,500	848074,357	-1,825	1773554955084,690	0,386
8	2122605,167	66636,833	-1481142,333	66636,833	6003157,333	750394,667	-1,974	4440467556,694	0,030
9	2122605,167	144826,833	-1336315,500	144826,833	6147984,167	683109,352	-1,956	20974811653,361	0,064
10	2122605,167	183817,833	-1152497,667	183817,833	6331802,000	633180,200	-1,820	33788995851,361	0,080
11	2122605,167	187292,833	-965204,833	187292,833	6519094,833	592644,985	-1,629	35078605418,028	0,081
12	2122605,167	965204,833	0,000	965204,833	7484299,667	623691,639	0,000	931620370290,028	0,313
	2122605,167								
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	2122605,167								
	2122605,167								

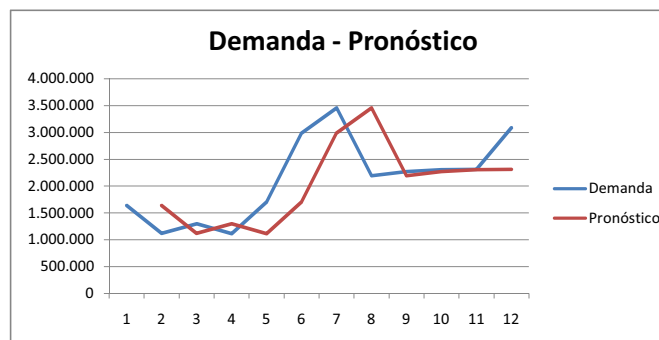
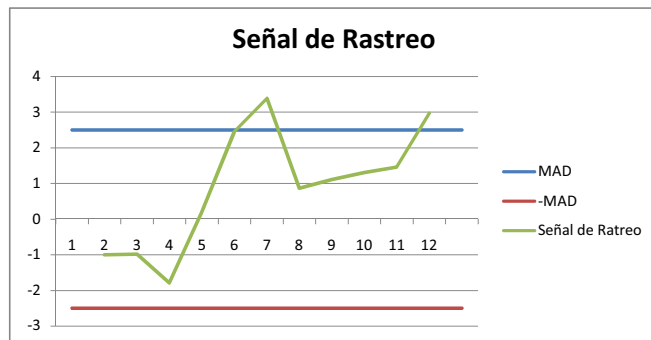
Medidas de Desempeño Finales						
MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
623691,639	0,352	5,000	0,000	555218560992,639	778262,793	1



MODELO PMS

Datos Iniciales PMS		 SE SET Reg Lineal SE Doble PM Doble Descomposicion Winters Media Comparaciones	Análisis del Error								
Periodo	Demanda		Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	1.636.944										
2	1.119.074		1636944,000	-517870,000	-517870,000	517870,000	517870,000	517870,000	-1,000	268189336900,000	0,463
3	1.295.624		1119074,000	176550,000	-341320,000	176550,000	694420,000	347210,000	-0,983	31169902500,000	0,136
4	1.113.387		1295624,000	-182237,000	-523557,000	182237,000	876657,000	292219,000	-1,792	33210324169,000	0,164
5	1.705.847		1113387,000	592460,000	68903,000	592460,000	1469117,000	367279,250	0,188	351008851600,000	0,347
6	2.985.227		1705847,000	1279380,000	1348283,000	1279380,000	2748497,000	549699,400	2,453	1636813184400,000	0,429
7	3.454.354		2985227,000	469127,000	1817410,000	469127,000	3217624,000	536270,667	3,389	220080142129,000	0,136
8	2.189.242		3454354,000	-1265112,000	552298,000	1265112,000	4482736,000	640390,857	0,862	1600508372544,000	0,578
9	2.267.432		2189242,000	78190,000	630488,000	78190,000	4560926,000	570115,750	1,106	6113676100,000	0,034
10	2.306.423		2267432,000	38991,000	669479,000	38991,000	4599917,000	511101,889	1,310	1520298081,000	0,017
11	2.309.898		2306423,000	3475,000	672954,000	3475,000	4603392,000	460339,200	1,462	12075625,000	0,002
12	3.087.810		2309898,000	777912,000	1450866,000	777912,000	5381304,000	489209,455	2,966	605147079744,000	0,252
			3087810,000								
			3087810,000								
			3087810,000								
			3087810,000								
			3087810,000								
			3087810,000								

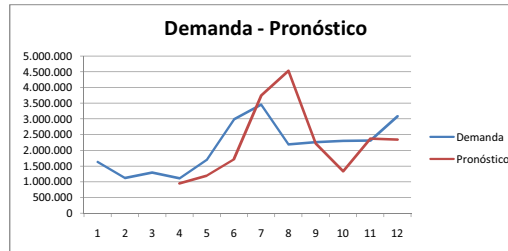
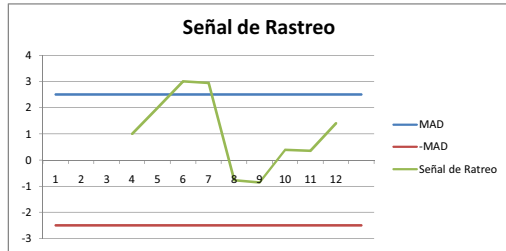
Valores Iniciales N (Periodos de Promedio)	Medidas de Desempeño Finales						
	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
1	489209,455	0,232	5,181	131896,909	432161203981,091	689476,123	1



MODELO PMD

Datos Iniciales PMD		Pronóstico					Análisis del Error								
Periodo	Demanda	St'	St''	a	b	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error	
1	1.636.944														
2	1.119.074														
3	1.295.624														
4	1.113.387														
5	1.705.847														
6	2.985.227														
7	3.454.354														
8	2.189.242														
9	2.267.432														
10	2.306.423														
11	2.309.898														
12	3.087.810														
13		2698854,000	2503507,250	2894200,750	390693,500	3284894,250									
14						3675587,750									
15						4066281,250									
16						4456974,750									
17						4847668,250									
18						5238361,750									

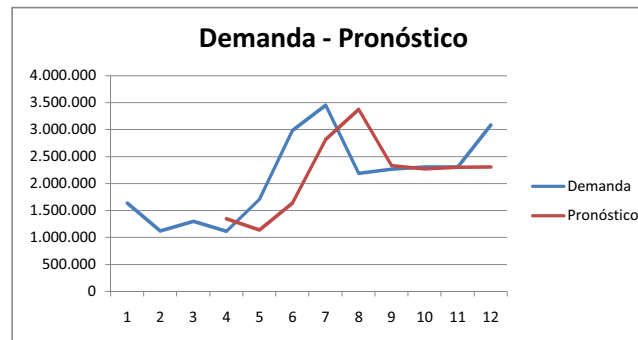
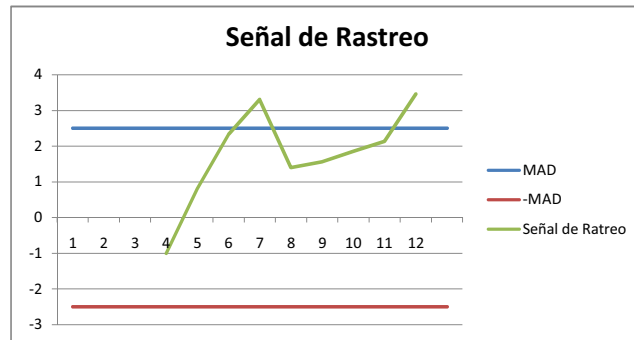
Valores Iniciales		Medidas de Desempeño Finales					
N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	710687,194	0,303	3,856	110263,417	996006596139,896	1058540,231	2



MODELO SE

Datos Iniciales SE		Pronóstico	Análisis del Error								
Periodo	Demanda		Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	1.636.944										
2	1.119.074										
3	1.295.624										
4	1.113.387										
5	1.705.847										
6	2.985.227										
7	3.454.354										
8	2.189.242										
9	2.267.432										
10	2.306.423										
11	2.309.898										
12	3.087.810										
		1350547,333	-237160,333	-237160,333	237160,333	237160,333	237160,333	-1,000	56245023706,778	0,213	
		1141846,240	564000,760	326840,427	564000,760	801161,093	400580,547	0,816	318096857280,578	0,331	
		1638166,909	1347060,091	1673900,518	1347060,091	2148221,185	716073,728	2,338	1814570889303,750	0,451	
		2823579,789	630774,211	2304674,729	630774,211	2778995,395	694748,849	3,317	397876105192,025	0,183	
		3378661,095	-1189419,095	1115255,634	1189419,095	3968414,490	793682,898	1,405	1414717782805,380	0,543	
		2331972,291	-64540,291	1050715,343	64540,291	4032954,782	672159,130	1,563	4165449209,144	0,028	
		2275176,835	31246,165	1081961,508	31246,165	4064200,947	580600,135	1,864	976322829,489	0,014	
		2302673,460	7224,540	1089186,048	7224,540	4071425,486	508928,186	2,140	52193975,385	0,003	
		2309031,055	778778,945	1867964,992	778778,945	4850204,431	538911,603	3,466	606496644827,239	0,252	
		2994356,527									
		2994356,527									
		2994356,527									
		2994356,527									
		2994356,527									
		2994356,527									

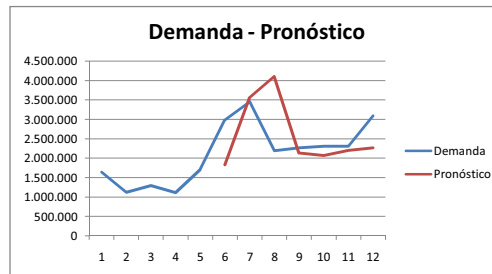
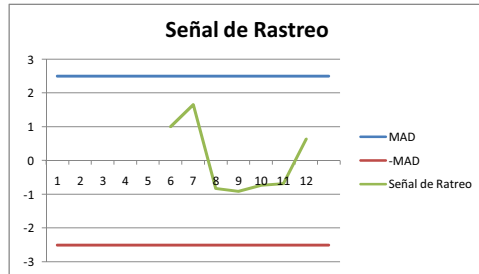
Valores Iniciales		Medidas de Desempeño Finales						
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,880	3,000	538911,603	0,224	4,466	207551,666	512577474347,752	759374,518	1



MODELO SED

Datos Iniciales SED		Pronóstico					Análisis del Error							
Periodo	Demanda	St'	St''	a	b	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	1.636.944													
2	1.119.074													
3	1.295.624													
4	1.113.387													
5	1.705.847													
6	2.985.227													
7	3.454.354													
8	2.189.242													
9	2.267.432													
10	2.306.423													
11	2.309.898													
12	3.087.810													
13														
14														
15														
16														
17														
18														

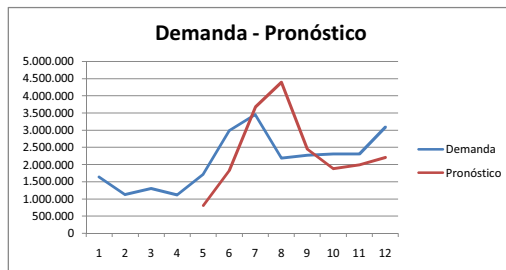
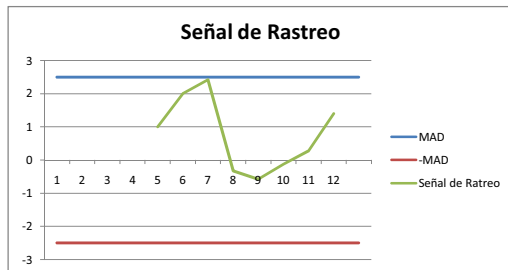
Valores Iniciales		Medidas de Desempeño Finales						
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstica	Intersecciones con cero
0,680	3,000	637838,047	0,252	2,567	57253,152	826043150625,911	981690,893	2,000




MODELO SET

Datos Iniciales SET		Pronóstico			Análisis del Error							
Periodo	Demanda	St	Tt	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	e^2 (Error Cuadrático)	Fracción Abs. del Error
1	1.636.944											
2	1.119.074											
3	1.295.624											
4	1.113.387											
5	1.705.847											
6	2.985.227	942727,000	-139412,100	803314,900	902532,100	902532,100	902532,100	902532,100	902532,100	1,000	814564191530,410	0,529
7	3.454.354	1462163,333	361312,709	1823476,042	1161750,958	2064283,058	1161750,958	2064283,058	1032141,529	2,000	1349665288228,040	0,389
8	2.189.242	2671554,241	1005852,141	3677406,382	-223052,382	1841230,676	223052,382	2287335,440	762445,147	2,415	49752365069,308	0,065
9	2.267.432	3514578,143	882102,679	4396680,822	-2207438,822	-366208,146	2207438,822	4494774,262	1123693,565	-0,326	4872786153623,910	1,008
10	2.306.423	2785250,482	-342584,379	2442666,103	-175234,103	-541442,249	175234,103	4670008,364	934001,673	-0,580	30706990680,477	0,077
11	2.309.898	2314745,208	-439804,260	1874940,948	431482,052	-109960,197	431482,052	5101490,416	850248,403	-0,129	186176761090,161	0,187
12	3.087.810	2189922,846	-200418,017	1989504,829	320393,171	210432,974	320393,171	5421883,588	774554,798	0,272	102651784136,900	0,139
		2223391,844	-22663,886	2200727,958	887082,042	1097515,016	887082,042	6308965,630	788620,704	1,392	786914549273,701	0,287
		2848297,849	469489,231	3317787,080								
				3317787,080								
				3317787,080								
				3317787,080								
				3317787,080								

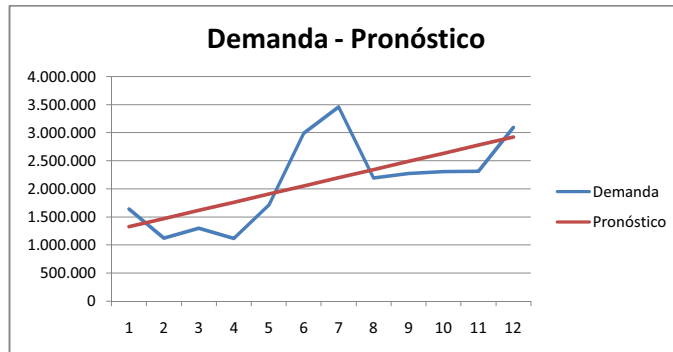
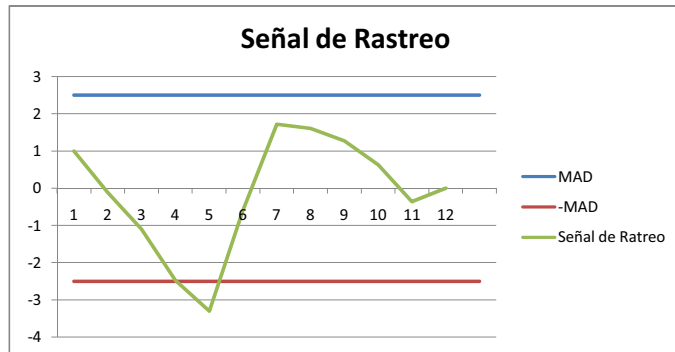
Valores Iniciales			Medidas de Desempeño Finales								
Alpha	Beta	N (Periodos de Promedio)	MAD	MAPE	Pendiente	Intercepto	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,73	0,76	4	788620,704	0,335	-139412,100	1639787,500	2,995	137189,377	1024152260454,110	1081877,870	2



MODELO REGRESION

Datos Iniciales Reg. Lineal		 PM Simple SE SET SE Doble PM Doble Descomposicion Winters Media Comparaciones	Análisis del Error							
Periodo	Demanda		Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)
1	1.636.944	1325642,244	311301,756	311301,756	311301,756	311301,756	311301,756	1,000	96908783544,111	0,190
2	1.119.074	1470544,593	-351470,593	-40168,837	351470,593	662772,350	331386,175	-0,121	123531577912,543	0,314
3	1.295.624	1615446,943	-319822,943	-359991,780	319822,943	982595,293	327531,764	-1,099	102286714799,103	0,247
4	1.113.387	1760349,293	-646962,293	-1006954,072	646962,293	1629557,585	407389,396	-2,472	418560207969,638	0,581
5	1.705.847	1905251,642	-199404,642	-1206358,714	199404,642	1828962,227	365792,445	-3,298	39762211327,377	0,117
6	2.985.227	2050153,992	935073,008	-271285,706	935073,008	2764035,235	460672,539	-0,589	874361530586,602	0,313
7	3.454.354	2195056,341	1259297,659	988011,952	1259297,659	4023332,894	574761,842	1,719	1585830592724,130	0,365
8	2.189.242	2339958,691	-150716,691	837295,261	150716,691	4174049,585	521756,198	1,605	22715520988,851	0,069
9	2.267.432	2484861,041	-217429,041	619866,220	217429,041	4391478,626	487942,070	1,270	47275387779,964	0,096
10	2.306.423	2629763,390	-323340,390	296525,830	323340,390	4714819,016	471481,902	0,629	104549008091,761	0,140
11	2.309.898	2774665,740	-464767,740	-168241,910	464767,740	5179586,756	470871,523	-0,357	216009052231,377	0,201
12	3.087.810	2919568,090	168241,910	0,000	168241,910	5347828,667	445652,389	0,000	28305340366,726	0,054
13		3064470,439								
14		3209372,789								
15		3354275,139								
16		3499177,488								
17		3644079,838								
18		3788982,188								

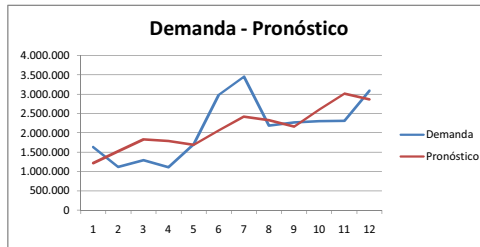
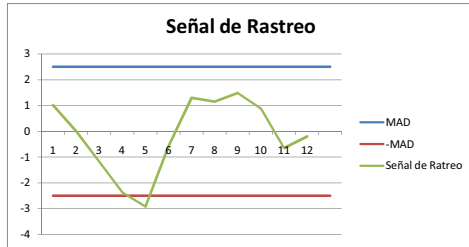
Medidas de Desempeño Finales									
Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
1180739,894	144902,350	0,671	445652,389	0,224	5,017	0,000	305007994026,849	576832,726	4



MODELO DESCOMPOSICION

Datos Iniciales Descomp.		Pronóstico					Análisis del Error								
Periodo	Demanda	Promedio	Razón	Índice Estacional	Suavización	Ft sin ajuste	Ft ajustado	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et ² (Error Cuadrático)	Fracción Abs. del Error
1	1.636.944	2122605,167	0,771	0,881	1857993,412	1387634,376	1222544,575	414399,425	414399,425	414399,425	414399,425	414399,425	1,000	171726883491,161	0,253
2	1.119.074	2122605,167	0,527	1,007	1111583,772	1521265,429	1531516,231	-412442,231	1957,194	412442,231	826841,656	413420,828	0,005	170108594250,506	0,369
3	1.295.624	2122605,167	0,610	1,109	1168617,493	1654896,482	1834752,272	-539128,272	-537171,078	539128,272	1365969,928	455323,309	-1,180	290659293473,996	0,416
4	1.113.387	2122605,167	0,525	1,004	1109445,376	1788527,535	1794881,794	-681494,794	-1218665,872	681494,794	2047464,723	511866,181	-2,381	464435154638,831	0,612
5	1.705.847	2122605,167	0,804	0,881	1936200,926	1922158,587	1693475,308	12371,692	-1206294,181	12371,692	2059836,414	411967,283	-2,928	153058755,109	0,007
6	2.985.227	2122605,167	1,406	1,007	2965246,166	2055789,640	2069642,248	915584,752	-290709,429	915584,752	2975421,166	495903,528	-0,586	838295438214,933	0,307
7	3.454.354	2122605,167	1,627	1,109	3115733,045	2189420,693	2427369,104	1026984,896	736275,467	1026984,896	4002406,062	571772,295	1,288	1054697976558,870	0,297
8	2.189.242	2122605,167	1,031	1,004	2181491,622	2323051,746	2331305,057	-142063,057	594212,411	142063,057	4144469,119	518058,640	1,147	20181912096,498	0,065
9	2.267.432	2122605,167	1,068	0,881	2573621,162	2456682,799	2164406,042	103025,958	697238,369	103025,958	4247495,077	471943,897	1,477	10614348084,758	0,045
10	2.306.423	2122605,167	1,087	1,007	2290985,562	2590313,851	2607768,264	-301345,264	395893,104	301345,264	4548840,342	454884,034	0,870	90808968411,772	0,131
11	2.309.898	2122605,167	1,088	1,109	2083464,963	2723944,904	3019985,936	-710087,936	-314194,832	710087,936	5258928,278	478084,389	-0,657	504224877184,159	0,307
12	3.087.810	2122605,167	1,455	1,004	3076878,502	2857575,957	2867728,319	220081,681	-94113,151	220081,681	5479009,959	456584,163	-0,206	48435946207,200	0,071
13				0,881	2991207,010		2635336,775								
14				1,007	3124838,063		3145894,281								
15				1,109	3258469,115		3612602,768								
16				1,004	3392100,168		3404151,582								
17				0,936	3525731,221		3299886,865								
18				1,246	3659362,274		4561391,040								

Valores Iniciales	Medidas de Desempeño Finales										
Estacionalidad	Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero	
4	1254003,324	133631,053	0,657	456584,163	0,240	4,406	-7842,763	305361870947,316	577167,256	3,000	



MODELO WINTERS

Datos Iniciales **Winters**

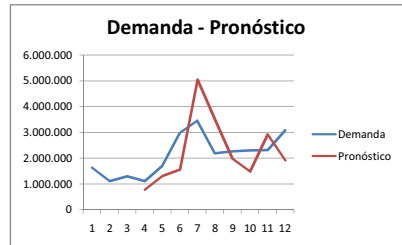
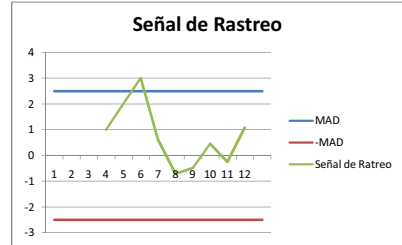


Periodo	Demanda
1	1.636.944
2	1.119.074
3	1.295.624
4	1.113.387
5	1.705.847
6	2.985.227
7	3.454.354
8	2.189.242
9	2.267.432
10	2.306.423
11	2.309.898
12	3.087.810

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- [Reg Lineal](#)
- [SE Doble](#)
- [PM Doble](#)
- [Descomposicion](#)
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- [Comparaciones](#)

Pronóstico				Análisis del Error								
St	It	Tt	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et*2 (Error Cuadrático)	Fracción Abs. del Error	
				1,188								
				0,812								
1295624,000		-341320,000										
1308500,805	0,845	-36710,748	774985,355	338401,645	338401,645	338401,645	338401,645	338401,645	1,000	114515673123,680	0,304	
1600990,267	1,060	246401,433	1307636,444	398210,556	736612,201	398210,556	736612,201	368306,100	2,000	158571646977,147	0,233	
3279756,001	0,900	1478234,732	1561172,745	1424054,255	2160666,455	1424054,255	2160666,455	720222,152	3,000	2027930520385,440	0,477	
3483964,595	1,002	382572,253	5042987,479	-1588633,479	572032,977	1588633,479	3749299,934	937324,984	0,610	2523756329923,090	0,460	
2646614,022	0,838	-666561,377	3481539,977	-1292297,977	-720265,000	1292297,977	5041597,911	1008319,582	-0,714	1670034060877,090	0,590	
2220937,941	1,018	-459400,023	1983538,608	283893,392	-436371,608	283893,392	5325491,304	887581,884	-0,492	80595458269,859	0,125	
2603200,163	0,879	264429,507	1476472,383	829950,617	393579,009	829950,617	6155441,920	879348,846	0,448	688818026021,499	0,360	
2358730,680	0,985	-173223,624	2919414,308	-609516,308	-215937,299	609516,308	6764958,228	845619,779	-0,255	371510129818,034	0,264	
3314368,305	0,924	797597,050	1920671,294	1167138,706	951201,407	1167138,706	7932096,934	881344,104	1,079	1362212758389,170	0,378	
			4050743,310									
			4050743,310									
			4050743,310									
			4050743,310									
			4050743,310									
			4050743,310									

Valores Iniciales			Medidas de Desempeño Finales						
Alpha	Beta	Gamma	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,85	0,86	0,85	881344,104	0,355	3,714	105689,045	999771622642,779	1060539,049	4

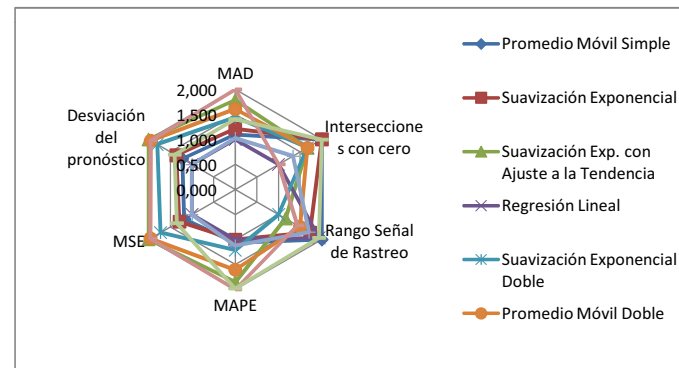
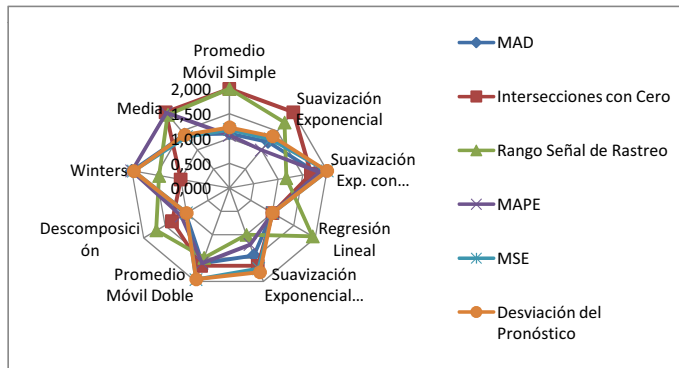


COMPARACIONES

Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	Intersecciones con cero (%)
Promedio Móvil Simple	489209,455	1	5,181	0,232	432161203981,091	689476,123	0,083
Suavización Exponencial	538911,603	1	4,466	0,224	512577474347,752	759374,518	0,083
Suavización Exp. con Ajuste a la Tendencia	788620,704	2	2,995	0,335	1024152260454,110	1081877,870	0,167
Regresión Lineal	445652,389	4	5,017	0,224	305007994026,849	576832,726	0,333
Suavización Exponencial Doble	637838,047	2	2,567	0,252	826043150625,911	981690,893	0,167
Promedio Móvil Doble	710687,194	2	3,856	0,303	996006596139,896	1058540,231	0,167
Descomposición	456584,163	3	4,406	0,240	305361870947,316	577167,256	0,250
Winters	881344,104	4	3,714	0,355	999771622642,779	1060539,049	0,333
Media	623691,639	1	5,000	0,352	555218560992,639	778262,793	0,083



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Datos Normalizados							
Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	
Promedio Móvil Simple	1,100	2,000	2,000	1,065	1,177	1,223	
Suavización Exponencial	1,214	2,000	1,727	1,002	1,289	1,361	
Suavización Exp. con Ajuste a la Tendencia	1,787	1,667	1,164	1,851	2,000	2,000	
Regresión Lineal	1,000	1,000	1,937	1,000	1,000	1,000	
Suavización Exponencial Doble	1,441	1,667	1,000	1,213	1,725	1,802	
Promedio Móvil Doble	1,608	1,667	1,493	1,608	1,961	1,954	
Descomposición	1,025	1,333	1,703	1,123	1,000	1,001	
Winters	2,000	1,000	1,439	2,000	1,966	1,958	
Media	1,409	2,000	1,931	1,980	1,348	1,399	

4. PF 25 gr

Periodo	Demanda
1	7.390.822
2	5.519.184
3	6.896.264
4	7.272.701
5	7.060.189
6	7.027.292
7	6.762.264
8	4.614.431
9	6.213.272
10	5.558.381
11	8.822.202
12	6.500.052
13	7.597.757
14	7.531.918
15	6.031.929
16	6.701.639
17	4.956.747
18	5.111.053
19	7.314.488
20	6.918.677
21	8.015.535
22	6.502.313
23	10.093.348
24	7.476.061
25	4.241.008
26	6.508.798
27	7.930.792
28	6.969.461
29	4.288.988
30	5.542.472
31	5.136.129
32	6.020.422
33	4.955.038
34	5.720.956
35	7.613.105
36	6.390.152
37	6.319.211
38	6.004.881
39	5.848.461
40	6.814.000
41	5.202.624

FOR TSM

NÚMERO DE PERIODOS DE DEMANDA

41

Elegir Modelos



Datos	41,000
Desviación Estándar	1.213.398,801
Promedio	6.473.049,195
Coefficiente Correlación	(0,208)
Coefficiente de Variación	0,187

Creado por:
Rosana Builes Palacio
María Cristina Bravo Gómez

[Comparaciones](#)

Modelos Pronosticados

[PM Simple](#)

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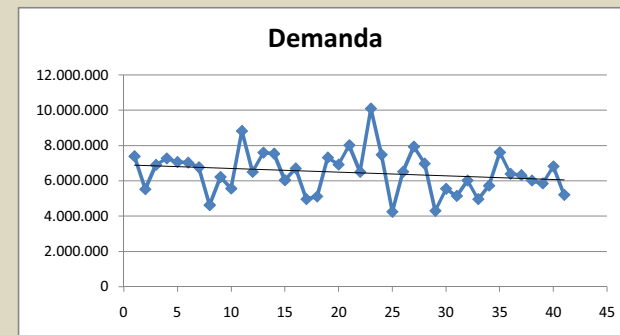
[SE Doble](#)

[PM Doble](#)

[Descomposicion](#)

[Winters](#)

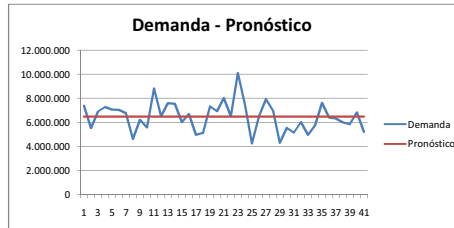
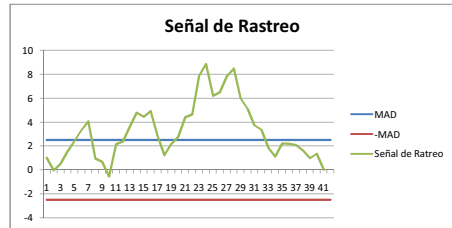
[Media](#)



MODELO MEDIA

Datos Iniciales <i>Media</i>		Pronóstico	Análisis del Error							
Periodo	Demanda		Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)
1	7.390.822	6473049,195	917772,805	917772,805	917772,805	917772,805	917772,805	1,000	842306921373,721	0,124
2	5.519.184	6473049,195	-953865,195	-36092,390	953865,195	1871638,000	935819,000	-0,039	909858810465,038	0,173
3	6.896.264	6473049,195	423214,805	387122,415	423214,805	2294852,805	764950,935	0,506	179110771067,965	0,061
4	7.272.701	6473049,195	799651,805	1186774,220	799651,805	3094504,610	773626,152	1,534	639443009044,721	0,110
5	7.060.189	6473049,195	587139,805	1773914,024	587139,805	3681644,415	736328,883	2,409	344733150472,233	0,083
6	7.027.292	6473049,195	554242,805	2328156,829	554242,805	4235887,220	705981,203	3,298	307185086759,087	0,079
7	6.762.264	6473049,195	289214,805	2617371,634	289214,805	4525102,024	646443,146	4,049	83645203360,648	0,043
8	4.614.431	6473049,195	-1858618,195	758753,439	1858618,195	6383720,220	797965,027	0,951	3454461595238,380	0,403
9	6.213.272	6473049,195	-259777,195	498976,244	259777,195	6643497,415	738166,379	0,676	67484191105,428	0,042
10	5.558.381	6473049,195	-914668,195	-415691,951	914668,195	7558165,610	755816,561	-0,550	836617907167,648	0,165
11	8.822.202	6473049,195	2349152,805	1933460,854	2349152,805	9907318,415	900665,310	2,147	5518518900666,400	0,266
12	6.500.052	6473049,195	27002,805	1960463,659	27002,805	9934321,220	827860,102	2,368	729151471,282	0,004
13	7.597.757	6473049,195	1124707,805	3085171,463	1124707,805	11059029,024	850694,540	3,627	1264967646353,600	0,148
14	7.531.918	6473049,195	1058868,805	4144040,268	1058868,805	12117897,829	865564,131	4,788	1121203145943,870	0,141
15	6.031.929	6473049,195	-441120,195	3702920,073	441120,195	12559018,024	837267,868	4,423	194587026544,428	0,073
16	6.701.639	6473049,195	228589,805	3931509,878	228589,805	12787607,829	799225,489	4,919	52253298894,184	0,034
17	4.956.747	6473049,195	-1516302,195	2415207,683	1516302,195	14303910,024	841406,472	2,870	2299172346931,650	0,306
18	5.111.053	6473049,195	-1361996,195	1053211,488	1361996,195	15665906,220	870328,123	1,210	1855033635526,670	0,266
19	7.314.488	6473049,195	841438,805	1894650,293	841438,805	16507345,024	688807,633	2,181	70801926254,599	0,115
20	6.918.677	6473049,195	445627,805	2340278,098	445627,805	16952972,829	847648,641	2,761	198584140480,428	0,064
21	8.015.535	6473049,195	1542485,805	3882763,902	1542485,805	18495458,634	880736,125	4,409	2379262458250,280	0,192
22	6.502.313	6473049,195	29263,805	3912027,707	29263,805	18524722,439	842032,838	4,646	856370275,941	0,005
23	10.093.348	6473049,195	3620298,805	7532326,512	3620298,805	22145021,244	962827,011	7,823	13106563436601,400	0,359
24	7.476.061	6473049,195	1003011,805	8535338,317	1003011,805	23148033,049	964501,377	8,849	1006032680724,720	0,134
25	4.241.008	6473049,195	-2232041,195	6303297,122	2232041,195	25380074,244	1015202,970	6,209	4982007896721,430	0,526
26	6.508.798	6473049,195	35748,805	6339045,927	35748,805	25415823,049	977531,656	6,485	1277977050,209	0,005
27	7.930.792	6473049,195	1457742,805	7796788,732	1457742,805	26873565,854	995317,254	7,833	2125014085173,720	0,184
28	6.969.461	6473049,195	496411,805	8293200,537	496411,805	27369977,659	977499,202	8,484	246424680022,282	0,071
29	4.288.988	6473049,195	-2184061,195	6109139,341	2184061,195	29554038,854	1019104,788	5,995	4770123304037,530	0,509
30	5.542.472	6473049,195	-930577,195	5178562,146	930577,195	30484616,049	1016153,868	5,096	865973916081,038	0,168
31	5.136.129	6473049,195	-1336920,195	3841641,951	1336920,195	31821536,244	1026501,169	3,742	1787355608124,920	0,260
32	6.020.422	6473049,195	-452627,195	3389014,756	452627,195	32274163,439	1008567,607	3,360	204871377763,965	0,075
33	4.955.038	6473049,195	-1518011,195	1871003,561	1518011,195	33792174,634	1024005,292	1,827	2304357988515,580	0,306
34	5.720.956	6473049,195	-752093,195	1118910,366	752093,195	34544267,829	1016007,877	1,101	565644174148,746	0,131
35	7.613.105	6473049,195	1140055,805	2258966,171	1140055,805	35684323,634	1019552,104	2,216	1299727238236,140	0,150
36	6.390.152	6473049,195	-82897,195	2176068,976	82897,195	35767220,829	993533,912	2,190	6871944959,087	0,013
37	6.319.211	6473049,195	-153838,195	2022230,780	153838,195	35921059,024	970839,433	2,083	23666190278,380	0,024
38	6.004.881	6473049,195	-468168,195	1554062,585	468168,195	36389227,220	957611,243	1,623	219181458923,746	0,078
39	5.848.461	6473049,195	-624588,195	929474,390	624588,195	37013815,415	949072,190	0,979	390110413485,697	0,107
40	6.814.000	6473049,195	340950,805	1270425,195	340950,805	37354766,220	933869,155	1,360	116247451346,989	0,050
41	5.202.624	6473049,195	-1270425,195	0,000	1270425,195	38625191,415	942077,839	0,000	1613980176400,650	0,244

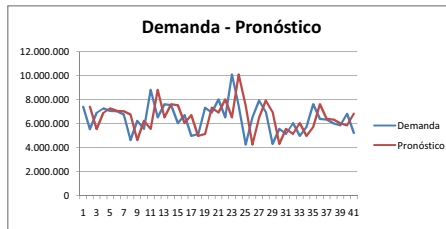
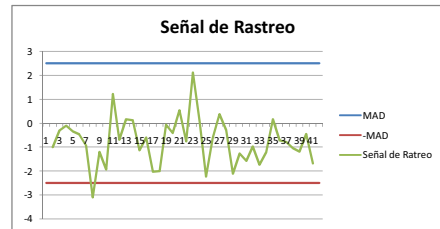
Medidas de Desempeño Finales					Intersecciones con cero
MAD	MAPE	Rango Señal de Rastreo	ME	MSE	
942077,839	0,153	9,399	0,000	1436426000691,330	1213398,801



MODELO PMS

Datos Iniciales PMS		Análisis del Error								
Periodo	Demanda	Pronóstico	et (Error del Pronóstico)	RSFE (Error Acumulado)	let (Error Absoluto)	let acumulado	MAD	SR (Señal de Rastreo)	et*2 (Error Cuadrático)	Fracción Abs. del Error
1	7.390.822									
2	5.519.184	7390822,000	-1871638,000	-1871638,000	1871638,000	1871638,000	1871638,000	-1,000	3503028803044,000	0,339
3	6.896.264	5519184,000	1377080,000	-494558,000	1377080,000	3248718,000	1624359,000	-0,304	1896349326400,000	0,200
4	7.272.701	6896264,000	376437,000	-118121,000	376437,000	3625155,000	1208385,000	-0,098	141704814969,000	0,052
5	7.060.189	7272701,000	-212512,000	-330633,000	212512,000	3837667,000	959416,750	-0,345	45161350144,000	0,030
6	7.027.292	7060189,000	-32897,000	-363530,000	32897,000	3870564,000	774112,800	-0,470	1082212609,000	0,005
7	6.762.264	7027292,000	-265028,000	-628558,000	265028,000	4135592,000	689265,333	-0,912	70239840784,000	0,039
8	4.614.431	6762264,000	-2147833,000	-2776391,000	2147833,000	6283425,000	897632,143	-3,093	4613186595889,000	0,465
9	6.213.272	4614431,000	1598841,000	-1177550,000	1598841,000	7882266,000	985283,250	-1,195	2556292543281,000	0,257
10	5.558.381	6213272,000	-654891,000	-1832441,000	654891,000	8537157,000	948573,000	-1,932	428882221881,000	0,118
11	8.822.202	5558381,000	3263821,000	1431380,000	3263821,000	11800978,000	1180097,800	1,213	10652527520041,000	0,370
12	6.500.052	8822202,000	-2322150,000	-890770,000	2322150,000	14123128,000	1283920,727	-0,694	5392380622500,000	0,357
13	7.597.757	6500052,000	1097705,000	206935,000	1097705,000	15220833,000	1268402,750	0,163	1204956267025,000	0,144
14	7.531.918	7597757,000	-65839,000	141096,000	65839,000	15286672,000	1175897,846	0,120	4334773921,000	0,009
15	6.031.929	7531918,000	-1499989,000	-1358893,000	1499989,000	16786661,000	1199047,214	-1,133	2249967000121,000	0,249
16	6.701.639	6031929,000	669710,000	-689183,000	669710,000	17456371,000	1163758,067	-0,592	448511484100,000	0,100
17	4.956.747	6701639,000	-1744892,000	-2434075,000	1744892,000	19201263,000	1200078,938	-2,028	3044648091664,000	0,352
18	5.111.053	4956747,000	154306,000	-2279769,000	154306,000	19355569,000	1138562,882	-2,002	23810341636,000	0,030
19	7.314.488	5111053,000	2203435,000	-76334,000	2203435,000	21559004,000	1197722,444	-0,064	4855125799225,000	0,301
20	6.918.677	7314488,000	-395811,000	-472145,000	395811,000	21954815,000	1155516,579	-0,409	156666347721,000	0,057
21	8.015.535	6918677,000	1096858,000	624713,000	1096858,000	23051673,000	1152583,650	0,542	1203097472164,000	0,137
22	6.502.313	8015535,000	-1513222,000	-888509,000	1513222,000	24564895,000	1169756,905	-0,760	2289840821284,000	0,233
23	10.093.348	6502313,000	3591035,000	2702526,000	3591035,000	28155930,000	1279815,000	2,112	12895532371225,000	0,356
24	7.476.061	10093348,000	-2617287,000	85239,000	2617287,000	30773217,000	1337965,957	0,064	6850191240369,000	0,350
25	4.241.008	7476061,000	-3235053,000	-3149814,000	3235053,000	34008270,000	1417011,250	-2,223	10465567912809,000	0,763
26	6.508.798	4241008,000	2267790,000	-882024,000	2267790,000	36276060,000	1451042,400	-0,608	5142871484100,000	0,348
27	7.930.792	6508798,000	1421994,000	539970,000	1421994,000	37698054,000	1449925,154	0,372	2022066936036,000	0,179
28	6.969.461	7930792,000	-961331,000	-421361,000	961331,000	38659385,000	1431829,074	-0,294	924157291561,000	0,138
29	4.288.988	6969461,000	-2680473,000	-3101834,000	2680473,000	41339858,000	1476423,500	-2,101	7184935503729,000	0,625
30	5.542.472	4288988,000	1253484,000	-1848350,000	1253484,000	42593342,000	1468735,931	-1,258	1571222138256,000	0,226
31	5.136.129	5542472,000	-406343,000	-2254693,000	406343,000	42999685,000	1433322,833	-1,573	165114633649,000	0,079
32	6.020.422	5136129,000	884293,000	-1370400,000	884293,000	43883978,000	1415612,194	-0,968	781974109849,000	0,147
33	4.955.038	6020422,000	-1065384,000	-2435784,000	1065384,000	44949362,000	1404667,563	-1,734	1135043067456,000	0,215
34	5.720.956	4955038,000	765918,000	-1668866,000	765918,000	45715280,000	1385311,515	-1,205	586630382724,000	0,134
35	7.613.105	5720956,000	1892149,000	222283,000	1892149,000	47607429,000	1400218,500	0,159	3580227838201,000	0,249
36	6.390.152	7613105,000	-1222953,000	-1000670,000	1222953,000	48830382,000	1395153,771	-0,717	149561404020209,000	0,191
37	6.319.211	6390152,000	-70941,000	-1071611,000	70941,000	48901323,000	1358370,083	-0,789	5032625481,000	0,011
38	6.004.881	6319211,000	-314330,000	-1385941,000	314330,000	49215653,000	1330152,784	-1,042	98803348900,000	0,052
39	5.848.461	6004881,000	-156420,000	-1542361,000	156420,000	49372073,000	1299265,079	-1,187	24467216400,000	0,027
40	6.814.000	5848461,000	965539,000	-576822,000	965539,000	50337612,000	1290708,000	-0,447	932265560521,000	0,142
41	5.202.624	6814000,000	-1611376,000	-2188198,000	1611376,000	51948988,000	1298724,700	-1,685	2596532613376,000	0,310
		5202624,000								
		5202624,000								
		5202624,000								
		5202624,000								
		5202624,000								
		5202624,000								

Valores Iniciales	Medidas de Desempeño Finales						
N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstica	Intersecciones con cero
1	1298724,700	0,210	5,205	-54704,950	2581001114131,350	1627015,867	12



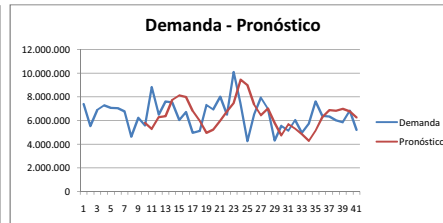
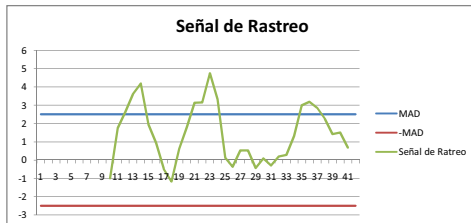
MODELO PMD

Datos Iniciales PMD		Pronóstico					Análisis del Error							
Periodo	Demanda	St'	St''	a	b	Ft (Pronóstico)	et (Error del Pronóstico)	RSE (Error Acumulado)	let (Error Absoluto)	let acumulado	MAD	SR (Señal de Rastreo)	et*2 (Error Cuadrático)	Fracción Abs. del Error
1	7.390.822													
2	5.519.184													
3	6.896.264													
4	7.272.701													
5	7.060.189													
6	7.027.292													
7	6.762.264													
8	4.614.431													
9	6.213.272													
10	5.558.381													
11	8.822.202													
12	6.500.052													
13	7.597.757													
14	7.531.918													
15	6.031.929													
16	6.701.639													
17	4.956.747													
18	5.111.053													
19	7.314.488													
20	6.918.677													
21	8.015.535													
22	6.502.313													
23	10.093.348													
24	7.476.061													
25	4.241.008													
26	6.508.798													
27	7.930.792													
28	4.288.988													
29	5.542.472													
30	5.136.129													
31	6.020.422													
32	4.955.038													
33	5.720.956													
34	7.613.105													
35	6.390.152													
36	6.319.211													
37	6.004.881													
38	5.848.461													
39	6.814.000													
40	5.202.624													
41														
42														
43														
44														
45														
46														
47														



- [PM Simple](#)
- [SE](#)
- [SET](#)
- [Reg Lineal](#)
- [SE Doble](#)
- [Descomposicion](#)
- [Winters](#)
- [Media](#)
- [Comparaciones](#)

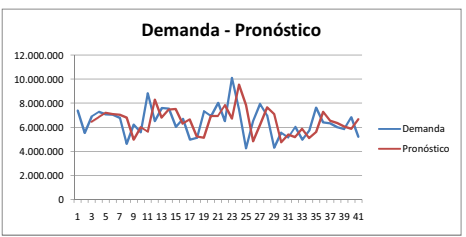
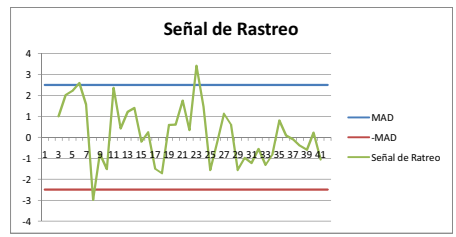
Valores Iniciales	Medidas de Desempeño Finales						
N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
5	1276943,853	0,204	5,933	27420,299	2768960429186,270	1690645,360	9



MODELO SE

Datos Iniciales		Análisis del Error								
Periodo	Demanda	Promóstico Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	let (Error Absoluto)	letl (Error Acumulado)	MAD	SR (Señal de Rastreo)	et*2 (Error Cuadrático)	Fracción Abs. del Error
1	7.390.822									
2	5.519.184									
3	6.896.264									
4	7.272.701									
5	7.060.189									
6	7.027.292									
7	6.762.264									
8	4.614.431									
9	6.213.272									
10	5.558.381									
11	8.822.202									
12	6.500.052									
13	7.597.757									
14	7.531.918									
15	6.031.929									
16	6.701.639									
17	4.956.747									
18	5.111.053									
19	7.314.488									
20	6.918.677									
21	8.015.535									
22	6.502.313									
23	10.093.348									
24	7.476.061									
25	4.241.008									
26	6.508.798									
27	7.930.792									
28	6.969.461									
29	4.288.988									
30	5.542.472									
31	5.136.129									
32	6.020.422									
33	4.955.038									
34	5.720.956									
35	7.613.105									
36	6.390.152									
37	6.319.211									
38	6.004.881									
39	5.848.461									
40	6.814.000									
41	5.202.624									

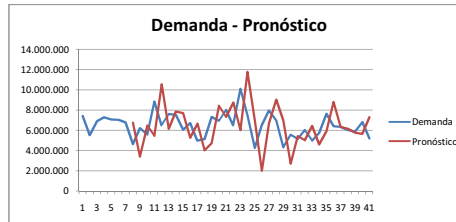
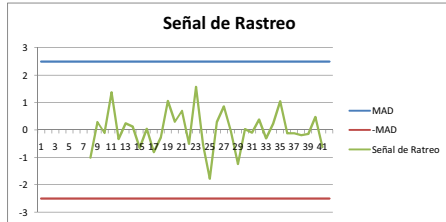
Valores Iniciales		Medidas de Desempeño Finales						
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,830	2,000	1145879,026	0,186	6,394	-31056,124	2223819895501,800	1510742,027	13



MODELO SED

Datos Iniciales SED		Pronóstico					Análisis del Error								
Periodo	Demanda	St'	St''	a	b	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error	
1	7.390.822														
2	5.519.184														
3	6.896.264														
4	7.272.701														
5	7.060.189														
6	7.027.292														
7	7.672.264														
8	4.614.431														
9	6.213.272														
10	5.558.381														
11	8.822.202														
12	6.500.052														
13	7.597.757														
14	7.531.918														
15	6.031.929														
16	6.701.639														
17	4.956.747														
18	5.111.053														
19	7.314.488														
20	6.918.677														
21	8.015.535														
22	6.502.313														
23	10.093.348														
24	7.476.061														
25	4.241.008														
26	6.508.798														
27	7.930.792														
28	6.969.461														
29	4.288.988														
30	5.542.472														
31	5.136.129														
32	6.020.422														
33	4.955.038														
34	5.720.956														
35	7.613.105														
36	6.390.152														
37	6.319.211														
38	6.004.881														
39	5.848.461														
40	6.814.000														
41	5.202.624														
42															
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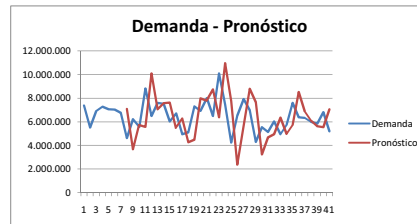
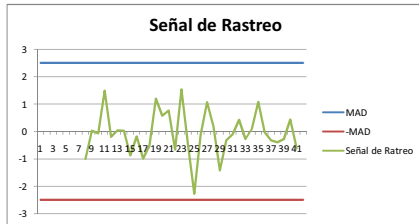
Valores Iniciales		Medidas de Desempeño Finales						
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,780	5,000	1881480,030	0,300	3,348	-34119,754	4997535750337,050	2269135,568	22,000



MODELO SET

Datos Iniciales SET		Pronóstico			Análisis del Error							
Periodo	Demanda	St	Tt	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	7.390.822											
2	5.519.184											
3	6.896.264											
4	7.272.701											
5	7.060.189											
6	7.027.292											
7	6.762.264											
8	4.614.431											
9	6.213.272											
10	5.558.381											
11	8.822.202											
12	6.500.052											
13	7.587.757											
14	7.531.918											
15	6.031.929											
16	6.701.639											
17	4.956.747											
18	5.111.053											
19	7.314.488											
20	6.918.677											
21	8.015.535											
22	6.502.313											
23	10.093.348											
24	7.476.061											
25	4.241.008											
26	6.508.798											
27	7.930.792											
28	6.969.461											
29	4.288.988											
30	5.542.472											
31	5.136.129											
32	6.020.422											
33	4.955.038											
34	5.720.956											
35	7.613.105											
36	6.390.152											
37	6.319.211											
38	6.004.881											
39	5.848.461											
40	6.814.000											
41	5.202.624											

Valores Iniciales		Medidas de Desempeño Finales									
Alpha	Beta	N (Periodos de Promedio)	MAD	MAPE	Pendiente	Intercepto	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,78	0,79	7	1777527,198	0,288	46230,964	6662035,571	3,801	-31760,500	4577437877860,590	2171669,431	18



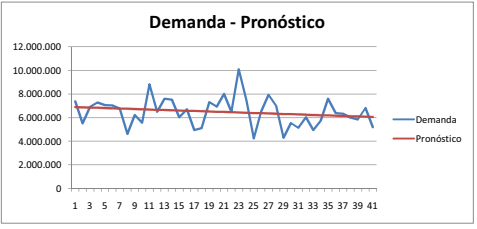
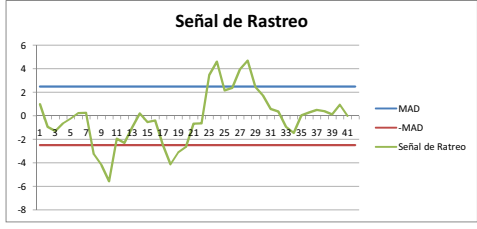
MODELO REGRESION

Datos Iniciales Reg. Lineal		Análisis del Error									
Periodo	Demanda	Pronóstico	et (Error del Pronóstico)	RSFE (Error Acumulado)	let (Error Absoluto)	let acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error	
1	7.390.822	689328,150	496893,850	496893,850	496893,850	496893,850	496893,850	1,000	246903498340,956	0,067	
2	5.519.184	6872884,202	-1353700,202	-856806,352	1353700,202	1850594,052	925297,026	-0,926	1832504237140,110	0,245	
3	6.896.264	6851840,254	44423,746	-812382,606	44423,746	1895017,798	631672,599	-1,286	1973469177,096	0,006	
4	7.272.701	6830796,307	441904,693	-370477,913	441904,693	2336922,491	584230,623	-0,634	195279758031,087	0,061	
5	7.060.189	6809752,359	250436,641	-120041,272	250436,641	2587359,132	517471,826	-0,232	62718511212,955	0,035	
6	7.027.292	6788708,411	238583,589	118542,317	238583,589	2825942,721	470990,454	0,252	56922128868,629	0,034	
7	6.762.264	6767664,463	-5400,463	113141,854	5400,463	2831343,185	404477,598	0,280	29165005,093	0,001	
8	4.614.431	6746620,516	-2132189,516	-2019047,662	2132189,516	4963532,700	620441,588	-3,254	4546232130773,330	0,462	
9	6.213.272	6725576,568	-512304,568	-2531352,230	512304,568	5475837,268	608426,363	-4,160	262455970336,546	0,082	
10	5.558.381	6704532,620	-1146151,620	-3677503,850	1146151,620	6621988,889	662198,889	-5,553	1313663536507,850	0,206	
11	8.822.202	6683488,672	2138713,328	-1538790,523	2138713,328	8760702,216	796427,474	-1,932	4574094697337,900	0,242	
12	6.500.052	6662444,725	-162392,725	-1701183,247	162392,725	8923094,941	743591,245	-2,288	26371397048,051	0,025	
13	7.597.757	6641400,777	956356,223	-744827,024	956356,223	9879451,164	75957,782	-0,980	914617225264,160	0,126	
14	7.531.918	6620356,829	911561,171	166734,146	911561,171	10791012,334	770786,595	0,216	83094367985,761	0,121	
15	6.031.929	6599312,882	-567383,882	-400649,735	567383,882	11258396,216	757226,414	-0,529	321924469023,568	0,094	
16	6.701.639	6578268,934	123370,066	-277279,669	123370,066	11481766,282	171610,393	-0,386	15220173234,708	0,018	
17	4.956.747	6557224,986	-1600477,986	-187757,655	1600477,986	13082244,268	769543,780	-2,440	2561529783871,370	0,323	
18	5.111.053	6536181,038	-1425128,038	-3202885,693	1425128,038	14507372,307	805965,128	-4,098	2030989925627,260	0,279	
19	7.314.488	6515137,091	799350,909	-2503534,784	799350,909	15306723,216	805617,011	-3,108	638961876370,861	0,109	
20	6.918.677	6494093,143	424583,857	-2078950,927	424583,857	15731307,073	786565,354	-2,643	180271451746,306	0,061	
21	8.015.535	6473049,195	1542485,805	-536465,122	1542485,805	17273792,878	822561,566	-0,652	2379262458250,280	0,192	
22	6.502.313	6452005,247	50307,753	-486157,369	50307,753	17324100,631	787459,120	-0,617	2530869927,995	0,008	
23	10.093.348	6430961,300	3662386,700	3176229,331	3662386,700	20986487,331	912455,971	3,481	13413076342889,100	0,363	
24	7.476.061	6409917,352	1066143,648	4242372,979	1066143,648	22052630,979	918859,624	4,617	1136662278349,060	0,143	
25	4.241.008	6388873,404	-2147865,404	2094507,575	2147865,404	24200496,383	968019,855	2,164	4613325794478,410	0,506	
26	6.508.798	6367829,456	140968,544	2235476,118	140968,544	24341464,927	936210,189	2,388	19872130271,738	0,022	
27	7.930.792	6346785,509	1584006,491	3819482,610	1584006,491	25925471,418	960202,645	3,978	250907656446,320	0,200	
28	6.969.461	6325741,561	643719,439	4463202,049	643719,439	26569190,857	948899,673	4,704	414374716177,875	0,092	
29	4.288.988	6304697,613	-2015709,613	2447492,436	2015709,613	28584900,470	985686,223	2,483	4063085244909,840	0,470	
30	5.542.472	6283653,666	-741181,666	1706310,770	741181,666	29326082,136	977536,071	1,746	549350261281,102	0,134	
31	5.136.129	6262609,718	-1126480,718	579830,052	1126480,718	30452562,854	982340,737	0,590	1268958807507,690	0,219	
32	6.020.422	6241565,770	-221143,770	358686,282	221143,770	30673706,624	958553,332	0,374	48904567025,224	0,037	
33	4.955.038	6220521,822	-1265483,822	-906797,540	1265483,822	31939190,446	967854,256	-0,937	1601449304502,140	0,255	
34	5.720.956	6199477,875	-478521,875	-1385319,415	478521,875	32417712,321	953462,127	-1,453	228983184436,685	0,084	
35	7.613.105	6178433,927	1434671,073	49351,659	1434671,073	33852383,394	967210,954	0,051	2058281088192,860	0,188	
36	6.390.152	6157389,979	232762,021	282113,679	232762,021	34085145,415	946809,595	0,298	54178158376,209	0,036	
37	6.319.211	6136346,031	182864,969	464978,648	182864,969	34268010,383	925162,443	0,502	33439596756,116	0,029	
38	6.004.881	6115302,084	-110421,084	354557,564	110421,084	34378431,467	904695,565	0,392	12192815708,631	0,018	
39	5.848.461	6094258,136	-245797,136	108760,429	245797,136	34624228,603	887900,733	0,123	60416232010,991	0,042	
40	6.814.000	6073214,188	740785,812	849546,240	740785,812	35265014,415	884125,360	0,961	548763619033,359	0,109	
41	5.202.624	6052170,240	-849546,240	0,000	849546,240	36214560,655	883281,967	0,000	721728814608,559	0,163	
42		6031126,293									
43		6010082,345									
44		5989038,397									
45		5967994,449									
46		5946950,502									
47		5925906,554									



- PM Simple
- SE
- SET
- SE Doble
- PM Doble
- Descomposicion
- Winters
- Media
- Comparaciones

Medidas de Desempeño Finales									
Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
6914972,098	-21043,948	-0,208	883281,967	0,144	10,257	0,000	1374427317611,920	1186923,755	9



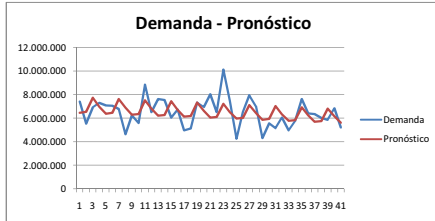
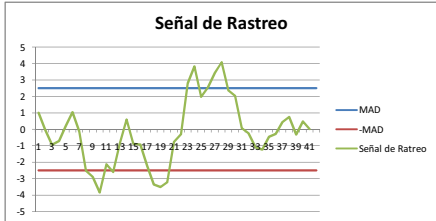
MODELO DESCOMPOSICION

Periodo	Demanda
1	7.390.822
2	5.519.184
3	6.896.264
4	7.272.701
5	7.060.189
6	7.027.292
7	6.762.264
8	4.614.431
9	6.213.272
10	5.558.381
11	8.822.202
12	6.500.052
13	7.597.757
14	7.531.918
15	6.031.929
16	6.701.639
17	4.956.747
18	5.111.053
19	7.314.488
20	6.918.677
21	8.015.535
22	6.502.313
23	10.093.348
24	7.476.061
25	4.241.000
26	6.508.798
27	7.930.792
28	6.969.461
29	4.288.988
30	5.542.472
31	5.136.129
32	6.020.422
33	4.955.038
34	5.720.956
35	7.613.105
36	6.390.152
37	6.319.211
38	6.004.881
39	5.848.461
40	6.814.000
41	5.202.624
42	
43	
44	
45	
46	
47	



Pronóstico						Análisis del Error							
Promedio	Razón	Índice Estacional	Suavización	Ft sin ajuste	Ft ajustado	et (Error del Pronóstico)	RSFE (Error Acumulado)	lett (Error Absoluto)	lett acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
6473049,195	1,142	0,930	7944493,305	6929768,663	6446816,018	944005,982	944005,982	944005,982	944005,982	944005,982	1,000	891147294967,495	0,128
6473049,195	0,853	0,943	5854098,082	6906932,689	6511785,736	-992601,736	-48595,753	992601,736	1936607,718	968303,859	-0,050	985258205491,343	0,180
6473049,195	1,065	1,119	6161557,402	6884069,716	7704959,193	-808695,193	-857290,947	808695,193	2745302,911	915100,970	-0,937	653987915855,432	0,117
6473049,195	1,124	1,015	7167824,985	6861260,742	6961651,264	311049,736	-546241,210	311049,736	3056532,648	764088,162	-0,715	96751938415,827	0,043
6473049,195	1,091	0,930	7589091,476	6838244,769	6361838,105	698350,895	152109,685	698350,895	3754703,543	750940,709	0,203	487693972657,529	0,099
6473049,195	1,086	0,943	7453720,808	6815588,796	6425667,644	601624,356	753734,041	601624,356	4356327,899	726054,650	1,038	361951865870,933	0,086
6473049,195	1,045	1,119	6041833,347	6792752,822	7602723,417	-840459,417	-86725,376	840459,417	5196787,316	742398,188	-0,117	706372031795,356	0,124
6473049,195	0,713	1,015	4547888,578	6769916,849	6868970,872	-2254539,872	-2341265,248	2254539,872	7451327,188	931415,899	-2,514	5082950035727,410	0,489
6473049,195	0,960	0,930	6678279,078	6747080,876	6276860,192	-63588,192	-2404853,441	63588,192	7514915,381	834990,598	-2,880	4043458203,438	0,010
6473049,195	0,859	0,943	5895673,627	6724244,902	6339549,552	-781168,552	-3186021,993	781168,552	8296083,933	829608,393	-3,840	610224306918,506	0,141
6473049,195	1,363	1,119	7882311,936	6701408,929	7500487,641	1321714,359	-1864307,634	1321714,359	9617798,292	874345,299	-2,132	1746928847349,540	0,150
6473049,195	1,004	1,015	6406317,973	6678572,955	6776290,481	-276238,481	-2140546,115	276238,481	9894036,773	824503,064	-2,596	76307698282,090	0,042
6473049,195	1,174	0,930	8166930,501	6655736,982	6191882,280	1405874,720	-734671,394	1405874,720	11299911,493	869223,961	-0,845	1976483729085,060	0,185
6473049,195	1,164	0,943	7988968,427	6632901,009	6253431,460	1278486,540	543815,145	1278486,540	12578398,033	898457,002	0,605	1634527831734,820	0,170
6473049,195	0,932	1,119	5389305,975	6610065,035	7398251,864	-1366322,864	-822507,719	1366322,864	13944720,897	929648,060	-0,885	1866838169979,700	0,227
6473049,195	1,035	1,015	6604997,987	6587229,062	6683610,089	-18028,911	-804478,809	18028,911	13962749,808	872671,863	-0,922	325041619,558	0,003
6473049,195	0,766	0,930	532073,569	6564393,089	6106904,367	-1150157,367	-1954636,176	1150157,367	15112907,175	888994,540	-2,199	1322861969184,950	0,232
6473049,195	0,790	0,943	5421200,954	6541557,115	6167313,369	-1052660,369	-3010896,545	1052660,369	16169167,544	898287,084	-3,352	115685966648,880	0,207
6473049,195	1,130	1,119	6532525,113	61518721,142	7296016,088	18471,912	-2992424,633	18471,912	16187639,456	851981,024	-3,512	341211527,120	0,003
6473049,195	1,069	1,015	6818906,189	6495885,168	6509298,698	327747,302	-2664677,331	327747,302	16515386,758	825769,338	-3,227	107418294054,703	0,047
6473049,195	1,238	0,930	8616005,654	6473049,195	6021926,455	1993608,545	-671068,785	1993608,545	18508995,303	881380,729	-0,761	3974475032509,380	0,249
6473049,195	1,005	0,943	6898685,131	6450213,222	6081195,277	421117,723	-249951,062	421117,723	18930113,026	860459,683	-0,290	177340136562,090	0,087
6473049,195	1,559	1,119	9018033,980	6427377,248	7193780,312	2899567,688	2649616,626	2899567,688	21829680,714	949116,553	2,792	8407492778206,560	0,265
6473049,195	1,155	1,015	7368252,431	6404541,275	6498249,306	977811,694	3627428,320	977811,694	22807492,408	950312,184	3,817	956115708149,628	0,131
6473049,195	0,655	0,930	4558716,156	6381705,302	5936948,542	-1695940,542	1931487,778	1695940,542	24503432,950	980137,318	1,971	2876214321834,920	0,400
6473049,195	1,006	0,943	6903763,652	6358869,328	5995077,185	513720,815	2445208,592	513720,815	25017153,764	962198,222	2,541	263909075382,354	0,079
6473049,195	1,225	1,119	7085869,995	6336033,355	7091544,536	839247,464	3284456,057	839247,464	25856401,229	957644,490	3,430	704336306623,123	0,106
6473049,195	1,077	1,015	6868957,858	6313197,381	6405568,915	563892,085	3848348,142	563892,085	26420293,314	943581,904	4,078	317974283612,578	0,081
6473049,195	0,663	0,930	4610290,499	6290361,408	5851970,629	-1562982,629	2285365,512	1562982,629	27983275,943	964940,550	2,368	2442914699673,740	0,364
6473049,195	0,856	0,943	587799,240	6267525,435	5908959,094	-366487,094	1918878,419	366487,094	28349763,037	944992,101	2,031	134312789826,006	0,066
6473049,195	0,793	1,119	4588941,731	6244689,461	6989308,759	-1853179,759	65988,660	1853179,759	30202942,796	974288,477	0,067	3434275219956,350	0,361
6473049,195	0,930	1,015	5933604,479	6221853,488	6312888,523	-292466,523	-226767,864	292466,523	30495409,320	952981,541	-0,238	85536667339,106	0,049
6473049,195	0,765	0,930	5326236,542	6199017,515	5766992,717	-811954,717	-1038722,581	811954,717	31307364,036	948708,001	-1,095	659270462074,883	0,164
6473049,195	0,884	0,943	6068113,973	6176181,541	5822841,002	-101885,002	-1140607,583	101885,002	31409249,038	923801,442	-1,235	10380553625,702	0,018
6473049,195	1,176	1,119	6802028,384	6153345,568	6887072,983	726032,017	-414575,565	726032,017	32135281,055	918150,887	-0,452	527122489857,126	0,095
6473049,195	0,987	1,015	6298002,786	6130509,595	6220208,132	169943,868	-244631,697	169943,868	32305224,923	897367,359	-0,273	28880918278,387	0,027
6473049,195	0,976	0,930	6792604,325	6107673,621	5682014,804	637196,196	392564,498	637196,196	32942421,119	890335,706	0,441	406018991980,438	0,101
6473049,195	0,928	0,943	6389368,056	6094837,648	5736722,910	268158,090	660722,588	268158,090	33210579,209	873962,611	0,756	71908761090,964	0,045
6473049,195	0,904	1,119	5225384,087	6062001,674	6784837,207	-936376,207	-275653,618	936376,207	34146955,416	875562,959	-0,315	878800400255,156	0,160
6473049,195	1,053	1,015	6715738,684	6039165,701	6127527,741	686472,259	410818,641	686472,259	34833427,675	870835,692	0,472	4712414163056,082	0,101
6473049,195	0,804	0,930	5592370,041	6016329,728	5597036,892	-394412,892	16405,749	394412,892	35227840,567	859215,624	0,019	155561529041,283	0,076

Valores Iniciales	Medidas de Desempeño Finales									
Estacionalidad	Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstica	Intersecciones con cero
4	6952604,636	-22835,973	-0,248	859215,624	0,139	7,919	400,140	1139272806690,380	1080626,960	10,000



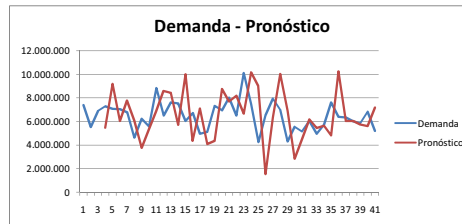
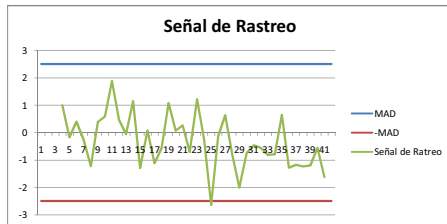
MODELO WINTERS

Periodo	Demanda
1	7.390.822
2	5.519.184
3	6.896.264
4	7.272.701
5	7.060.189
6	7.027.292
7	6.762.264
8	4.614.431
9	6.213.272
10	5.558.381
11	8.822.202
12	6.500.052
13	7.597.757
14	7.531.018
15	6.031.929
16	6.701.639
17	4.956.747
18	5.111.053
19	7.314.488
20	6.918.677
21	8.015.535
22	6.502.313
23	10.093.348
24	7.476.061
25	4.241.008
26	6.508.798
27	7.930.792
28	6.969.461
29	4.288.988
30	5.542.472
31	5.136.129
32	6.020.422
33	4.955.038
34	5.720.956
35	7.613.105
36	6.390.152
37	6.319.211
38	6.004.881
39	5.848.461
40	6.814.000
41	5.202.624



Datos Iniciales Winters		Pronóstico				Análisis del Error							
Periodo	Demanda	St	It	Tt	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	7.390.822												
2	5.519.184												
3	6.896.264												
4	7.272.701												
5	7.060.189												
6	7.027.292												
7	6.762.264												
8	4.614.431												
9	6.213.272												
10	5.558.381												
11	8.822.202												
12	6.500.052												
13	7.597.757												
14	7.531.018												
15	6.031.929												
16	6.701.639												
17	4.956.747												
18	5.111.053												
19	7.314.488												
20	6.918.677												
21	8.015.535												
22	6.502.313												
23	10.093.348												
24	7.476.061												
25	4.241.008												
26	6.508.798												
27	7.930.792												
28	6.969.461												
29	4.288.988												
30	5.542.472												
31	5.136.129												
32	6.020.422												
33	4.955.038												
34	5.720.956												
35	7.613.105												
36	6.390.152												
37	6.319.211												
38	6.004.881												
39	5.848.461												
40	6.814.000												
41	5.202.624												

Valores Iniciales			Medidas de Desempeño Finales						
Alpha	Beta	Gamma	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,81	0,79	0,82	1853223,093	0,296	4,512	-79067,501	5086032865147,280	2285496,273	17

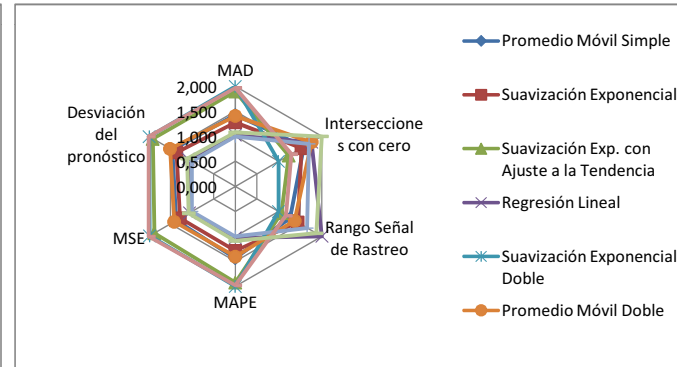
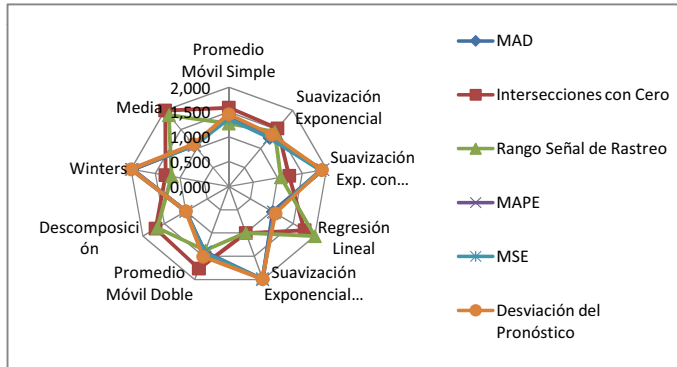


COMPARACIONES

Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	Intersecciones con cero (%)
Promedio Móvil Simple	1298724,700	12	5,205	0,210	2581001114131,350	1627015,867	0,293
Suavización Exponencial	1145879,026	13	6,394	0,186	2223819895501,800	1510742,027	0,317
Suavización Exp. con Ajuste a la Tendencia	1777527,198	18	3,801	0,288	4577437877860,590	2171669,431	0,439
Regresión Lineal	883281,967	9	10,257	0,144	1374427317611,920	1186923,755	0,220
Suavización Exponencial Doble	1881480,030	22	3,348	0,300	4997535750337,050	2269135,568	0,537
Promedio Móvil Doble	1276943,853	9	5,933	0,204	2768960429186,270	1690645,360	0,220
Descomposición	859215,624	10	7,919	0,139	1139272806690,380	1080626,960	0,244
Winters	1853223,093	17	4,512	0,296	5086032865147,280	2285496,273	0,415
Media	942077,839	5	9,399	0,153	1436426000691,330	1213398,801	0,122



- [PM Simple](#)
- [SE](#)
- [SET](#)
- [Reg Lineal](#)
- [SE Doble](#)
- [PM Doble](#)
- [Descomposicion](#)
- [Winters](#)
- [Media](#)



Datos Normalizados							
Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	
Promedio Móvil Simple	1,430	1,588	1,269	1,438	1,365	1,453	
Suavización Exponencial	1,280	1,529	1,441	1,291	1,275	1,357	
Suavización Exp. con Ajuste a la Tendencia	1,898	1,235	1,066	1,923	1,871	1,906	
Regresión Lineal	1,024	1,765	2,000	1,031	1,060	1,088	
Suavización Exponencial Doble	2,000	1,000	1,000	2,000	1,978	1,986	
Promedio Móvil Doble	1,409	1,765	1,374	1,404	1,413	1,506	
Descomposición	1,000	1,706	1,662	1,000	1,000	1,000	
Winters	1,972	1,294	1,168	1,977	2,000	2,000	
Media	1,081	2,000	1,876	1,089	1,075	1,110	

5. PF 27 GR

Periodo	Demanda
1	2.979.504
2	2.704.992
3	2.973.696
4	4.261.536
5	2.000.000
6	3.252.480
7	2.336.352
8	3.496.312
9	1.605.920
10	1.698.848
11	2.698.432
12	1.302.752
13	1.955.008
14	1.912.576
15	1.141.280
16	1.878.876
17	1.960.368

FOR TSM

NÚMERO DE PERIODOS DE DEMANDA

17

[Elegir Modelos](#)



Datos	17,000
Desviación Estándar	836.353,753
Promedio	2.362.290,118
Coefficiente de Correlación	(0,648)
Coefficiente de Variación	0,354

Creado por:
Rosana Builes Palacio
María Cristina Bravo Gómez



[Comparaciones](#)

Modelos Pronosticados

[PM Simple](#)

[SE](#)

[SET](#)

[Reg Lineal](#)

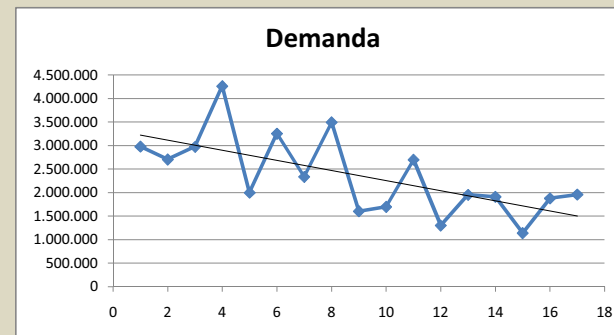
[SE Doble](#)

[PM Doble](#)

[Descomposicion](#)

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MODELO MEDIA

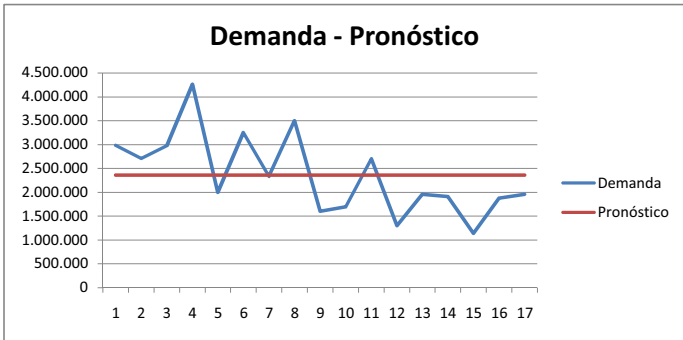
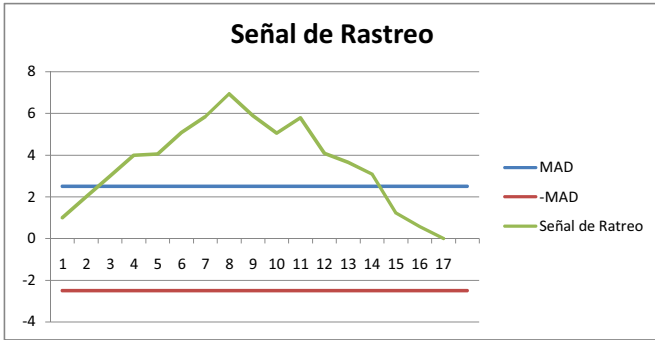
Datos Iniciales Media	
Periodo	Demanda
1	2.979.504
2	2.704.992
3	2.973.696
4	4.261.536
5	2.000.000
6	3.252.480
7	2.336.352
8	3.496.312
9	1.605.920
10	1.698.848
11	2.698.432
12	1.302.752
13	1.955.008
14	1.912.576
15	1.141.280
16	1.878.876
17	1.960.368



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Periodo	Demanda	Pronóstico		Análisis del Error						
		Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	2.979.504	2362290,118	617213,882	617213,882	617213,882	617213,882	617213,882	1,000	380952976569,190	0,207
2	2.704.992	2362290,118	342701,882	959915,765	342701,882	959915,765	479957,882	2,000	117444580168,249	0,127
3	2.973.696	2362290,118	611405,882	1571321,647	611405,882	1571321,647	523773,882	3,000	373817152975,779	0,206
4	4.261.536	2362290,118	1899245,882	3470567,529	1899245,882	3470567,529	867641,882	4,000	3607134921634,600	0,446
5	2.000.000	2362290,118	-362290,118	3108277,412	362290,118	3832857,647	766571,529	4,055	131254129344,720	0,181
6	3.252.480	2362290,118	890189,882	3998467,294	890189,882	4723047,529	787174,588	5,080	792438026643,543	0,274
7	2.336.352	2362290,118	-25938,118	3972529,176	25938,118	4748985,647	678426,521	5,856	672785947,073	0,011
8	3.496.312	2362290,118	1134021,882	5106551,059	1134021,882	5883007,529	735375,941	6,944	1286005629655,310	0,324
9	1.605.920	2362290,118	-756370,118	4350180,941	756370,118	6639377,647	737708,627	5,897	572095754869,426	0,471
10	1.698.848	2362290,118	-663442,118	3686738,824	663442,118	7302819,765	730281,976	5,048	440155443468,014	0,391
11	2.698.432	2362290,118	336141,882	4022880,706	336141,882	7638961,647	694451,059	5,793	112991365071,779	0,125
12	1.302.752	2362290,118	-1059538,118	2963342,588	1059538,118	8698499,765	724874,980	4,088	1122621022747,070	0,813
13	1.955.008	2362290,118	-407282,118	2556060,471	407282,118	9105781,882	700444,760	3,649	165878723355,073	0,208
14	1.912.576	2362290,118	-449714,118	2106346,353	449714,118	9555496,000	682535,429	3,086	202242787611,073	0,235
15	1.141.280	2362290,118	-1221010,118	885336,235	1221010,118	10776506,118	718433,741	1,232	1490865707396,480	1,070
16	1.878.876	2362290,118	-483414,118	401922,118	483414,118	11259920,235	703745,015	0,571	233689209140,484	0,257
17	1.960.368	2362290,118	-401922,118	0,000	401922,118	11661842,353	685990,727	0,000	161541388653,896	0,205
		2362290,118								
		2362290,118								
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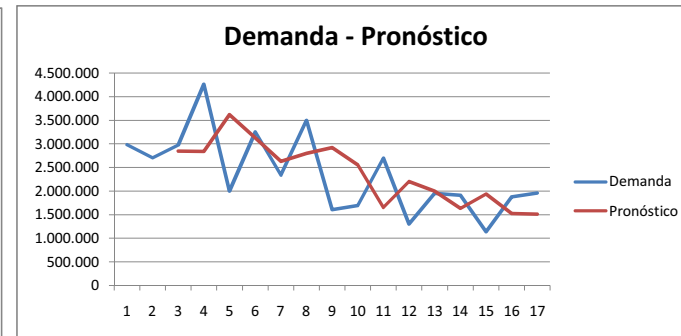
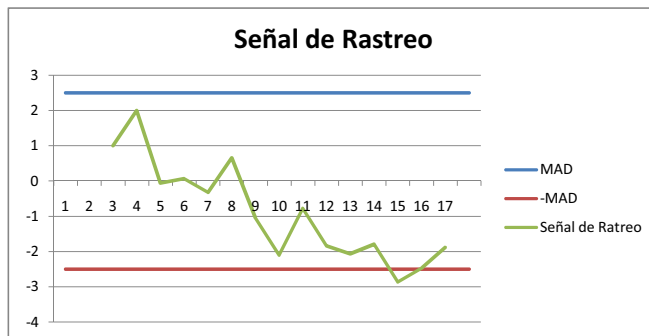
Medidas de Desempeño Finales						
MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
685990,727	0,326	6,944	0,000	658341270897,163	836353,753	0



MODELO PMS

Datos Iniciales PMS		Análisis del Error								
Período	Demanda	Pronóstico	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	2.979.504									
2	2.704.992									
3	2.973.696									
4	4.261.536	2842248,000	131448,000	131448,000	131448,000	131448,000	131448,000	1,000	17278576704,000	0,044
5	2.000.000	2839344,000	1422192,000	1553640,000	1422192,000	1553640,000	776820,000	2,000	2022630084864,000	0,334
6	3.252.480	3617616,000	-1617616,000	-63976,000	1617616,000	3171256,000	1057085,333	-0,061	2616681523456,000	0,809
7	2.336.352	3130768,000	121712,000	57736,000	121712,000	3292968,000	823242,000	0,070	14813810944,000	0,037
8	3.496.312	2626240,000	-289888,000	-232152,000	289888,000	3582856,000	716571,200	-0,324	84035052544,000	0,124
9	1.605.920	2794416,000	701896,000	469744,000	701896,000	4284752,000	714125,333	0,658	492657994816,000	0,201
10	1.698.848	2916332,000	-1310412,000	-840668,000	1310412,000	5595164,000	799309,143	-1,052	1717179609744,000	0,816
11	2.698.432	2551116,000	-852268,000	-1692936,000	852268,000	6447432,000	805929,000	-2,101	726360743824,000	0,502
12	1.302.752	1652384,000	1046048,000	-646888,000	1046048,000	7493480,000	832608,889	-0,777	1094216418304,000	0,388
13	1.955.008	2198640,000	-895888,000	-1542776,000	895888,000	8389368,000	838936,800	-1,839	802615308544,000	0,688
14	1.912.576	2000592,000	-45584,000	-1588360,000	45584,000	8434952,000	766813,818	-2,071	2077901056,000	0,023
15	1.141.280	1628880,000	283696,000	-1304664,000	283696,000	8718648,000	726554,000	-1,796	80483420416,000	0,148
16	1.878.876	1933792,000	-792512,000	-2097176,000	792512,000	9511160,000	731627,692	-2,866	628075270144,000	0,694
17	1.960.368	1526928,000	351948,000	-1745228,000	351948,000	9863108,000	704507,714	-2,477	123867394704,000	0,187
		1510078,000	450290,000	-1294938,000	450290,000	10313398,000	687559,867	-1,883	202761084100,000	0,230
		1919622,000								
		1919622,000								
		1919622,000								
		1919622,000								
		1919622,000								
		1919622,000								
		1919622,000								
		1919622,000								

Valores Iniciales	Medidas de Desempeño Finales						
N (Períodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstica	Intersecciones con cero
2	687559,867	0,348	4,866	-86329,200	708382279610,933	871195,164	5



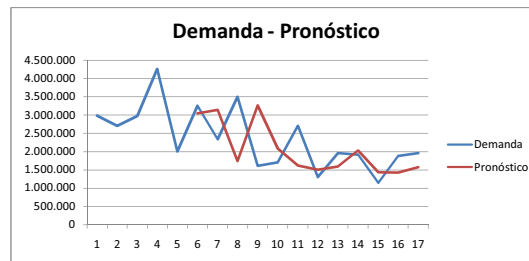
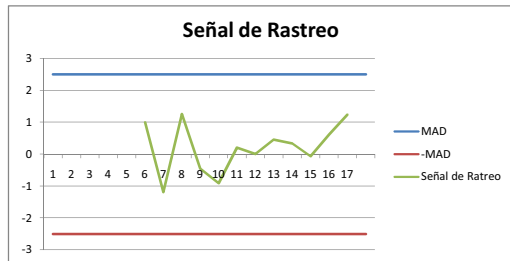
MODELO PMD

Datos Iniciales PMD		Pronóstico					Análisis del Error							
Periodo	Demanda	St'	St''	a	b	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	let (Error Absoluto)	let acumulado	MAD	SR (Señal de Rastreo)	et ² (Error Cuadrático)	Fracción Abs. del Error
1	2.979.504													
2	2.704.992													
3	2.973.696													
4	4.261.536													
5	2.000.000	2886064,000												
6	3.252.480	3313408,000												
7	2.336.352	3078410,667	3092627,556	3064193,778	-14216,889	3049976,889	202503,111	202503,111	202503,111	202503,111	202503,111	1,000	41007510009,679	0,062
8	3.496.312	3171338,667	3187719,111	3154958,222	-16380,444	3138577,778	-802225,778	-599722,667	802225,778	1004728,889	502364,444	-1,194	643566198531,162	0,343
9	1.605.920	2529610,667	2926453,333	2132768,000	-396842,667	1735925,333	1760386,667	1160664,000	1760386,667	2765115,556	921705,185	1,259	3098961216177,780	0,503
10	1.698.848	3028381,333	2909776,889	3146985,778	118604,444	3265590,222	-1659670,222	-499006,222	1659670,222	4424785,778	1106196,444	-0,451	2754505246531,160	1,033
11	2.698.432	2479528,000	2679173,333	2279882,667	-199645,333	2080237,333	-381389,333	-880395,556	381389,333	4806175,111	961235,022	-0,916	145457823580,444	0,224
12	1.302.752	2267026,667	2591645,333	1942408,000	-324618,667	1617789,333	1080642,667	200247,111	1080642,667	5886817,778	981136,296	0,204	1167788573020,450	0,400
13	1.955.008	2001066,667	2249207,111	1752926,222	-248140,444	1504785,778	-202033,778	-1786,667	202033,778	6088851,556	869835,937	-0,002	40817647363,161	0,155
14	1.912.576	1900010,667	2056034,667	1743986,667	-156024,000	1587962,667	367045,333	365258,667	367045,333	6455896,889	806987,111	0,453	134722276721,778	0,188
15	1.141.280	1985397,333	1962158,222	2008636,444	23239,111	2031875,556	-119299,556	245959,111	119299,556	6575196,444	730577,383	0,337	14232383955,753	0,062
16	1.878.876	1723445,333	1869617,778	1577272,889	-146172,444	1431100,444	-289820,444	-43861,333	289820,444	6865016,889	686501,689	-0,064	83995890017,975	0,254
17	1.960.368	1669621,333	1792821,333	1546421,333	-123200,000	1423221,333	455654,667	411793,333	455654,667	7320671,556	665515,596	0,619	207621175255,111	0,243
18		1644244,000	1679103,556	1609384,444	-34859,556	1574524,889	385843,111	797366,444	385843,111	7706514,667	642209,556	1,242	148874906391,901	0,197
19		1660174,667	1658013,333	1662336,000	2161,333	1664497,333								
20						1666658,667								
21						1668820,000								
22						1670981,333								
23						1673142,667								
						1675304,000								



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Valores Iniciales	Medidas de Desempeño Finales						
N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstica	Intersecciones con cero
3	642209,556	0,306	2,453	66469,704	706795903963,030	878094,572	8



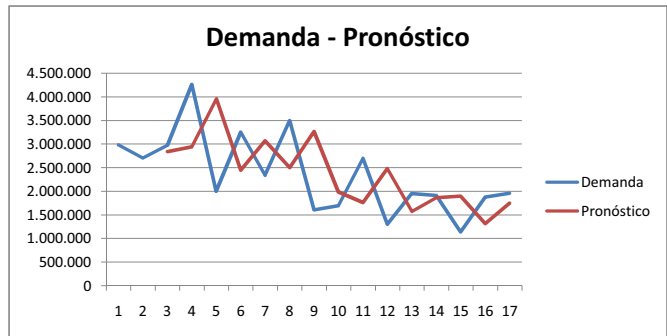
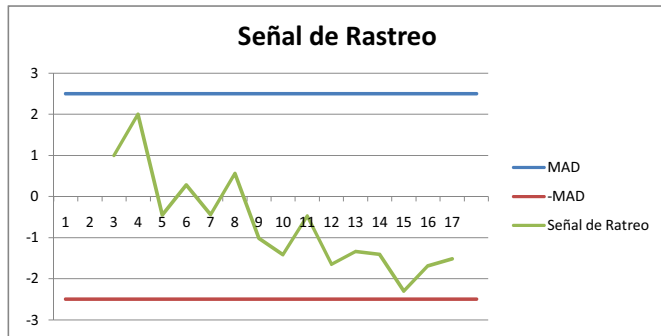
MODELO SE

Datos Iniciales SE		Análisis del Error								
Periodo	Demanda	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	2.979.504									
2	2.704.992									
3	2.973.696									
4	4.261.536	2842248,000	131448,000	131448,000	131448,000	131448,000	131448,000	1,000	17278576704,000	0,044
5	2.000.000	2943462,960	1318073,040	1449521,040	1318073,040	1449521,040	724760,520	2,000	1737316538774,840	0,309
6	3.252.480	3958379,201	-1958379,201	-508858,161	1958379,201	3407900,241	1135966,747	-0,448	3835249094126,050	0,979
7	2.336.352	2450427,216	802052,784	293194,623	802052,784	4209953,025	1052488,256	0,279	643288668026,995	0,247
8	3.496.312	3068007,860	-731655,860	-438461,237	731655,860	4941608,884	988321,777	-0,444	535320297066,007	0,313
9	1.605.920	2504632,848	991679,152	553217,916	991679,152	5933288,037	988881,339	0,559	983427541034,781	0,284
10	1.698.848	3268225,795	-1662305,795	-1109087,879	1662305,795	7595593,832	1085084,833	-1,022	2763260556021,800	1,035
11	2.698.432	1988250,333	-289402,333	-1398490,212	289402,333	7884996,164	985624,521	-1,419	83753710256,268	0,170
12	1.302.752	1765410,537	933021,463	-465468,749	933021,463	8818017,628	979779,736	-0,475	870529051250,159	0,346
13	1.955.008	2483837,063	-1181085,063	-1646553,812	1181085,063	9999102,691	999910,269	-1,647	1394961927004,330	0,907
14	1.912.576	1574401,565	380606,435	-1265947,377	380606,435	10379709,127	943609,921	-1,342	144861258680,281	0,195
15	1.141.280	1867468,520	45107,480	-1220839,897	45107,480	10424816,607	868734,717	-1,405	2034684765,099	0,024
16	1.878.876	1902201,280	-760921,280	-1981761,176	760921,280	11185737,886	860441,376	-2,303	579001193697,088	0,667
17	1.960.368	1316291,894	562584,106	-1419177,071	562584,106	11748321,992	839165,857	-1,691	316500875985,942	0,299
		1749481,656	210886,344	-1208290,726	210886,344	11959208,336	797280,556	-1,516	44473050216,830	0,108
		1911864,141								
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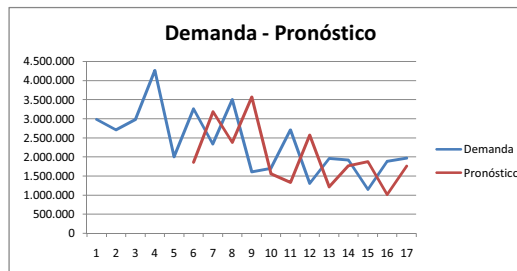
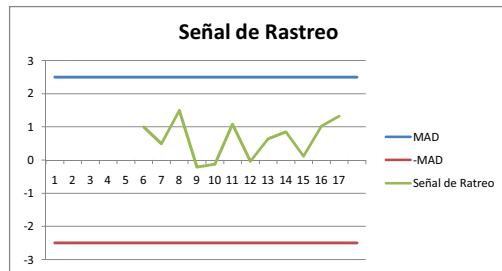
Valores Iniciales		Medidas de Desempeño Finales						
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,770	2,000	797280,556	0,395	4,303	-80552,715	930083801574,031	998257,662	5



MODELO SED

Datos Iniciales SED		Pronóstico					Análisis del Error							
Periodo	Demanda	St'	St''	a	b	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	2.979.504													
2	2.704.992													
3	2.973.696													
4	4.261.536													
5	2.000.000													
6	3.252.480													
7	2.336.352													
8	3.496.312													
9	1.605.920													
10	1.698.848													
11	2.698.432													
12	1.302.752													
13	1.955.008													
14	1.912.576													
15	1.141.280													
16	1.878.876													
17	1.960.368													
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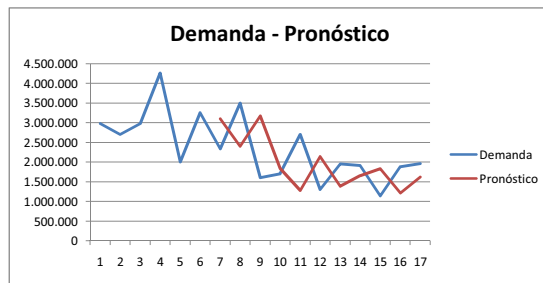
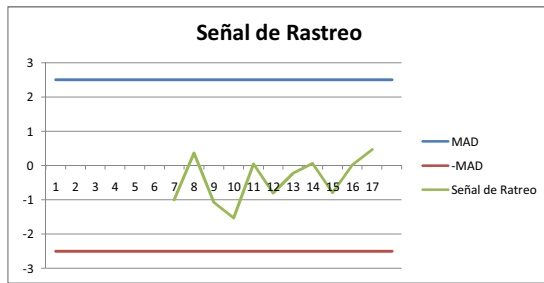
Valores Iniciales		Medidas de Desempeño Finales						
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,580	3,000	899027,777	0,463	1,709	98817,155	1096240776706,260	1093571,684	4,000



MODELO SET

Datos Iniciales SET		Pronóstico			Análisis del Error							
Periodo	Demanda	St	Tt	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	2.979.504											
2	2.704.992											
3	2.973.696											
4	4.261.536											
5	2.000.000											
6	3.252.480											
7	2.336.352											
8	3.496.312											
9	1.605.920											
10	1.698.848											
11	2.698.432											
12	1.302.752											
13	1.955.008											
14	1.912.576											
15	1.141.280											
16	1.878.876											
17	1.960.368											
		3082475,733	15364,114	3097839,848	-761487,848	-761487,848	761487,848	761487,848	761487,848	-1,000	579863742071,490	0,326
		2656176,896	-258466,916	2397709,980	1098602,020	337114,172	1098602,020	1860089,867	930044,934	0,362	1206926397728,680	0,314
		3034899,152	136590,371	3171489,522	-1565569,522	-1228455,350	1565569,522	3425659,390	1141886,463	-1,076	2451007929126,260	0,975
		2263459,199	-426388,430	1837070,770	-138222,770	-1366678,120	138222,770	3563882,159	890970,540	-1,534	19105534068,765	0,081
		1756901,563	-476093,338	1280808,226	1417623,774	50945,654	1417623,774	4981505,934	996301,187	0,051	2009657165608,760	0,525
		2103030,015	33684,172	2136714,186	-833962,186	-783016,532	833962,186	5815468,120	969244,687	-0,808	695492928336,591	0,640
		1653016,118	-266208,631	1386807,488	568200,512	-214816,020	568200,512	6383668,632	911952,662	-0,236	322851822199,435	0,291
		1716363,785	-61883,726	1654480,058	258095,942	43279,922	258095,942	6641764,574	830220,572	0,052	66613515043,963	0,135
		1804175,705	30927,574	1835103,279	-693823,279	-650543,357	693823,279	7335587,853	815065,317	-0,798	481390742143,140	0,608
		1432685,777	-218571,277	1214114,500	664761,500	14218,143	664761,500	8000349,352	800034,935	0,018	441907851559,293	0,354
		1599676,170	20476,958	1620153,129	340214,871	354433,014	340214,871	8340564,224	758233,111	0,467	115746158735,163	0,174
		1817477,754	142818,226	1960295,980								
				1960295,980								
				1960295,980								
				1960295,980								
				1960295,980								

Valores Iniciales			Medidas de Desempeño Finales								
Alpha	Beta	N (Periodos de Promedio)	MAD	MAPE	Pendiente	Intercepto	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,58	0,62	6	758233,111	0,402	15364,114	2974926,933	2,001	32221,183	762778526056,504	916000,207	7



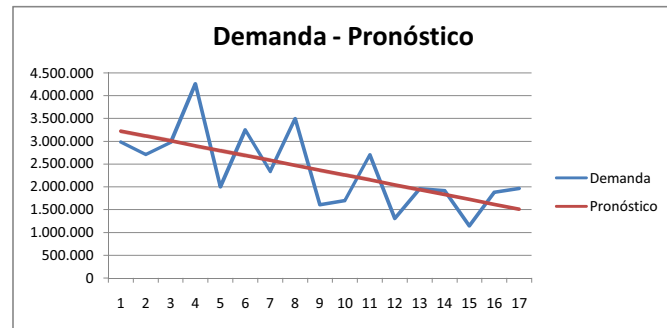
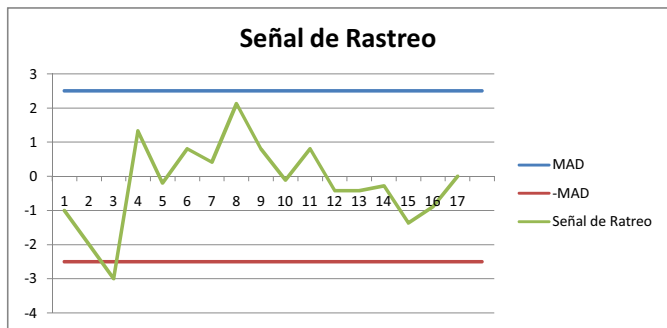
MODELO REGRESION

Datos Iniciales <i>Reg. Lineal</i>		Pronóstico	Análisis del Error							
Periodo	Demanda		Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)
1	2.979.504	3220675,451	-241171,451	-241171,451	241171,451	241171,451	241171,451	-1,000	58163668767,988	0,081
2	2.704.992	3113377,284	-408385,284	-649556,735	408385,284	649556,735	324778,368	-2,000	166778540444,002	0,151
3	2.973.696	3006079,118	-32383,118	-681939,853	32383,118	681939,853	227313,284	-3,000	1048666308,543	0,011
4	4.261.536	2898780,951	1362755,049	680815,196	1362755,049	2044694,902	511173,725	1,332	1857101323628,430	0,320
5	2.000.000	2791482,784	-791482,784	-110667,588	791482,784	2836177,686	567235,537	-0,195	626444997865,007	0,396
6	3.252.480	2684184,618	568295,382	457627,794	568295,382	3404473,069	567412,178	0,807	322959641603,676	0,175
7	2.336.352	2576886,451	-240534,451	217093,343	240534,451	3645007,520	520715,360	0,417	57856822108,439	0,103
8	3.496.312	2469588,284	1026723,716	1243817,059	1026723,716	4671731,235	583966,404	2,130	1054161588352,630	0,294
9	1.605.920	2362290,118	-756370,118	487446,941	756370,118	5428101,353	603122,373	0,808	572095754869,426	0,471
10	1.698.848	2254991,951	-556143,951	-68697,010	556143,951	5984245,304	598424,530	-0,115	309296094212,081	0,327
11	2.698.432	2147693,784	550738,216	482041,206	550738,216	6534983,520	594089,411	0,811	303312582217,302	0,204
12	1.302.752	2040395,618	-737643,618	-255602,412	737643,618	7272627,137	606052,261	-0,422	544118106655,440	0,566
13	1.955.008	1933097,451	21910,549	-233691,863	21910,549	7294537,686	561118,284	-0,416	480072158,341	0,011
14	1.912.576	1825799,284	86776,716	-146915,147	86776,716	7381314,402	527236,743	-0,279	7530198385,297	0,045
15	1.141.280	1718501,118	-577221,118	-724136,265	577221,118	7958535,520	530569,035	-1,365	333184218657,720	0,506
16	1.878.876	1611202,951	267673,049	-456463,216	267673,049	8226208,569	514138,036	-0,888	71648861171,453	0,142
17	1.960.368	1503904,784	456463,216	0,000	456463,216	8682671,784	510745,399	0,000	208358667274,655	0,233
18		1396606,618								
19		1289308,451								
20		1182010,284								
21		1074712,118								
22		967413,951								
23		860115,784								



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Medidas de Desempeño Finales									
Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
3327973,618	-107298,167	-0,648	510745,399	0,237	5,130	0,000	382031753216,496	637109,675	7

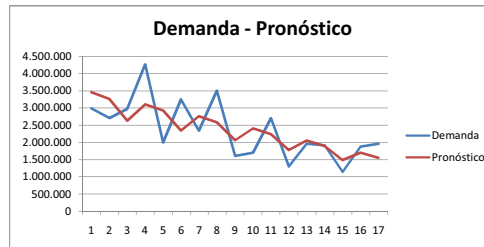
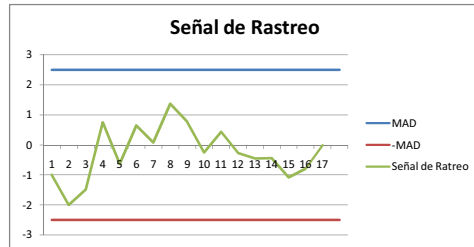


MODELO DESCOMPOSICION

Datos Iniciales Descomp.		Pronóstico							Análisis del Error						
Periodo	Demanda	Promedio	Razón	Índice Estacional	Suavización	Ft sin ajuste	Ft ajustado	et (Error del Pronóstico)	RSFE (Error Acumulado)	let1 (Error Absoluto)	let1 acumulado	MAD	SR (Señal de Rastreo)	et2 (Error Cuadrático)	Fracción Abs. del Error
1	2.979.504	2362290,118	1,261	1,066	2794862,380	3237203,187	3451067,900	-471563,900	-471563,900	471563,900	471563,900	471563,900	-1,000	222372511617,242	0,158
2	2.704.992	2362290,118	1,145	1,042	2595321,581	3127839,053	3260012,045	-555020,045	-1026583,945	555020,045	1026583,945	513291,973	-2,000	308047250661,981	0,205
3	2.973.696	2362290,118	1,259	0,870	3417986,168	3018474,920	2626115,599	347580,401	-679003,544	347580,401	1374164,346	458054,782	-1,482	120812134951,193	0,117
4	4.261.536	2362290,118	1,804	1,066	3997446,101	2909110,786	3101300,187	1160235,813	481232,268	1160235,813	2534400,158	633600,040	0,760	1346147140862,750	0,272
5	2.000.000	2362290,118	0,847	1,042	1918912,575	2799746,652	2918055,454	-918055,454	-436823,186	918055,454	3452455,613	690491,123	-0,633	842825817436,929	0,459
6	3.252.480	2362290,118	1,377	0,870	3738422,372	2690382,519	2340670,600	911809,400	474986,214	911809,400	4364265,013	727377,502	0,653	831396382567,177	0,280
7	2.336.352	2362290,118	0,989	1,066	2191566,889	2581018,385	2751532,475	-415180,475	59805,739	415180,475	4779445,488	682777,927	0,088	172374826784,695	0,178
8	3.496.312	2362290,118	1,480	1,042	3354558,531	2471654,251	2576098,864	920213,136	980018,876	920213,136	5699658,625	712457,328	1,376	846792216382,241	0,263
9	1.605.920	2362290,118	0,680	0,870	1845855,241	2362290,118	2055225,600	-449305,600	530713,276	449305,600	6148964,225	683218,247	0,777	201875522191,361	0,280
10	1.698.848	2362290,118	0,719	1,066	1593569,388	2252925,984	2401764,763	-702916,763	-172203,487	702916,763	6851880,987	685188,099	-0,251	494091975034,406	0,414
11	2.698.432	2362290,118	1,142	1,042	2589027,548	2143561,850	2234142,273	464289,727	292086,240	464289,727	7316170,714	665106,429	0,439	215564950804,524	0,172
12	1.302.752	2362290,118	0,551	0,870	1497391,904	2034197,717	1769780,600	-467028,600	-174942,360	467028,600	7783199,315	648599,943	-0,270	218115713545,163	0,358
13	1.955.008	2362290,118	0,828	1,066	1833855,001	1924833,583	2051997,050	-96989,050	-271931,410	96989,050	7880188,365	606168,336	-0,449	9406875836,970	0,050
14	1.912.576	2362290,118	0,810	1,042	1835033,068	1815469,449	1892185,682	20390,318	-251541,092	20390,318	7900578,683	564327,049	-0,446	415765070,455	0,011
15	1.141.280	2362290,118	0,483	0,870	1311794,902	1706105,316	1484335,601	-343055,601	-594596,693	343055,601	8243634,283	549575,619	-1,082	117687145172,054	0,301
16	1.878.876	2362290,118	0,795	1,066	1762440,946	1596741,182	1702229,338	176646,662	-417950,030	176646,662	8420280,946	526267,559	-0,794	31204043317,989	0,094
17	1.960.368	2362290,118	0,830	1,042	1880887,403	1487377,048	1550229,091	410138,909	-7811,122	410138,909	8830419,855	519436,462	-0,015	168213924586,118	0,209
18				0,870		1378012,914	1198890,601								
19				1,027		1268648,781	1302930,250								
20				1,022		1159284,647	1184434,149								
21				0,773		1049920,513	811391,994								
22				0,833		940556,380	783277,751								
23				1,065		831192,246	885600,814								

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Valores Iniciales	Medidas de Desempeño Finales									
Estacionalidad	Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
3	3346567,321	-109364,134	-0,665	519436,462	0,225	3,376	-459,478	361608482166,074	619845,959	6,000



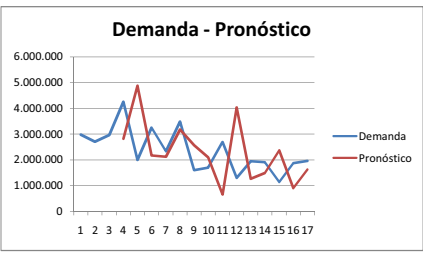
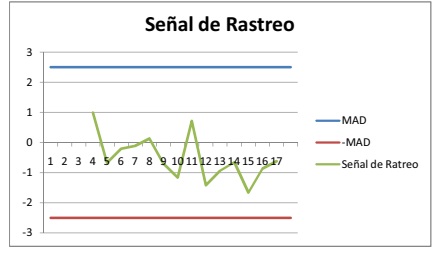
MODELO WINTERS

Datos Iniciales Winters	
Periodo	Demanda
1	2.979.504
2	2.704.992
3	2.973.696
4	4.261.536
5	2.000.000
6	3.252.480
7	2.336.352
8	3.496.312
9	1.605.920
10	1.698.848
11	2.698.432
12	1.302.752
13	1.955.008
14	1.912.576
15	1.141.280
16	1.878.876
17	1.960.368

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Pronóstico				Análisis del Error								
St	It	Tt	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et*2 (Error Cuadrático)	Fracción Abs. del Error	
				1,048								
				1,013								
2973696,000		-5808,000										
4024808,025	1,030	797451,219	2824564,674	1436971,326	1436971,326	1436971,326	1436971,326	1436971,326	1,000	2064886590382,310	0,337	
2828658,588	0,790	-717685,280	4885135,068	-2885135,068	-1448163,743	2885135,068	4322106,394	2161053,197	-0,670	8324004362179,060	1,443	
2843934,432	1,113	-160634,826	2174086,972	1078393,028	-369770,715	1078393,028	5400499,422	1800166,474	-0,205	1162931522733,320	0,332	
2876050,415	0,806	-14144,211	2118910,872	217441,128	-152329,587	217441,128	5617940,549	1404485,137	-0,108	47280643995,539	0,093	
3057627,538	1,135	134604,003	3185131,679	311180,321	158850,733	311180,321	5929120,870	1185824,174	0,134	96833191900,350	0,089	
2352002,521	0,716	-503970,052	2573651,905	-967731,905	-808881,172	967731,905	6896852,775	1149475,462	-0,704	936505039840,740	0,603	
1601946,372	1,081	-690995,486	2097939,412	-399091,412	-1207972,584	399091,412	7295944,187	1042277,741	-1,159	159273955461,155	0,235	
2910990,325	0,870	829034,488	652346,368	2046085,632	838113,048	2046085,632	9342029,819	1167753,727	0,718	4186466412656,160	0,758	
1965860,717	0,776	-519330,225	4041730,322	-2738978,322	-1900865,275	2738978,322	12081008,142	1342334,238	-1,416	7502002250801,000	2,102	
2006868,704	0,946	-93473,184	1258549,846	696458,154	-1204407,120	696458,154	12777466,296	1277746,630	-0,943	485053960881,542	0,356	
2300297,458	0,816	200572,289	1483920,235	428655,765	-775751,355	428655,765	13206122,061	1200556,551	-0,646	183745764652,159	0,224	
1594716,679	0,778	-488104,043	2365943,776	-1224663,776	-2000415,131	1224663,776	14430785,837	1202565,486	-1,663	1499801364022,490	1,073	
1943067,591	0,926	147601,723	903386,618	975489,382	-1024925,750	975489,382	15406275,218	1185098,094	-0,865	951579533631,994	0,519	
2391329,215	0,808	376103,248	1626263,043	334104,957	-690820,793	334104,957	15740380,175	1124312,870	-0,614	111626122183,907	0,170	
			2563469,629									
			2563469,629									
			2563469,629									
			2563469,629									
			2563469,629									

Valores Iniciales			Medidas de Desempeño Finales						
Alpha	Beta	Gamma	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstica	Intersecciones con cero
0,7	0,76	0,73	1124312,870	0,595	2,663	-49344,342	1979427908237,270	1460031,367	5



COMPARACIONES

Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	Intersecciones con cero (%)
Promedio Móvil Simple	687559,867	5	4,866	0,348	708382279610,933	871195,164	0,294
Suavización Exponencial	797280,556	5	4,303	0,395	930083801574,031	998257,662	0,294
Suavización Exp. con Ajuste a la Tendencia	758233,111	7	2,001	0,402	762778526056,504	916000,207	0,412
Regresión Lineal	510745,399	7	5,130	0,237	382031753216,496	637109,675	0,412
Suavización Exponencial Doble	899027,777	4	1,709	0,463	1096240776706,260	1093571,684	0,235
Promedio Móvil Doble	642209,556	8	2,453	0,306	706795903963,030	878094,572	0,471
Descomposición	519436,462	6	3,376	0,225	361608482166,074	619845,959	0,353
Winters	1124312,870	5	2,663	0,595	1979427908237,270	1460031,367	0,294
Media	685990,727	0	6,944	0,326	658341270897,163	836353,753	0,000



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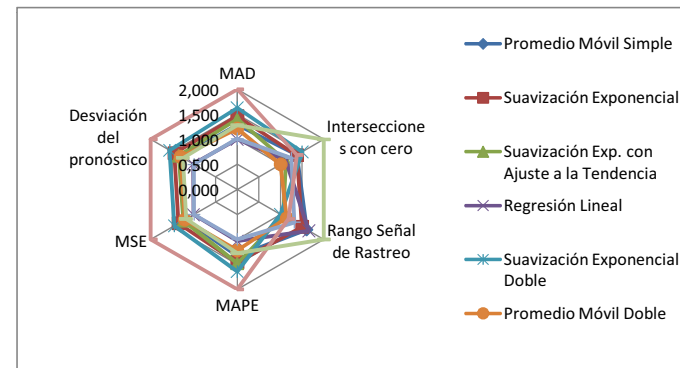
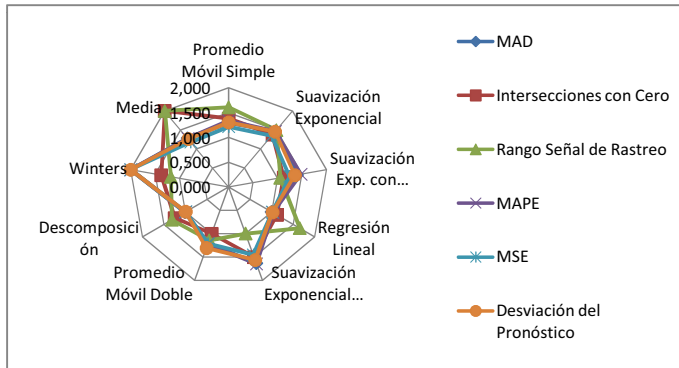
[SE Doble](#)

[PM Doble](#)

[Descomposicion](#)

[Winters](#)

[Media](#)



Datos Normalizados							
Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	
Promedio Móvil Simple	1,288	1,375	1,603	1,333	1,214	1,299	
Suavización Exponencial	1,467	1,375	1,496	1,460	1,351	1,450	
Suavización Exp. con Ajuste a la Tendencia	1,403	1,125	1,056	1,478	1,248	1,352	
Regresión Lineal	1,000	1,125	1,653	1,034	1,013	1,021	
Suavización Exponencial Doble	1,633	1,500	1,000	1,643	1,454	1,564	
Promedio Móvil Doble	1,214	1,000	1,142	1,218	1,213	1,307	
Descomposición	1,014	1,250	1,318	1,000	1,000	1,000	
Winters	2,000	1,375	1,182	2,000	2,000	2,000	
Media	1,286	2,000	2,000	1,275	1,183	1,258	

Periodo	Demanda
1	1.835.000
2	1.636.500
3	1.851.500
4	1.225.000
5	1.525.000
6	1.485.000
7	1.336.000
8	1.760.000
9	1.388.000
10	1.032.000
11	1.364.000
12	1.165.000
13	1.289.777
14	963.500
15	867.000

FOR TSM

NÚMERO DE PERIODOS DE DEMANDA

15

Elegir Modelos



Datos	15,000
Desviación Estándar	305.886,863
Promedio	1.381.551,800
Coefficiente Correlación	(0,794)
Coefficiente de Variación	0,221

Creado por:
 Rosana Builes Palacio
 María Cristina Bravo Gómez



[Comparaciones](#)

Modelos Pronosticados

[PM Simple](#)

[SE](#)

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[Reg Lineal](#)

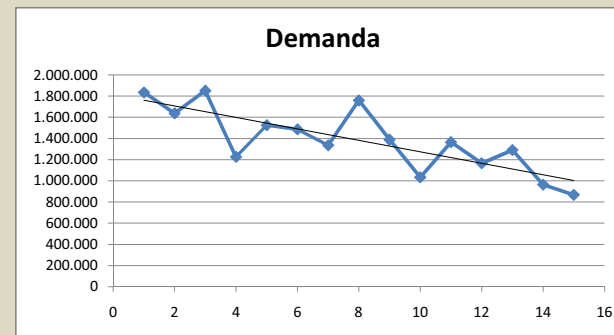
[SE Doble](#)

[PM Doble](#)


[Descomposicion](#)

[Winters](#)

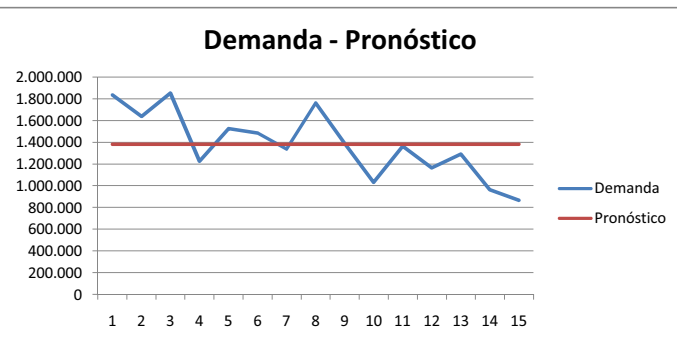
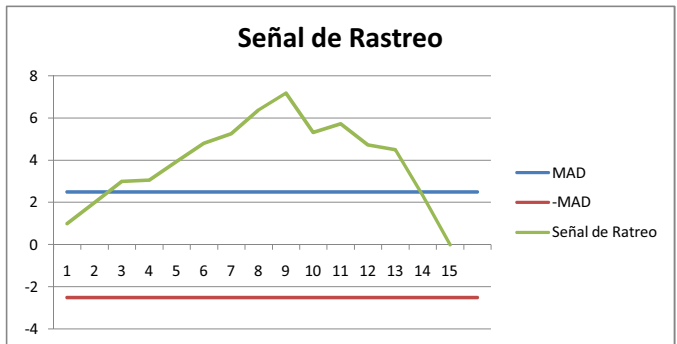
[Media](#)



MODELO MEDIA

Datos Iniciales Media		 PM Simple SE SET Reg Lineal SE Doble PM Doble Descomposicion Winters Comparaciones	Pronóstico		Análisis del Error						
Periodo	Demanda		Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	1.835.000		1381551,800	453448,200	453448,200	453448,200	453448,200	453448,200	1,000	205615270083,240	0,247
2	1.636.500		1381551,800	254948,200	708396,400	254948,200	708396,400	354198,200	2,000	64998584683,240	0,156
3	1.851.500		1381551,800	469948,200	1178344,600	469948,200	1178344,600	392781,533	3,000	220851310683,240	0,254
4	1.225.000		1381551,800	-156551,800	1021792,800	156551,800	1334896,400	333724,100	3,062	24508466083,240	0,128
5	1.525.000		1381551,800	143448,200	1165241,000	143448,200	1478344,600	295668,920	3,941	20577386083,240	0,094
6	1.485.000		1381551,800	103448,200	1268689,200	103448,200	1581792,800	263632,133	4,812	10701530083,240	0,070
7	1.336.000		1381551,800	-45551,800	1223137,400	45551,800	1627344,600	232477,800	5,261	2074966483,240	0,034
8	1.760.000		1381551,800	378448,200	1601585,600	378448,200	2005792,800	250724,100	6,388	143223040083,240	0,215
9	1.388.000		1381551,800	6448,200	1608033,800	6448,200	2012241,000	223582,333	7,192	41579283,240	0,005
10	1.032.000		1381551,800	-349551,800	1258482,000	349551,800	2361792,800	236179,280	5,329	122186460883,240	0,339
11	1.364.000		1381551,800	-17551,800	1240930,200	17551,800	2379344,600	216304,055	5,737	308065683,240	0,013
12	1.165.000		1381551,800	-216551,800	1024378,400	216551,800	2595896,400	216324,700	4,735	46894682083,240	0,186
13	1.289.777		1381551,800	-91774,800	932603,600	91774,800	2687671,200	206743,938	4,511	8422613915,040	0,071
14	963.500		1381551,800	-418051,800	514551,800	418051,800	3105723,000	221837,357	2,320	174767307483,240	0,434
15	867.000		1381551,800	-514551,800	0,000	514551,800	3620274,800	241351,653	0,000	264763554883,240	0,593
			1381551,800								
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Medidas de Desempeño Finales						
MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
241351,653	0,189	7,192	0,000	87328987898,693	305886,863	1



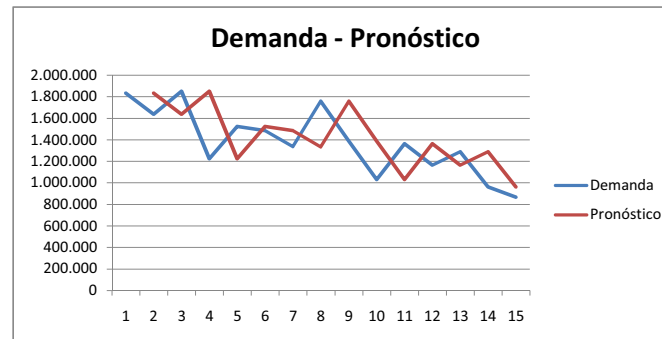
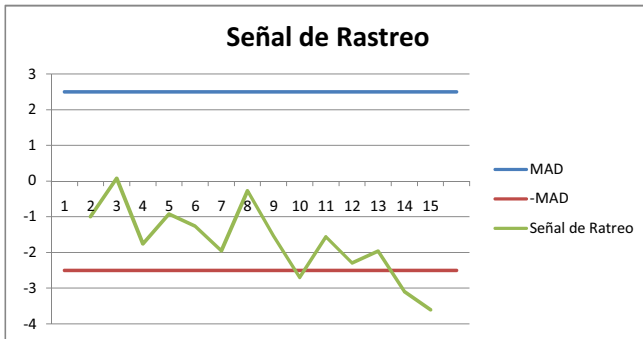
MODELO PMS

Datos Iniciales PMS		Análisis del Error								
Periodo	Demanda	Pronóstico	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	1.835.000									
2	1.636.500	1835000,000	-198500,000	-198500,000	198500,000	198500,000	198500,000	-1,000	39402250000,000	0,121
3	1.851.500	1636500,000	215000,000	16500,000	215000,000	413500,000	206750,000	0,080	46225000000,000	0,116
4	1.225.000	1851500,000	-626500,000	-610000,000	626500,000	1040000,000	346666,667	-1,760	392502250000,000	0,511
5	1.525.000	1225000,000	300000,000	-310000,000	300000,000	1340000,000	335000,000	-0,925	90000000000,000	0,197
6	1.485.000	1525000,000	-40000,000	-350000,000	40000,000	1380000,000	276000,000	-1,268	16000000000,000	0,027
7	1.336.000	1485000,000	-149000,000	-499000,000	149000,000	1529000,000	254833,333	-1,958	22201000000,000	0,112
8	1.760.000	1336000,000	424000,000	-75000,000	424000,000	1953000,000	279000,000	-0,269	179776000000,000	0,241
9	1.388.000	1760000,000	-372000,000	-447000,000	372000,000	2325000,000	290625,000	-1,538	138384000000,000	0,268
10	1.032.000	1388000,000	-356000,000	-803000,000	356000,000	2681000,000	297888,889	-2,696	126736000000,000	0,345
11	1.364.000	1032000,000	332000,000	-471000,000	332000,000	3013000,000	301300,000	-1,563	110224000000,000	0,243
12	1.165.000	1364000,000	-199000,000	-670000,000	199000,000	3212000,000	292000,000	-2,295	396010000000,000	0,171
13	1.289.777	1165000,000	124777,000	-545223,000	124777,000	3336777,000	278064,750	-1,961	15569299729,000	0,097
14	963.500	1289777,000	-326277,000	-871500,000	326277,000	3663054,000	281773,385	-3,093	106456680729,000	0,339
15	867.000	963500,000	-96500,000	-968000,000	96500,000	3759554,000	268539,571	-3,605	9312250000,000	0,111
		867000,000								
		867000,000								
		867000,000								
		867000,000								
		867000,000								
		867000,000								



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Valores Iniciales	Medidas de Desempeño Finales						
N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
1	268539,571	0,207	3,684	-69142,857	94142123604,143	318408,268	2



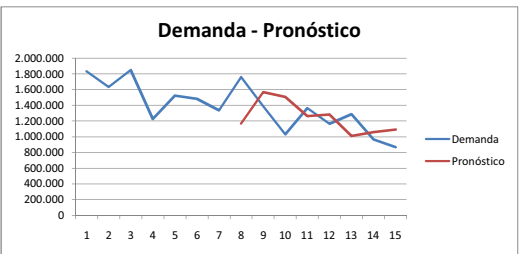
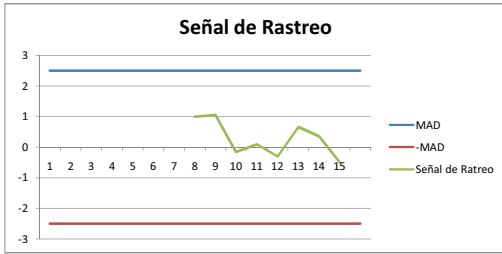
MODELO PMD

Datos Iniciales PMD		Pronóstico					Análisis del Error							
Periodo	Demanda	St'	St''	a	b	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	1.835.000													
2	1.636.500													
3	1.851.500													
4	1.225.000													
5	1.525.000													
6	1.485.000													
7	1.336.000													
8	1.760.000													
9	1.388.000													
10	1.032.000													
11	1.364.000													
12	1.165.000													
13	1.289.777													
14	963.500													
15	867.000													
16														
17														
18														
19														
20														
21														



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Valores Iniciales	Medidas de Desempeño Finales						
N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
4	259047,836	0,210	1,558	-16199,940	96582377367,345	332234,646	5



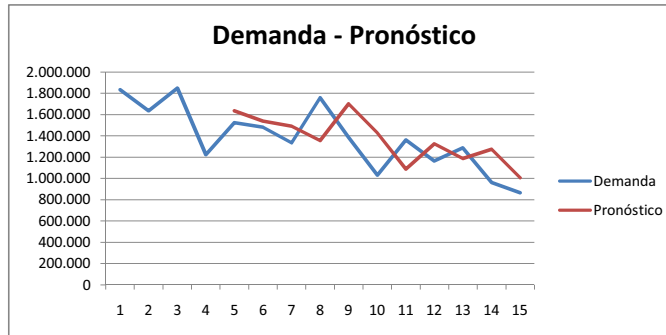
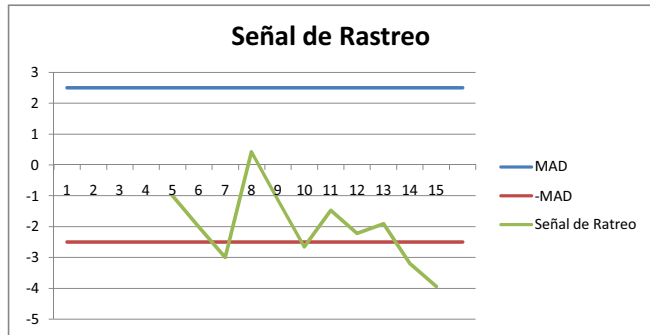
MODELO SE

Datos Iniciales SE		Análisis del Error								
Periodo	Demanda	Pronóstico Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	1.835.000									
2	1.636.500									
3	1.851.500									
4	1.225.000									
5	1.525.000	1637000,000	-112000,000	-112000,000	112000,000	112000,000	112000,000	-1,000	12544000000,000	0,073
6	1.485.000	1540680,000	-55680,000	-167680,000	55680,000	167680,000	83840,000	-2,000	3100262400,000	0,037
7	1.336.000	1492795,200	-156795,200	-324475,200	156795,200	324475,200	108158,400	-3,000	24584734743,040	0,117
8	1.760.000	1357951,328	402048,672	77573,472	402048,672	726523,872	181630,968	0,427	161643134656,964	0,228
9	1.388.000	1703713,186	-315713,186	-238139,714	315713,186	1042237,058	208447,412	-1,142	99674815763,757	0,227
10	1.032.000	1432199,846	-400199,846	-638339,560	400199,846	1442436,904	240406,151	-2,655	160159916761,475	0,388
11	1.364.000	1088027,978	275972,022	-362367,538	275972,022	1718408,926	245486,989	-1,476	76160556681,688	0,202
12	1.165.000	1325363,917	-160363,917	-522731,455	160363,917	1878772,842	234846,605	-2,226	25716585869,863	0,138
13	1.289.777	1187450,948	102326,052	-420405,404	102326,052	1981098,894	220122,099	-1,910	10470620840,650	0,079
14	963.500	1275451,353	-311951,353	-732356,757	311951,353	2293050,247	229305,025	-3,194	97313646496,811	0,324
15	867.000	1007173,189	-140173,189	-872529,946	140173,189	2433223,436	221202,131	-3,944	19648523023,260	0,162



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Valores Iniciales		Medidas de Desempeño Finales						
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,860	4,000	221202,131	0,180	4,372	-79320,904	62819708839,773	262871,984	2



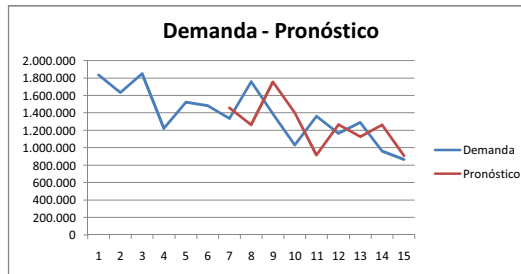
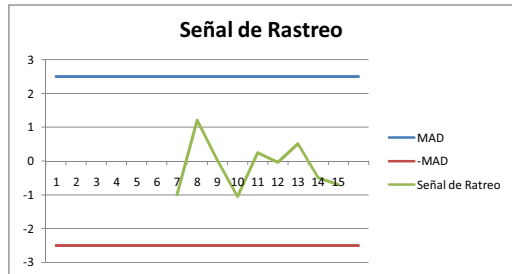
MODELO SED

Datos Iniciales SED		Pronóstico					Análisis del Error							
Periodo	Demanda	St'	St''	a	b	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	1.835.000													
2	1.636.500													
3	1.851.500													
4	1.225.000													
5	1.525.000													
6	1.485.000	1637000,000	1637000,000											
7	1.336.000	1547320,000	1584088,800	1510551,200	-52911,200									
8	1.760.000	1422641,200	1488834,716	1356447,684	-95254,084	1457640,000	-121640,000	-121640,000	121640,000	121640,000	121640,000	-1,000	14796289600,000	0,091
9	1.388.000	1621682,892	1567215,140	1676150,644	78380,424	1261193,600	498806,400	377166,400	498806,400	620446,400	310223,200	1,216	248807824680,959	0,283
10	1.032.000	1483809,986	1518006,099	1449613,873	-49209,041	1754531,068	-366531,068	10635,332	366531,068	986977,468	328992,489	0,032	134345023809,220	0,264
11	1.364.000	1217242,094	1340555,336	1093928,852	-177450,763	1400404,832	-368404,832	-357769,500	368404,832	1355382,300	338845,575	-1,056	135722119946,224	0,357
12	1.165.000	1303829,259	1318886,950	1288771,567	-21668,386	916478,089	447521,911	89752,411	447521,911	1802904,210	360580,842	0,249	200275860483,901	0,328
13	1.289.777	1221919,996	1261676,447	1182163,545	-57210,503	1267103,181	-102103,181	-12350,770	102103,181	1905007,391	317501,232	-0,039	10425059590,867	0,088
14	963.500	1261955,628	1261841,164	1262070,093	164,717	1124953,042	164823,958	152473,188	164823,958	2069831,350	295690,193	0,516	27166937237,087	0,128
15	867.000	1085866,808	1158016,294	1013717,321	-103824,870	1262234,809	-298734,809	-146261,621	298734,809	2368566,159	296070,770	-0,494	89242486366,709	0,310
16		956735,391	1039260,561	874210,221	-118755,733	909892,451	-42892,451	-189154,072	42892,451	2411458,610	267939,846	-0,706	1839762363,829	0,049
17						75454,488								
18						636698,756								
19						517943,023								
20						399187,291								
21						280431,558								
						161675,826								



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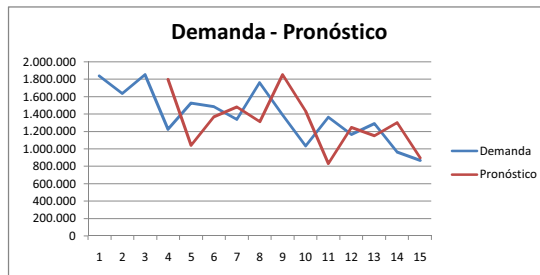
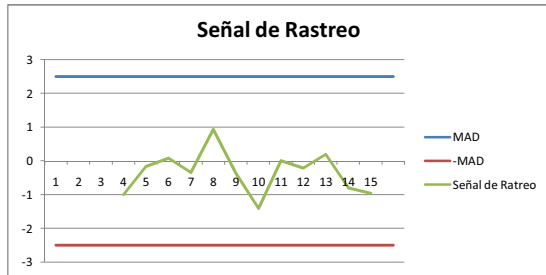
Valores Iniciales		Medidas de Desempeño Finales						
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,590	4,000	267939,846	0,211	2,272	-21017,119	95846818230,977	328371,239	6,000



MODELO SET

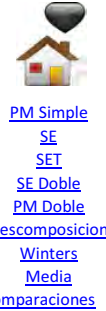
Datos Iniciales SET		Pronóstico			Análisis del Error							
Periodo	Demanda	St	Tt	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et ² (Error Cuadrático)	Fracción Abs. del Error
1	1.835.000											
2	1.636.500											
3	1.851.500											
4	1.225.000											
5	1.525.000											
6	1.485.000											
7	1.336.000											
8	1.760.000											
9	1.388.000											
10	1.032.000											
11	1.364.000											
12	1.165.000											
13	1.289.777											
14	963.500											
15	867.000											
		1790833,333	8250,000	1799083,333	-574083,333	-574083,333	574083,333	574083,333	574083,333	-1,000	329571673611,111	0,469
		1362780,000	-323340,533	1039439,467	485560,533	-88522,800	485560,533	1059643,867	529821,933	-0,167	235769031530,951	0,318
		1408465,472	-42880,769	1365584,703	119415,297	30892,497	119415,297	1179059,164	393019,721	0,079	14260013224,471	0,080
		1456340,329	26093,506	1482433,835	-146433,835	-115541,338	146433,835	1325492,999	331373,250	-0,349	21442868056,743	0,110
		1371144,120	-58486,677	1312657,444	447342,556	331801,218	447342,556	1772835,555	354567,111	0,936	200115362672,244	0,254
		1652637,786	199898,384	1852536,170	-464536,170	-132734,952	464536,170	2237371,726	372895,288	-0,356	215793853508,443	0,335
		1499488,681	-68417,708	1431070,973	-399070,973	-531805,925	399070,973	2636442,698	376634,671	-1,412	159257641260,779	0,387
		1127777,033	-298921,102	828855,931	535144,069	3338,144	535144,069	3171586,767	396448,346	0,008	286379174099,749	0,392
		1235565,424	10178,112	1245743,536	-80743,536	-77405,392	80743,536	3252330,302	361370,034	-0,214	6519518532,233	0,069
		1184378,449	-36459,354	1147919,096	141857,906	64452,514	141857,906	3394188,208	339418,821	0,190	20123665382,440	0,110
		1255731,103	45477,772	1301208,875	-337708,875	-273256,361	337708,875	3731897,083	339263,371	-0,805	114047284116,669	0,351
		1044550,130	-149582,874	894967,256	-27967,256	-301223,617	27967,256	3759864,339	313322,028	-0,961	782167408,761	0,032
		873712,141	-165736,761	707975,380								
				707975,380								
				707975,380								
				707975,380								
				707975,380								
				707975,380								

Valores Iniciales			Medidas de Desempeño Finales									
Alpha	Beta	N (Periodos de Promedio)	MAD	MAPE	Pendiente	Intercepto	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero	
0,76	0,76	3	313322,028	0,242	8250,000	1757833,333	2,348	-25101,968	133671854450,383	381868,880	8	

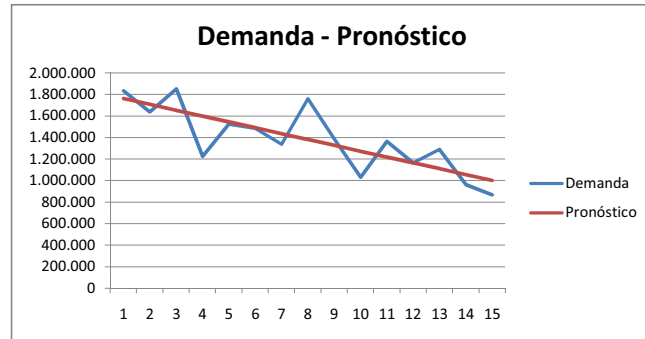
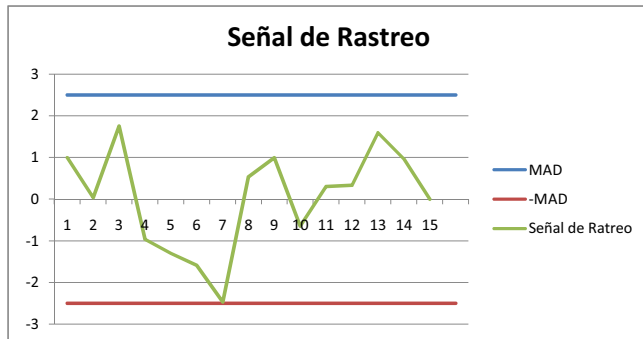


MODELO REGRESION

Datos Iniciales Reg. Lineal		Pronóstico	Análisis del Error							
Periodo	Demanda		Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)
1	1.835.000	1761542,175	73457,825	73457,825	73457,825	73457,825	73457,825	1,000	5396052053,731	0,040
2	1.636.500	1707257,836	-70757,836	2699,989	70757,836	144215,661	72107,830	0,037	5006671314,970	0,043
3	1.851.500	1652973,496	198526,504	201226,493	198526,504	342742,164	114247,388	1,761	39412772620,296	0,107
4	1.225.000	1598689,157	-373689,157	-172462,664	373689,157	716431,321	179107,830	-0,963	139643586166,139	0,305
5	1.525.000	1544404,818	-19404,818	-191867,482	19404,818	735836,139	147167,228	-1,304	376546956,069	0,013
6	1.485.000	1490120,479	-5120,479	-196987,961	5120,479	740956,618	123492,770	-1,595	26219300,800	0,003
7	1.336.000	1435836,139	-99836,139	-296824,100	99836,139	840792,757	120113,251	-2,471	9967254707,477	0,075
8	1.760.000	1381551,800	378448,200	81624,100	378448,200	1219240,957	152405,120	0,536	143223040083,240	0,215
9	1.388.000	1327267,461	60732,539	142356,639	60732,539	1279973,496	142219,277	1,001	3688441328,091	0,044
10	1.032.000	1272983,121	-240983,121	-98626,482	240983,121	1520956,618	152095,662	-0,648	58072864813,458	0,234
11	1.364.000	1218698,782	145301,218	46674,736	145301,218	1666257,836	151477,985	0,308	21112443910,769	0,107
12	1.165.000	1164414,443	585,557	47260,293	585,557	1666843,393	138903,616	0,340	342877,168	0,001
13	1.289.777	1110130,104	179646,896	226907,189	179646,896	1846490,289	142037,715	1,598	32273007396,418	0,139
14	963.500	1055845,764	-92345,764	134561,425	92345,764	1938836,054	138488,290	0,972	8527740181,513	0,096
15	867.000	1001561,425	-134561,425	0,000	134561,425	2073397,479	138226,499	0,000	18106777098,031	0,155
16		947277,086								
17		892992,746								
18		838708,407								
19		784424,068								
20		730139,729								
21		675855,389								



Medidas de Desempeño Finales										
Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero	
1815826,514	-54284,339	-0,794	138226,499	0,105	4,233	0,000	32322250720,545	186094,016	5	



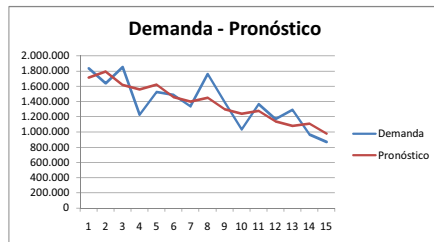
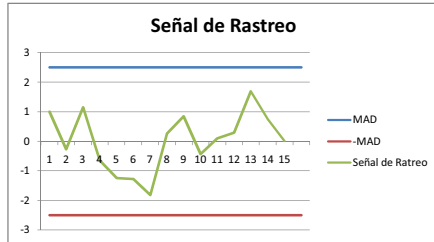
MODELO DESCOMPOSICION

Datos Iniciales <i>Descomp.</i>		Pronóstico						Análisis del Error							
Periodo	Demanda	Promedio	Razón	Índice Estacional	Suavización	Ft sin ajuste	Ft ajustado	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et ² (Error Cuadrático)	Fracción Abs. del Error
1	1.835.000	1381551,800	1,328	0,972	1886894,692	1763755,242	1715247,217	119752,783	119752,783	119752,783	119752,783	119752,783	1,000	14340729116,427	0,065
2	1.636.500	1381551,800	1,185	1,049	1559463,044	1709154,750	1793586,427	-157086,427	-37333,644	157086,427	276839,211	138419,605	-0,270	24676145604,733	0,096
3	1.851.500	1381551,800	1,340	0,978	1892949,869	1654554,259	1618324,532	233175,468	195841,825	233175,468	510014,679	170004,893	1,152	54370799075,808	0,126
4	1.225.000	1381551,800	0,887	0,972	1259643,596	1599953,767	1555950,724	-330950,724	-135108,899	330950,724	840965,403	210241,351	-0,643	109528381589,499	0,270
5	1.525.000	1381551,800	1,104	1,049	1453211,819	1545353,275	1621693,214	-96693,214	-231802,113	96693,214	937658,616	187531,723	-1,236	9349577554,532	0,063
6	1.485.000	1381551,800	1,075	0,978	1518244,966	1490752,783	1458109,813	26890,187	-204911,925	26890,187	964548,804	160758,134	-1,275	723082176,821	0,018
7	1.336.000	1381551,800	0,967	0,972	1373782,730	1436152,292	1396654,231	-60654,231	-265566,156	60654,231	1025203,035	146457,576	-1,813	3678935732,400	0,045
8	1.760.000	1381551,800	1,274	1,049	1677149,378	1381551,800	1449800,000	310200,000	44633,844	310200,000	1335403,035	166925,379	0,267	96224040000,000	0,176
9	1.388.000	1381551,800	1,005	0,978	1419073,410	1326951,308	1297895,094	90104,906	134738,750	90104,906	1425507,941	158389,771	0,851	8118894141,989	0,065
10	1.032.000	1381551,800	0,747	0,972	1061185,462	1272350,817	1237357,738	-205357,738	-70618,988	205357,738	1630865,679	163086,568	-0,433	42171800595,763	0,199
11	1.364.000	1381551,800	0,987	1,049	1299790,768	1217750,325	1277906,786	86093,214	15474,225	86093,214	1716958,893	156087,172	0,099	7412041426,406	0,063
12	1.165.000	1381551,800	0,843	0,978	1191081,068	1163149,833	1137680,375	27319,625	42793,851	27319,625	1744278,518	145356,543	0,294	746361924,292	0,023
13	1.289.777	1381551,800	0,934	0,972	1326252,521	1108549,341	1078061,245	211715,755	254509,605	211715,755	1955994,273	150461,098	1,692	44823560813,965	0,164
14	963.500	1381551,800	0,697	1,049	918143,992	1053948,850	1106013,573	-142513,573	111996,033	142513,573	2098507,846	149893,418	0,747	20310118437,418	0,148
15	867.000	1381551,800	0,628	0,978	886409,687	999348,358	977465,656	-110465,656	1530,377	110465,656	2208973,501	147264,900	0,010	12202661110,611	0,127
16				0,972		944747,866	918764,752								
17				1,049		890147,375	934120,359								
18				0,978		835546,883	817250,937								
19				0,884		780946,391	690018,839								
20				1,016		726345,899	737687,932								
21				0,888		671745,408	596233,747								



- PM Simple
- SE
- SET
- Reg Lineal
- SE Doble
- PM Doble
- Winters
- Media
- Comparaciones

Valores Iniciales		Medidas de Desempeño Finales									
Estacionalidad	Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero	
3	1818355,734	-54600,492	-0,806	147264,900	0,110	3,505	102,025	29911808620,044	179020,575	6,000	



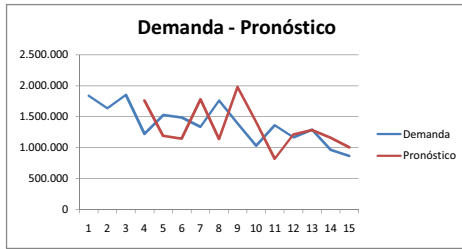
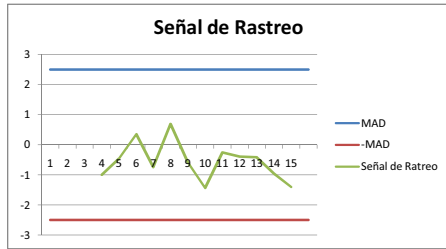
MODELO WINTERS

Datos Iniciales Winters		Pronóstico				Análisis del Error							
Periodo	Demanda	St	It	Tt	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	1.835.000					1,057							
2	1.636.500					0,943							
3	1.851.500												
4	1.225.000												
5	1.525.000												
6	1.485.000												
7	1.336.000												
8	1.760.000												
9	1.388.000												
10	1.032.000												
11	1.364.000												
12	1.165.000												
13	1.289.777												
14	963.500												
15	867.000												



- [PM Simple](#)
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- [SE Doble](#)
- [PM Doble](#)
- [Descomposicion](#)
- [Media](#)
- [Comparaciones](#)

Valores Iniciales			Medidas de Desempeño Finales						
Alpha	Beta	Gamma	MAD	MAPE	Rango Señal de Rastreo	IME	MSE	Desviación Pronóstico	Intersecciones con cero
0,74	0,71	0,65	349609,742	0,265	2,123	-40725,387	163730371663,989	422628,621	4



COMPARACIONES

Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	Intersecciones con cero (%)
Promedio Móvil Simple	268539,571	2	3,684	0,207	94142123604,143	318408,268	0,133
Suavización Exponencial	221202,131	2	4,372	0,180	62819708839,773	262871,984	0,133
Suavización Exp. con Ajuste a la Tendencia	313322,028	8	2,348	0,242	133671854450,383	381868,880	0,533
Regresión Lineal	138226,499	5	4,233	0,105	32322250720,545	186094,016	0,333
Suavización Exponencial Doble	267939,846	6	2,272	0,211	95846818230,977	328371,239	0,400
Promedio Móvil Doble	259047,836	5	1,558	0,210	96582377367,345	332234,646	0,333
Descomposición	147264,900	6	3,505	0,110	29911808620,044	179020,575	0,400
Winters	349609,742	4	2,123	0,265	163730371663,989	422628,621	0,267
Media	241351,653	1	7,192	0,189	87328987898,693	305886,863	0,067



[PM Simple](#)

[SE](#)

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[Reg Lineal](#)

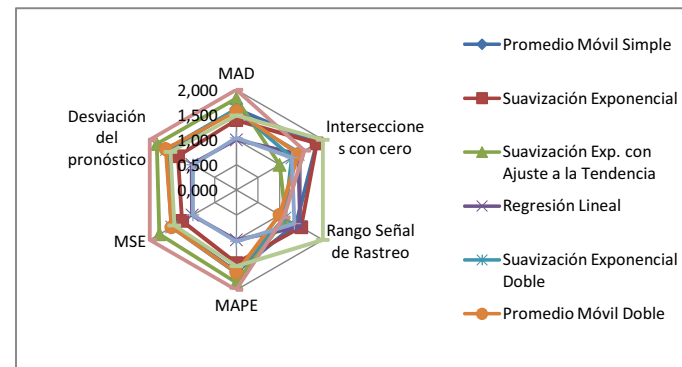
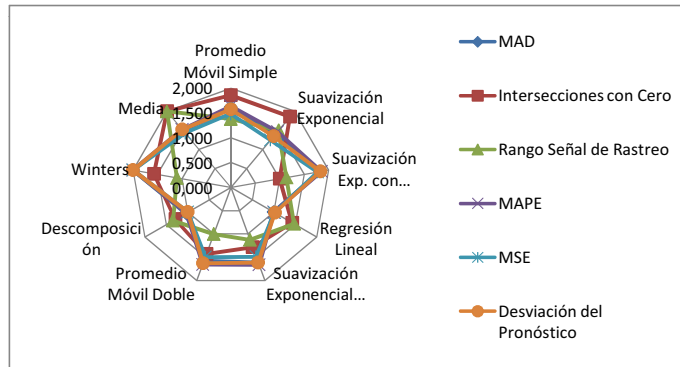
[SE Doble](#)

[PM Doble](#)

[Descomposicion](#)

[Winters](#)

[Media](#)



Datos Normalizados						
Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico
Promedio Móvil Simple	1,616	1,857	1,377	1,636	1,480	1,572
Suavización Exponencial	1,393	1,857	1,499	1,466	1,246	1,344
Suavización Exp. con Ajuste a la Tendencia	1,828	1,000	1,140	1,856	1,775	1,833
Regresión Lineal	1,000	1,429	1,475	1,000	1,018	1,029
Suavización Exponencial Doble	1,614	1,286	1,127	1,661	1,493	1,613
Promedio Móvil Doble	1,572	1,429	1,000	1,657	1,498	1,629
Descomposición	1,043	1,286	1,346	1,031	1,000	1,000
Winters	2,000	1,571	1,100	2,000	2,000	2,000
Media	1,488	2,000	2,000	1,525	1,429	1,521

7. PF 30 GR KERR


Periodo	Demanda
1	3481920
2	4043520
3	5896800
4	4717440
5	5784480
6	5391360
7	3201120
8	5054400
9	5117040
10	5171040
11	4250480
12	4687578
13	6516180
14	7750080
15	5930280
16	5321160
17	5447520
18	6518880
19	2575440
20	3830400
21	4760640
22	7599240
23	7517160
24	7626600
25	4480200
26	4910039
27	6580080
28	5013720
29	4596480
30	4856400
31	5472000
32	6949440
33	7770240
34	5745600
35	5745600
36	8262720
37	5796900
38	6511680
39	5472000
40	6549300
41	6019200

FOR TSM

NÚMERO DE PERIODOS DE DEMANDA

41

Elegir Modelos



Datos	41,000
Desviación Estándar	1.308.462,982
Promedio	5.583.472,122
Coefficiente de Correlación	0,406
Coefficiente de Variación	0,234

Creado por:
Rosana Builes Palacio
María Cristina Bravo Gómez



[Comparaciones](#)

Modelos Pronosticados

[PM Simple](#)

[SE](#)

[SET](#)

[Reg Lineal](#)

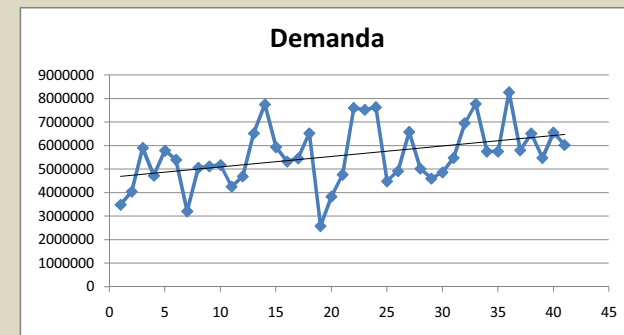
[SE Doble](#)

[PM Doble](#)

[Descomposicion](#)

[Winters](#)

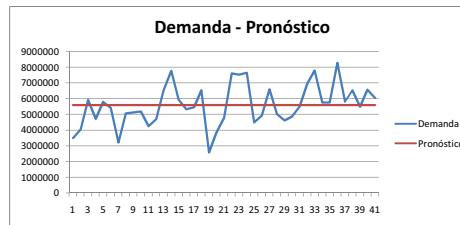
[Media](#)



MODELO MEDIA

Datos Iniciales Media		Pronóstico		Análisis del Error						
Periodo	Demanda	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et*2 (Error Cuadrático)	Fracción Abs. del Error
1	3481920	5583472,122	-2101552,122	-2101552,122	2101552,122	2101552,122	2101552,122	-1,000	4416521321277,670	0,604
2	4043520	5583472,122	-1539952,122	-3641504,244	1539952,122	3641504,244	1820752,122	-2,000	2371452537902,060	0,381
3	5896800	5583472,122	313327,878	-3328176,366	313327,878	3954832,122	1318277,374	-2,525	98174359162,551	0,053
4	4717440	5583472,122	-866032,122	-4194208,488	866032,122	4820864,244	1205216,061	-3,480	750011636251,332	0,184
5	5784480	5583472,122	201007,878	-3993200,610	201007,878	5021872,122	1004374,424	-3,976	40404167037,673	0,035
6	5391360	5583472,122	-192112,122	-4185312,732	192112,122	5213984,244	868997,374	-4,816	36907067400,600	0,036
7	3201120	5583472,122	-2382352,122	-6567664,854	2382352,122	7596336,366	1085190,909	-6,052	5675601632965,480	0,744
8	5054400	5583472,122	-529072,122	-7096736,976	529072,122	8125408,488	1015676,061	-6,987	279917310225,966	0,105
9	5117040	5583472,122	-466432,122	-7563169,098	466432,122	8591840,610	954648,957	-7,922	217558924387,917	0,091
10	5171040	5583472,122	-412432,122	-7975601,220	412432,122	9004272,732	900427,273	-8,858	170100255217,186	0,080
11	4250480	5583472,122	-1332992,122	-9308593,341	1332992,122	10337264,854	939751,350	-9,905	1776867997184,020	0,314
12	4687578	5583472,122	-895894,122	-10204487,463	895894,122	11233158,976	936096,581	-10,901	802626277746,747	0,191
13	6516180	5583472,122	932707,878	-9271779,585	932707,878	12165866,854	935835,912	-9,907	869943985774,259	0,143
14	7750080	5583472,122	2166607,878	-7105171,707	2166607,878	14332474,732	1023748,195	-6,940	4694189697223,040	0,380
15	5930280	5583472,122	346807,878	-6758363,829	346807,878	14679282,610	978618,841	-6,906	120275704276,698	0,058
16	5321160	5583472,122	-262312,122	-7020675,951	262312,122	14941594,732	933849,671	-7,518	68807649322,552	0,049
17	5447520	5583472,122	-135952,122	-7156628,073	135952,122	15077546,854	886914,521	-8,069	18482979463,039	0,025
18	6518880	5583472,122	935407,878	-6221220,195	935407,878	16012954,732	889608,596	-6,993	874987898315,722	0,143
19	2575440	5583472,122	-3008032,122	-9229252,317	3008032,122	19020986,854	1001104,571	-9,219	9048257246690,360	1,168
20	3830400	5583472,122	-1753072,122	-10982324,439	1753072,122	20774058,976	1038702,949	-10,573	3073261864762,550	0,458
21	4760640	5583472,122	-822832,122	-11805156,561	822832,122	21596891,098	1028423,386	-11,479	677052700914,747	0,173
22	7599240	5583472,122	2015767,878	-9789388,683	2015767,878	23612658,976	1073302,681	-9,121	4063320138173,280	0,265
23	7517160	5583472,122	1933687,878	-7855700,805	1933687,878	25546346,854	1110710,733	-7,073	3739148809712,790	0,257
24	7626600	5583472,122	2043127,878	-5812572,927	2043127,878	27589474,732	1149561,447	-5,056	4174371526060,110	0,268
25	4480200	5583472,122	-1103272,122	-6915845,049	1103272,122	28692746,854	1147709,874	-6,026	1217209375074,750	0,246
26	4910039	5583472,122	-673433,122	-7589278,171	673433,122	29366179,976	1129468,461	-6,719	453512169740,966	0,137
27	6580080	5583472,122	996607,878	-6592670,293	996607,878	30362787,854	1124547,698	-5,863	993227262588,893	0,151
28	5013720	5583472,122	-569752,122	-7162422,415	569752,122	30932539,976	1104733,571	-6,483	32461748067,917	0,114
29	4596480	5583472,122	-986992,122	-8149414,537	986992,122	31919532,098	1100673,521	-7,404	974153448793,771	0,215
30	4856400	5583472,122	-727072,122	-8876486,659	727072,122	32646604,220	1088220,141	-8,157	52863380158,649	0,150
31	5472000	5583472,122	-111472,122	-8987958,780	111472,122	32758076,341	1056712,140	-8,506	12426033972,308	0,020
32	6949440	5583472,122	1365967,878	-7621990,902	1365967,878	34124044,220	1066376,382	-7,148	1865868243861,090	0,197
33	7770240	5583472,122	2186767,878	-5435223,024	2186767,878	36310812,098	1100327,639	-4,940	4781953752465,970	0,281
34	5745600	5583472,122	162127,878	-5273095,146	162127,878	36472939,976	1072733,529	-4,916	26285448840,600	0,028
35	5745600	5583472,122	162127,878	-5110967,268	162127,878	36635067,854	1046716,224	-4,883	26285448840,600	0,028
36	8262720	5583472,122	2679247,878	-2431719,390	2679247,878	39314315,732	1092064,326	-2,227	7178369192028,890	0,324
37	5796900	5583472,122	213427,878	-2218291,512	213427,878	39527743,610	1068317,395	-2,076	45551459128,405	0,037
38	6511680	5583472,122	928207,878	-1290083,634	928207,878	40455951,488	1064630,302	-1,212	86156984871,820	0,143
39	5472000	5583472,122	-111472,122	-1401555,756	111472,122	40567423,610	1040190,349	-1,347	12426033972,308	0,020
40	6549300	5583472,122	965827,878	-435727,878	965827,878	41533251,488	103831,287	-0,420	932823490016,210	0,147
41	6019200	5583472,122	435727,878	0,000	435727,878	41968979,366	1023633,643	0,000	189858783708,893	0,072

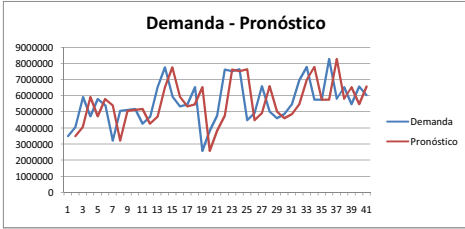
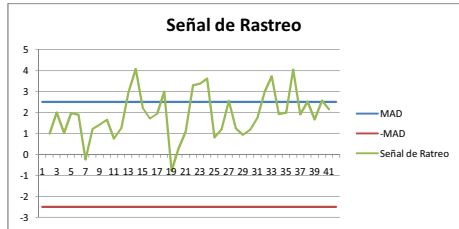
Medidas de Desempeño Finales						
MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstica	Intersecciones con cero
1023633,643	0,205	11,479	0,000	1670317440154,640	1308462,982	0



MODELO PMS

Datos Iniciales PMS		Análisis del Error								
Periodo	Demanda	Pronóstico	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et*2 (Error Cuadrático)	Fracción Abs. del Error
1	3481920									
2	4043520	SE	3481920,000	561600,000	561600,000	561600,000	561600,000	1,000	31539456000,000	0,139
3	5896800	SET	4043520,000	1853280,000	2414880,000	1853280,000	2414880,000	2,000	3434646758400,000	0,314
4	4717440	Reg_Lineal	5896800,000	-1179360,000	1235520,000	1179360,000	3594240,000	1,031	1390890009600,000	0,250
5	5784480	SE Doble	4717440,000	1067040,000	2302560,000	1067040,000	4661280,000	1,976	1138574361600,000	0,184
6	5391360	PM Doble	5784480,000	-393120,000	1909440,000	393120,000	5054400,000	1,889	154543334400,000	0,073
7	3201120	Descomposicion	5391360,000	-2190240,000	-280800,000	2190240,000	7244640,000	-0,233	4797151257600,000	0,684
8	5054400	Winters	3201120,000	1853280,000	1572480,000	1853280,000	9097920,000	1,210	3434646758400,000	0,367
9	5117040	Media	5054400,000	62640,000	1635120,000	62640,000	9160560,000	1,428	3923769600,000	0,012
10	5171040	Comparaciones	5117040,000	54000,000	1689120,000	54000,000	9214560,000	1,650	2916000000,000	0,010
11	4250480		5171040,000	-920560,000	768560,000	920560,000	10135120,000	0,758	847430713600,000	0,217
12	4687578		4250480,000	437098,000	1205658,000	437098,000	10572218,000	1,254	191054661604,000	0,093
13	6516180		4687578,000	1828602,000	3034260,000	1828602,000	12400820,000	2,936	3343785274404,000	0,281
14	7750080		6516180,000	1233900,000	4268160,000	1233900,000	13634720,000	4,069	1522509210000,000	0,159
15	5930280		7750080,000	-1819800,000	2448360,000	1819800,000	15454520,000	2,218	3311672040000,000	0,307
16	5321160		5930280,000	-609120,000	1839240,000	609120,000	16063640,000	1,717	371027174400,000	0,114
17	5447520		5321160,000	126360,000	1965600,000	126360,000	16190000,000	1,943	15966849600,000	0,023
18	6518880		5447520,000	1071360,000	3036960,000	1071360,000	17261360,000	2,991	1147812249600,000	0,164
19	2575440		6518880,000	-3943440,000	-906480,000	3943440,000	21204800,000	-0,769	15550719033600,000	1,531
20	3830400		2575440,000	1254960,000	348480,000	1254960,000	22459760,000	0,295	1574924601600,000	0,328
21	4760640		3830400,000	930240,000	1278720,000	930240,000	23900000,000	1,093	865346457600,000	0,195
22	7599240		4760640,000	2838600,000	4117320,000	2838600,000	26228600,000	3,297	8057649960000,000	0,374
23	7517160		7599240,000	-82080,000	4035240,000	82080,000	26310680,000	3,374	6737126400,000	0,011
24	7626600		7517160,000	109440,000	4144680,000	109440,000	26420120,000	3,608	11977113600,000	0,014
25	4480200		7626600,000	-3146400,000	998280,000	3146400,000	29566520,000	0,810	9899832960000,000	0,702
26	4910039		4480200,000	429839,000	1428119,000	429839,000	29996359,000	1,190	184761565921,000	0,088
27	6580080		4910039,000	1670041,000	3098160,000	1670041,000	31666400,000	2,544	2789036941681,000	0,254
28	5013720		6580080,000	-1566360,000	1531800,000	1566360,000	33232760,000	1,245	2453483649600,000	0,312
29	4596480		5013720,000	-417240,000	1114560,000	417240,000	33650000,000	0,927	174089217600,000	0,091
30	4856400		4596480,000	259920,000	1374480,000	259920,000	33909920,000	1,175	675584064000,000	0,054
31	5472000		4856400,000	615600,000	1990080,000	615600,000	34255200,000	1,729	378963360000,000	0,113
32	6949440		5472000,000	1477440,000	3467520,000	1477440,000	36002960,000	2,886	2182828953600,000	0,213
33	7770240		6949440,000	820800,000	4288320,000	820800,000	36823760,000	3,727	673712640000,000	0,106
34	5745600		7770240,000	-2024640,000	2263680,000	2024640,000	38848400,000	1,923	4099167129600,000	0,352
35	5745600		5745600,000	0,000	2263680,000	0,000	38848400,000	1,981	0,000	0,000
36	8262720		5745600,000	2517120,000	4780800,000	2517120,000	41365520,000	4,045	6335893094400,000	0,305
37	5796900		8262720,000	-2465820,000	2314980,000	2465820,000	43831340,000	1,901	6080268272400,000	0,425
38	6511680		5796900,000	714780,000	3029760,000	714780,000	44546120,000	2,517	5109104484000,000	0,110
39	5472000		6511680,000	-1039680,000	1990080,000	1039680,000	45585800,000	1,659	1080934502400,000	0,190
40	6549300		5472000,000	1077300,000	3067380,000	1077300,000	46663100,000	2,564	1160575290000,000	0,164
41	6019200		6549300,000	-530100,000	2537280,000	530100,000	47193200,000	2,151	281006010000,000	0,088
			6019200,000							
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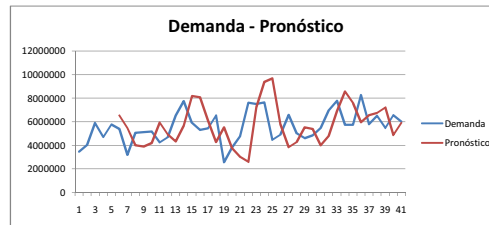
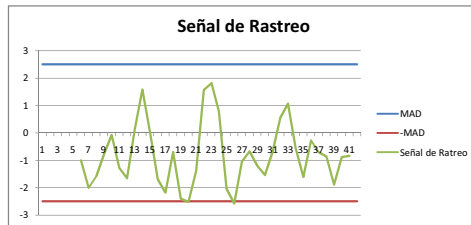
Valores Iniciales	Medidas de Desempeño Finales						
N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
1	1179830,000	0,235	4,839	63432,000	2246108042940,250	1517794,636	4



MODELO PMD

Datos Iniciales PMD		Pronóstico					Análisis del Error							
Período	Demanda	St'	St''	a	b	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	let (Error Absoluto)	letl (Error acumulado)	MAD	SR (Señal de Rastreo)	et*2 (Error Cuadrático)	Fracción Abs. del Error
1	3481920													
2	4043520													
3	5896800													
4	4717440													
5	5784480													
6	5391360													
7	3201120													
8	5054400													
9	5117040													
10	5117040													
11	4250480													
12	4687578													
13	6516180													
14	7750080													
15	5930280													
16	5321160													
17	5447520													
18	6518880													
19	2575440													
20	3830400													
21	4760640													
22	7599240													
23	7517160													
24	7626600													
25	4480200													
26	4910039													
27	6580080													
28	5013720													
29	4596480													
30	4856400													
31	5472000													
32	6949440													
33	7770240													
34	5745600													
35	5745600													
36	8262720													
37	5796900													
38	6511680													
39	5472000													
40	6549300													
41	6019200													
42														
43														
44														
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46														
47														

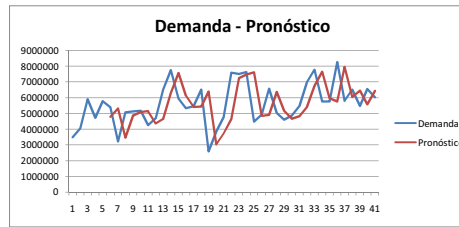
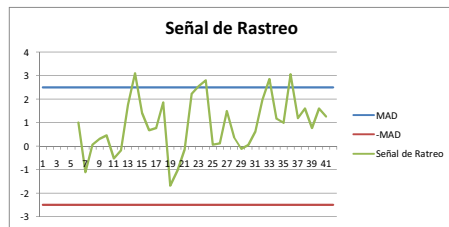
Valores Iniciales N (Períodos de Promedio)	Medidas de Desempeño Finales						
	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
3	1653764,037	0,310	4,383	-38235,556	4106121801149,370	2055100,865	6



MODELO SE

Datos Iniciales SE		Análisis del Error								
Periodo	Demanda	Pronóstico Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	3481920									
2	4043520									
3	5896800									
4	4717440									
5	5784480									
6	5391360	PM Simple								
7	3201120	SET								
8	5054400	Reg Lineal								
9	5117040	SE Doble								
10	5171040	Comparaciones								
11	4250480	Descomposicion	4784832,000	606528,000	606528,000	606528,000	606528,000	1,000	367876214784,000	0,113
12	4687578	Winters	5318576,640	-2117456,640	-1510928,640	2117456,640	2723984,640	-1,109	448362262280,090	0,661
13	6516180	Media	3455214,797	1599185,203	88256,563	1599185,203	4323169,843	0,061	2557393314133,820	0,316
14	7750080		4862497,776	254542,224	342798,788	254542,224	4577712,068	0,300	64791743994,354	0,050
15	5930280		5086494,933	84545,067	427343,855	84545,067	4662257,135	0,458	7147868341,535	0,016
16	5321160		5160894,592	-910414,592	-483070,737	910414,592	5572671,726	-0,520	828854729269,845	0,214
17	5447520		4358729,751	327848,249	-155222,488	327848,249	5900519,975	-0,184	107484474348,588	0,070
18	6518880		4648236,210	1867943,790	1712721,301	1867943,790	7768463,765	1,764	3489214002135,000	0,287
19	2830400		6292026,745	1458053,255	1370774,556	1458053,255	9226517,020	3,093	2125910293789,360	0,188
20	4760640		7575113,609	-1644833,609	1525940,947	1644833,609	10871350,630	1,404	27054477602696,670	0,277
21	7599240		6127660,033	-806500,033	719440,914	806500,033	11677850,663	0,678	650442303440,458	0,152
22	5175440		5417940,004	29579,996	749020,910	29579,996	11707430,659	0,768	874976164,796	0,005
23	2830400		5443970,400	1074909,600	182390,509	1074909,600	12782340,258	1,855	1155430647146,510	0,165
24	4760640		6388980,848	-3814450,848	-190520,339	3814450,848	16596791,106	-1,679	1455003527244,700	1,481
25	7599240		3033174,102	797225,898	-1193294,441	797225,898	17394017,004	-1,029	635569132813,620	0,208
26	5175440		3734732,892	1025907,108	-167387,333	1025907,108	18419924,112	-0,145	1052485393809,890	0,215
27	4596480		4637531,147	2961708,853	2794321,520	2961708,853	21381632,965	2,222	8771719329550,930	0,390
28	7599240		7243834,938	273325,062	3067646,582	273325,062	21654958,028	2,550	74706589709,805	0,036
29	4760640		7484360,993	142239,007	3209885,590	142239,007	21797197,035	2,798	20231935249,538	0,019
30	5175440		7609531,319	-3129331,319	80554,271	3129331,319	24926528,354	0,065	9792714504713,470	0,698
31	6949440		4855719,758	54319,242	134873,512	54319,242	24980847,596	0,113	2950580019,704	0,011
32	7770240		4903520,691	1676559,309	1811432,821	1676559,309	26657406,905	1,495	2810851166611,080	0,255
33	5745600		6378892,883	-1365172,883	446259,939	1365172,883	28022579,788	0,366	1863697000258,490	0,272
34	5745600		5177540,746	-581060,746	-134800,807	581060,746	28603640,534	-0,113	337631590484,352	0,126
35	5745600		4856400,290	190192,710	55391,903	190192,710	28793833,244	0,048	36173267121,996	0,039
36	5745600		4833576,875	638423,125	693815,028	638423,125	29432256,369	0,613	407584086664,595	0,117
37	5745600		5395389,225	1554050,775	2247865,803	1554050,775	30986307,145	1,959	2415073811374,440	0,224
38	5745600		6762953,907	1007286,093	3255151,896	1007286,093	31993593,238	2,849	1014625273158,700	0,130
39	5745600		7649365,669	-1903765,669	1351386,228	1903765,669	33897358,906	1,156	36243232721852,110	0,331
40	5745600		5974051,880	-228451,880	1122934,347	228451,880	34125810,787	0,987	52190261594,670	0,040
41	6019200		5773014,226	2489705,774	3612640,122	2489705,774	36615516,561	3,059	6198634842924,900	0,301
			7963955,307	-2167055,307	1445584,815	2167055,307	38783571,868	1,193	4696128703925,190	0,374
			6056946,637	454733,363	1900318,178	454733,363	39237305,231	1,598	206783431562,537	0,070
			6457111,996	-985111,996	915206,181	985111,996	40222417,228	0,774	970445645494,324	0,180
			5590213,440	959086,560	1874292,742	959086,560	4181503,788	1,593	91984703096,245	0,146
			6434209,613	-415009,613	1459283,129	415009,613	41596513,401	1,263	172232978673,640	0,069

Valores Iniciales		Medidas de Desempeño Finales						Desviación		Intersecciones con cero	
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero			
0,880	5,000	1155458,706	0,229	4,772	40535,642	2199199008137,050	1504005,740	8			



MODELO SED

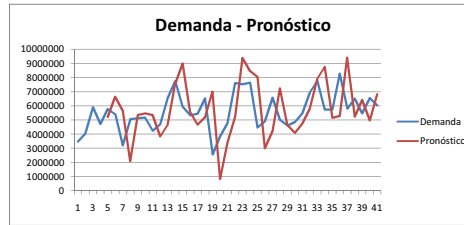
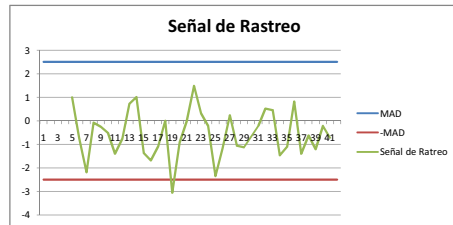
Datos Iniciales SED	
Periodo	Demanda



- PM Simple
- SE
- SET
- Reg Lineal
- PM Doble
- Descomposicion
- Winters
- Media
- Comparaciones

Pronóstico					Análisis del Error												
St'	St''	a	b	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error					
1	3481920																
2	4043520																
3	5896800																
4	4717440	3762720,000	3762720,000	551446,272													
5	5784480	4488307,200	4314166,272	4662448,128	881016,515	5213894,400	570585,600	570585,600	570585,600	570585,600	1,000	325567926927,359	0,099				
6	5391360	5473398,528	5195182,787	5751614,269	164058,510	6632630,784	-1241270,784	-670685,184	1241270,784	1811856,384	905928,192	-0,740	1540753159211,970	0,230			
7	3201120	5411049,247	5359241,296	5462857,197	5411049,247	5359241,296	-2425795,707	-3096480,891	2425795,707	4237652,091	1412550,697	-2,192	5884484811517,440	0,758			
8	5054400	3731503,019	4122260,206	3340845,833	4736904,725	4589366,040	4884443,409	467205,834	2103764,742	2950635,258	-145845,633	2950635,258	7188287,349	1797071,837	-0,081	8706248424902,950	0,584
9	5117040	5025807,534	4921061,575	5130553,492	331695,535	5351649,244	-234609,244	-380454,877	234609,244	7422896,592	1484579,318	-0,256	55041497141,664	0,046			
10	5171040	5136184,208	5084554,776	5187813,640	163493,201	5462249,028	-291209,028	-671663,904	291209,028	7714105,620	1285684,270	-0,522	84802697836,500	0,056			
11	4250480	4463049,010	4612210,394	4313887,626	-472344,382	5351306,841	-1100826,841	-1772490,745	1100826,841	8814932,461	1259276,066	-1,408	1211819733619,940	0,259			
12	4687578	4633691,042	4628535,687	4638846,398	16325,293	3841543,244	846034,756	-926455,989	846034,756	9660967,217	1207620,902	-0,767	715774808988,415	0,180			
13	6516180	6064382,650	5719779,379	6408985,921	1091243,692	4655171,691	1861008,309	934552,320	1861008,309	11521975,526	1280219,503	0,730	3463351926514,800	0,286			
14	7750080	7345512,636	6955336,654	7735688,618	1235557,275	7500229,614	249850,386	1184402,707	249850,386	11771825,913	1177182,591	1,006	62425215583,158	0,032			
15	5930280	6269935,833	6434432,030	6105439,635	-520904,624	8971245,893	-3040965,893	-1856563,186	3040965,893	14812791,806	1346617,437	-1,379	9247473563197,040	0,513			
16	5321160	5548866,200	5761401,999	5336330,401	-673030,031	5584535,011	-263375,011	-2119938,197	263375,011	15076166,817	1256347,235	-1,687	69366396398,319	0,049			
17	5447520	5471843,088	5541337,227	5402348,949	-220064,772	4663300,370	784219,630	-1335718,567	784219,630	15860386,447	1220029,727	-1,095	615000428365,184	0,144			
18	6518880	6267591,141	6093290,202	6441892,081	551952,975	5182284,177	1336595,823	877,256	1336595,823	17196982,270	1228355,876	0,001	1786488394380,230	0,205			
19	2575440	3461556,274	4093172,417	2829940,131	-2000117,785	6993845,056	-4418405,056	-4417527,800	4418405,056	21651387,326	1441025,822	-3,066	1952330323562,700	1,716			
20	3830400	3741877,506	3826188,284	3657566,727	-266984,132	82922,346	3000577,654	1416950,146	3000577,654	24615964,980	1538497,811	-0,921	9003466257082,350	0,783			
21	4760640	4516137,001	4350549,309	4681724,693	524361,025	3390582,595	1370057,405	-46892,741	1370057,405	25986022,385	1528589,552	-0,031	1877057293199,470	0,288			
22	7592940	6859295,280	6257196,247	7461394,313	1906646,938	5206085,718	2393154,282	234621,541	2393154,282	28379176,666	1576620,926	1,488	5727817415402,270	0,315			
23	7517160	7359272,467	7094774,174	7623770,760	837577,927	9368041,251	-1850881,251	495380,289	1850881,251	30230057,918	1591055,680	0,311	3425761406703,120	0,246			
24	7626600	7562441,392	7450201,260	7674681,524	355427,085	8461348,687	-834748,687	-339368,398	834748,687	31064806,605	1533240,330	-0,218	696805370915,691	0,109			
25	4480200	5219937,934	5755201,132	4684674,736	-1695000,128	8030108,610	-3549908,610	-3889277,008	3549908,610	34614715,215	1648319,772	-2,360	12601851138038,800	0,792			
26	4910039	4984414,744	5169403,477	4799426,011	-585797,655	2989674,608	1920364,392	-1968912,616	1920364,392	36535079,606	1660685,437	-1,186	3687799396817,590	0,391			
27	6580080	6197120,339	5950468,292	6443772,385	781064,815	4213628,356	2366451,644	397539,028	2366451,644	38901531,250	1691370,924	0,235	5600093383058,430	0,360			
28	5013720	5297736,081	5454391,812	5141080,351	-496076,480	7224837,200	-2211117,200	-1813578,172	2211117,200	41116248,450	1713027,019	-1,059	4889039271579,510	0,441			
29	4596480	4764781,460	4930287,944	4599274,975	-524103,868	4645003,871	-48523,871	-1862102,043	48523,871	41161172,321	1646446,893	-1,131	2354566020,915	0,011			
30	4856400	4834411,550	4857421,885	4811401,216	-72866,059	4075171,107	781228,893	-1008870,150	781228,893	41942401,214	1613169,277	-0,670	610318582961,710	0,161			
31	5472000	5318978,772	5208205,119	5429752,425	350783,234	4738355,157	733464,843	-347408,306	733464,843	42675866,057	1580587,632	-0,220	537970676646,461	0,134			
32	6949440	6558129,305	6234147,501	6882111,110	1025942,381	5780535,659	1168904,341	821496,034	1168904,341	43844770,398	1565884,657	0,525	1366337357596,980	0,168			
33	7770240	7479333,433	7180488,809	778178,057	946341,309	798053,491	-137813,491	683682,543	137813,491	43982583,889	1516640,824	0,451	18992558431,729	0,018			
34	5745600	6161696,024	6406206,292	5917185,755	-774282,517	8724519,366	-2978919,366	-2295246,623	2978919,366	46961503,255	1565383,442	-1,466	8873960588702,110	0,518			
35	5745600	5845463,046	5980041,425	5710884,667	-426164,868	5142903,239	602696,761	-1692540,061	602696,761	47564200,017	1534329,033	-1,103	363243386278,293	0,105			
36	8262720	7682578,331	7273969,474	8091187,188	1293928,049	5284719,799	2978000,201	1285460,139	2978000,201	50542200,218	1579443,757	0,814	8868485197035,890	0,360			
37	5796900	6249462,799	6495344,401	6003581,198	-778625,072	9385115,237	-3588215,237	-2302755,098	3588215,237	54130415,455	1640315,620	-1,404	12875288586967,000	0,619			
38	6511680	6448747,872	6459931,039	6437564,705	-35413,362	5224956,125	1286723,875	-1016031,223	1286723,875	55417139,329	1629915,863	-0,623	1655658329641,600	0,198			
39	5472000	5706419,489	5887262,261	5525576,717	-572668,778	6402151,343	-930151,343	-1946182,565	930151,343	65347290,672	1609922,591	-1,209	865181519970,473	0,170			
40	6549300	6347008,677	6236669,538	6453747,817	349407,276	4952907,940	1596392,060	-349790,505	1596392,060	57943682,732	1609546,743	-0,217	2548467610556,040	0,244			
41	6019200	6097874,083	6131184,992	6064563,173	-105484,546	6806755,094	-787555,094	-1137345,599	787555,094	58731237,826	1587330,752	-0,717	620243025569,197	0,131			
42																	
43																	
44																	
45																	
46																	
47																	

Valores Iniciales		Medidas de Desempeño Finales						
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,760	2,000	1587330,752	0,317	4,554	-30739,070	3783958517273,600	1972072,128	13,000



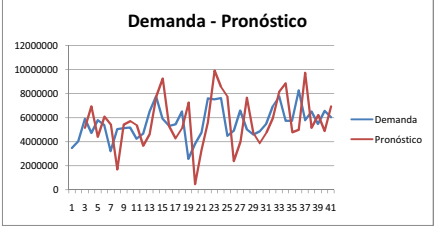
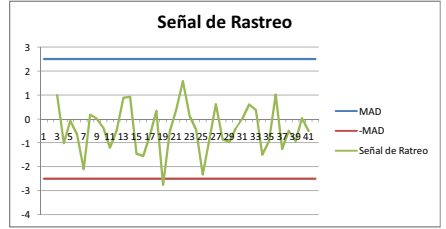
MODELO SET

Datos Iniciales SET		Pronóstico			Análisis del Error							
Periodo	Demanda	St	Tt	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	lett (Error Absoluto)	lett acumulado	MAD	SR (Señal de Rastreo)	et*2 (Error Cuadrático)	Fracción Abs. del Error
1	3481920											
2	4043520											
3	5896800											
4	4717440											
5	5784480											
6	5391360											
7	3201120											
8	5054400											
9	5117040											
10	5171040											
11	4250480											
12	4681780											
13	6518000											
14	5710080											
15	5930280											
16	5321160											
17	5447520											
18	5188800											
19	2599240											
20	3830400											
21	4760640											
22	4599240											
23	7511760											
24	7628600											
25	4480200											
26	4910039											
27	6580080											
28	5013720											
29	4596480											
30	4856400											
31	5472000											
32	6349440											
33	7770240											
34	5745600											
35	5745600											
36	8262720											
37	5799200											
38	6511680											
39	5472000											
40	6549300											
41	6019200											



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Valores Iniciales			Medidas de Desempeño Finales									
Alpha	Beta	N (Periodos de Promedio)	MAD	MAPE	Pendiente	Intercepto	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero	
0,87	0,89	2	1705231,610	0,339	561600,000	2920320,000	4,332	-22126,055	4276554080452,580	2095016,701		17



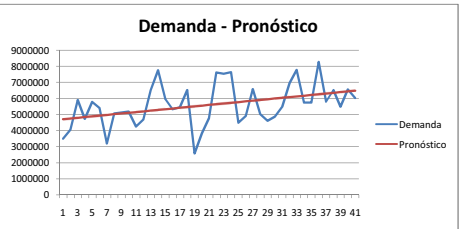
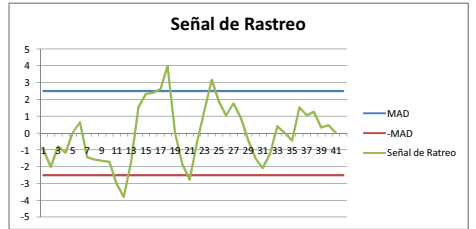
MODELO REGRESION

Datos Iniciales Reg. Lineal		Análisis del Error								
Periodo	Demanda	Pronóstico	et (Error del Pronóstico)	RSE (Error Acumulado)	lett (Error Absoluto)	lett acumulado	MAD	SR (Señal de Rastreo)	et*2 (Error Cuadrático)	Fracción Abs. del Error
1	3481920	4696150,962	-1214230,962	-1214230,962	1214230,962	1214230,962	1214230,962	-1,000	1474356828284,060	0,349
2	4043520	4740517,020	-696997,020	-1911227,981	696997,020	1911227,981	955613,991	-2,000	485804845451,741	0,172
3	5896800	4784883,078	1111916,922	-799311,059	1111916,922	3023144,904	1007714,968	-0,793	1236359242096,330	0,189
4	4717440	4829249,136	-111809,136	-911120,195	111809,136	3134954,039	783738,510	-1,163	12501282829,176	0,024
5	5784480	4873615,194	910864,806	-255,389	910864,806	4045818,846	809163,769	0,000	829674695304,521	0,157
6	5391360	4917981,252	473378,748	473123,360	473378,748	4519197,594	753199,599	0,628	224087439302,159	0,088
7	3201120	4962347,310	-1761227,310	-1288103,950	1761227,310	6280424,904	897203,558	-1,436	3101921636630,700	0,550
8	5054400	5006713,368	47686,632	-1240417,318	47686,632	6328111,536	791013,942	-1,568	2274014893,436	0,009
9	5117040	5051079,426	65960,574	-1174456,744	65960,574	6394072,110	710452,457	-1,653	4350797350,908	0,013
10	5171040	5095445,484	75594,516	-1098862,227	75594,516	6469666,626	646966,663	-1,698	5714530879,828	0,015
11	4250480	5139811,542	-889331,542	-1988193,769	889331,542	7358998,168	668999,833	-2,972	790910591261,437	0,209
12	4687578	5184177,600	-496599,600	-2484793,369	496599,600	7855597,768	654633,147	-3,796	246611162547,129	0,106
13	6516180	5228543,658	1287636,342	-1197157,027	1287636,342	9143234,110	703325,701	-1,702	1658007349651,900	0,198
14	7750080	5272909,716	2477170,284	1280013,257	2477170,284	11620404,394	830028,885	1,542	6136372616657,660	0,320
15	5930280	5317275,774	613004,226	1893017,483	613004,226	12233408,620	815560,575	2,321	375774181256,188	0,103
16	5321160	5361641,832	-40481,832	1852535,652	40481,832	12273890,452	767118,153	2,415	1638778712,485	0,008
17	5447520	5406007,890	41512,110	1894047,762	41512,110	12315402,562	724435,445	2,615	1723255285,331	0,008
18	6518880	5450373,948	1068506,052	2962553,814	1068506,052	13383908,614	743550,479	3,984	1141705183354,220	0,164
19	2575440	5494700,006	-2919300,006	43253,808	2919300,006	16303208,620	858063,612	0,050	8522312524584,050	1,134
20	3830400	5539106,064	-1708706,064	-1665452,256	1708706,064	18011914,684	900595,734	-1,849	2919676412936,040	0,446
21	4760640	5583472,122	-822832,122	-2488284,378	822832,122	18834746,806	896892,705	-2,774	677052700914,748	0,173
22	7599240	5627838,180	1971401,820	-516882,558	1971401,820	20806148,626	945734,028	-0,547	3886425136036,690	0,259
23	7517160	5672204,238	1844955,762	1328073,204	1844955,762	22651104,388	984830,626	1,349	3403861763814,140	0,245
24	7626600	5716570,296	1910029,704	3238102,908	1910029,704	24561134,092	1023380,587	3,164	3648213470188,950	0,250
25	4480200	5760936,354	-1280736,354	1957366,554	1280736,354	25841870,446	1033674,818	1,894	1640285608475,070	0,286
26	4910039	5805302,412	-895263,412	1062103,142	895263,412	26737133,858	1028351,302	1,033	801496576903,316	0,182
27	6580080	5849668,470	730411,530	1792514,672	730411,530	27467545,388	1017316,496	1,762	533501003106,041	0,111
28	5013720	5894034,528	-880314,528	912200,144	880314,528	28347859,916	1012423,568	0,901	774953668293,749	0,176
29	4596480	5938400,586	-1341920,586	-429720,442	1341920,586	29689780,502	1023785,535	-0,420	1800750859298,910	0,232
30	4855400	5982766,644	-1126366,644	-1556087,086	1126366,644	30816147,147	1027204,905	-1,515	1268701816888,510	0,232
31	5472000	6027132,702	-555132,702	-2111219,788	555132,702	31371279,849	1011976,769	-2,086	308172316930,403	0,101
32	6949440	6071498,760	877941,240	-1233278,548	877941,240	32249211,089	1007788,159	-1,224	770780820709,194	0,126
33	7770240	6115864,818	1654375,182	421096,633	1654375,182	33903596,270	1027381,705	0,410	2736857242425,550	0,213
34	5745600	6160230,876	-141630,876	6465,757	141630,876	34318227,147	1009359,622	0,006	171918763442,325	0,072
35	5745600	6204596,934	-458996,934	-45231,177	458996,934	34777224,081	993634,974	-0,455	210678185555,741	0,080
36	8262720	6248962,992	2013757,008	1561225,831	2013757,008	36790981,089	1021971,697	1,528	4055217286623,580	0,244
37	5796900	6293329,050	-496429,050	1064796,781	496429,050	37287410,139	1007767,842	1,057	246441801856,875	0,086
38	6511680	6337695,108	173984,892	1238781,673	173984,892	37461395,030	985826,185	1,257	30270742578,780	0,027
39	5472000	6382061,166	-910061,166	328720,506	910061,166	38371456,197	983883,492	0,334	82821126229,100	0,166
40	6549300	6426427,224	122872,776	451593,282	122872,776	38494328,972	962358,224	0,469	15097719028,858	0,019
41	6019200	6470793,282	-451593,282	0,000	451593,282	38945922,255	949900,543	0,000	203936492555,233	0,075
42		6515159,340								
43		6559525,398								
44		6603891,456								
45		6648257,514								
46		6692623,572								
47		6736989,630								



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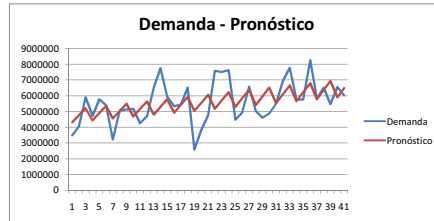
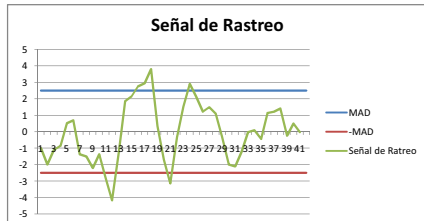
Medidas de Desempeño - Finales									
Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	IMSE	Desviación Pronóstico	Intersecciones con cero
4651784,904	44366,058	0,406	949900,543	0,187	7,780	0,000	1394748845637,200	1195666,160	10



MODELO DESCOMPOSICION

Datos Iniciales Descomp.		Pronóstico						Análisis del Error							
Periodo	Demanda	Promedio	Razón	Índice Estacional	Suavización	Ft sin ajuste	Ft ajustado	et (Error del Pronóstico)	RSFE (Error Acumulado)	let (Error Absoluto)	let acumulado	MAD	SR (Señal de Rastreo)	et*2 (Error Cuadrático)	Fracción Abs. del Error
1	3481920	5583472,122	0,624	0,916	3799163,297	4695610,952	4303511,171	-821591,171	821591,171	821591,171	821591,171	821591,171	-1,000	675012051760,956	0,236
2	4043520	5583472,122	0,724	1,003	4031047,135	4740004,011	4754670,530	-711150,530	-1532741,700	711150,530	1532741,700	766370,850	-2,000	505735075965,776	0,176
3	5896800	5583472,122	1,056	1,087	5426863,009	4784397,069	5196899,984	698100,016	-834641,684	698100,016	2230841,717	743613,906	-1,122	487343632584,445	0,168
4	4717440	5583472,122	0,845	0,916	5147253,499	4828790,128	4425569,424	291870,576	-542771,108	291870,576	2522712,293	630678,073	-0,861	85188433332,686	0,012
5	5784480	5583472,122	1,036	1,003	5766636,874	4873183,186	4888261,788	896218,212	353447,104	896218,212	3418930,505	683786,101	0,517	803207083140,925	0,155
6	5391360	5583472,122	0,966	1,087	4961703,322	4917576,245	5343411,756	47948,244	401395,348	47948,244	3466878,749	577813,125	0,695	2299034126,556	0,009
7	3201120	5583472,122	0,573	0,916	3492779,160	4961969,303	4547627,677	-1346507,677	-945112,329	1346507,677	4813386,426	687626,632	-1,374	1813082923218,320	0,421
8	5054400	5583472,122	0,905	1,003	5038808,919	5006362,362	5021853,047	32546,953	-912565,375	32546,953	4845933,379	605741,672	-1,507	1059304170,932	0,006
9	5117040	5583472,122	0,916	1,087	4709244,860	5050755,420	5488123,528	-371083,528	-1283648,903	371083,528	5217016,907	579668,545	-2,214	137702984513,779	0,073
10	5171040	5583472,122	0,926	0,916	5642181,720	5095148,478	4669685,930	501354,070	-782294,832	501354,070	5718370,977	571837,098	-1,368	251355903911,138	0,097
11	4250480	5583472,122	0,761	1,003	4237368,735	5139541,537	5155444,305	-904964,305	-1687259,138	904964,305	6623355,282	602121,389	-2,802	818960395563,667	0,213
12	4687576	5583472,122	0,840	1,087	4314008,216	5183934,595	5632835,300	-945257,300	-2632516,437	945257,300	7568592,582	630716,048	-4,174	893511362455,557	0,202
13	6516180	5583472,122	1,167	0,916	7109879,575	5228327,654	4791744,183	1724435,817	-908000,620	1724435,817	9239028,399	718484,338	-1,270	2973678888450,600	0,265
14	7750080	5583472,122	1,388	1,003	7726173,675	5272720,712	5289035,564	2461044,436	1552963,817	2461044,436	11754072,836	839576,631	1,850	6056739717971,610	0,318
15	5930280	5583472,122	1,062	1,087	5457674,868	5317113,771	5777547,072	152732,928	1705696,745	152732,928	11906805,764	793787,051	2,149	23227347438,658	0,026
16	5321160	5583472,122	0,953	0,916	5805979,393	5361506,829	4913802,436	407357,564	2113054,310	407357,564	12314163,329	769635,208	2,746	165940185330,578	0,077
17	5447520	5583472,122	0,976	1,003	5430716,279	5405899,888	5422626,822	24893,178	2137947,488	24893,178	12339056,507	725826,853	2,946	619670308,304	0,005
18	6518880	5583472,122	1,168	1,087	5999367,238	5450292,946	592258,843	956621,157	2734568,644	956621,157	12935677,663	718648,759	3,805	355958604433,627	0,092
19	2575440	5583472,122	0,461	0,916	2810092,455	5494866,005	5035860,688	-2460420,688	274147,956	2460420,688	15396098,352	810320,966	0,338	605366996388,420	0,055
20	3830400	5583472,122	0,686	1,003	3818584,537	5539079,063	5556218,081	-1725818,081	-1451670,125	1725818,081	17121916,432	856095,822	-1,696	2978448047026,380	0,251
21	4760640	5583472,122	0,853	1,087	4381247,645	5583472,122	6066970,615	-1306330,615	-2758000,740	1306330,615	18428247,047	877535,574	-3,143	1706496676691,150	0,474
22	7599240	5583472,122	1,361	0,916	8291618,903	5627865,180	5157918,941	2441321,059	-316679,682	2441321,059	20869568,106	948616,732	-0,334	5960048510844,790	0,321
23	7517160	5583472,122	1,346	1,003	7493972,153	5672258,239	5689809,339	1827350,661	1510670,979	1827350,661	22696918,767	986822,555	1,531	3339210438353,870	0,243
24	7626600	5583472,122	1,366	1,087	7018809,087	5716651,297	6211682,387	1414917,113	2925588,592	1414917,113	24111836,380	1004659,849	2,912	2001991850696,620	0,186
25	4480200	5583472,122	0,802	0,916	4888398,183	5761044,356	5279977,194	-799777,194	2125811,397	799777,194	24911613,574	996464,524	1,233	639643560734,794	0,179
26	4910039	5583472,122	0,879	1,003	4894893,223	5805437,414	5823400,597	-91361,597	1212449,800	91361,597	25824975,172	993268,276	1,221	834229407666,870	0,184
27	6580080	5583472,122	1,178	1,087	6055689,992	5849830,473	6356394,159	23685,841	1436135,641	23685,841	26048661,012	964765,223	1,489	5003535357,386	0,036
28	5013720	5583472,122	0,898	0,916	5470528,043	5894235,531	5402035,447	-388315,447	1047820,193	388315,447	26436976,460	944177,731	1,110	15078886689,657	0,077
29	4596480	5583472,122	0,823	1,003	4582301,444	5938616,590	5956991,856	-1360511,856	-312691,662	1360511,856	27797488,316	958534,080	-0,326	1850992510028,470	0,296
30	4856400	5583472,122	0,870	1,087	4469376,190	5983009,648	6501105,931	-1644705,931	-1957397,594	1644705,931	29442194,247	981406,475	-1,994	2705057600008,500	0,339
31	5472000	5583472,122	0,980	0,916	5970562,666	6027402,707	5524093,700	-52093,700	-2009491,294	52093,700	29494287,947	951428,643	-2,112	2713753618,000	0,010
32	6949440	5583472,122	1,245	1,003	6928003,374	6071795,765	6090583,114	858856,886	-1150634,408	858856,886	303531444,833	948535,776	-1,213	737635150020,827	0,124
33	7770240	5583472,122	1,392	1,087	7151001,904	6116188,824	6465817,703	1124422,297	-26212,111	1124422,297	31477567,130	953865,671	-0,027	1264325501785,080	0,145
34	5745600	5583472,122	1,029	0,916	6269090,800	6160581,882	5646151,953	99448,047	73235,935	99448,047	31577015,176	928735,740	0,079	9889913985,452	0,017
35	5745600	5583472,122	1,029	1,003	5727876,805	6204974,941	6224174,373	-478574,373	-405338,438	478574,373	3205589,549	915873,987	-0,443	229033430314,998	0,083
36	8262720	5583472,122	1,480	1,087	7604234,419	6249677,999	6790529,475	1472190,525	1066852,087	1472190,525	33527780,074	931327,224	1,146	2167344941846,280	0,178
37	5796900	5583472,122	1,038	0,916	6325064,825	6293761,058	5768210,208	28699,794	1095541,881	28699,794	33556469,868	906931,618	1,208	823104262,399	0,005
38	6511680	5583472,122	1,166	1,003	6491593,712	6338154,116	6357765,631	159314,369	1249456,250	159314,369	33710384,237	887115,375	1,408	23689632900,012	0,024
39	5472000	5583472,122	0,980	1,087	5035916,834	6382547,175	6935241,247	-1463241,247	-213784,997	1463241,247	35173625,484	901887,833	-0,237	2141074946760,810	0,267
40	6549300	5583472,122	1,173	0,916	7146017,191	6426940,233	5890268,459	659031,541	445246,544	659031,541	35832657,024	895816,426	0,497	434322571676,867	0,101
41	6019200	5583472,122	1,078	1,003	6000632,843	6471333,292	6491356,890	-472156,890	-26910,346	472156,890	36304813,914	885483,266	-0,030	222932128524,519	0,078
42				1,087			6515726,350				7079953,019				
43				0,939			6560119,409				6160123,465				
44				1,025			6604512,467				6766640,172				
45				1,089			6648905,526				7241551,660				
46				0,947			6693298,584				6337686,929				
47				1,024			6737691,643				6896658,350				

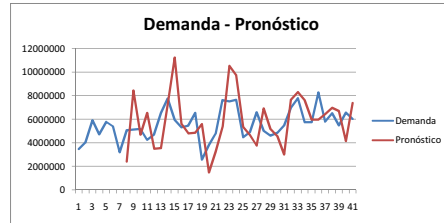
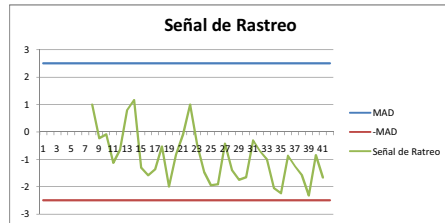
Valores Iniciales	Medidas de Desempeño Finales									
Estacionalidad	Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
3	4651217,894	44393,058	0,419	885483,266	0,174	7,979	-656,350	1257441992216,330	1335287,647	12,000



MODELO WINTERS

Datos Iniciales Winters		Pronóstico				Análisis del Error								
Periodo	Demanda	St	It	Tt	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	let (Error Absoluto)	let acumulado	MAD	SR (Señal de Rastreo)	et*2 (Error Cuadrático)	Fracción Abs. del Error	
1	3481920			0,713										
2	4043520			0,828										
3	5896800			1,207										
4	4717440			0,966										
5	5784480			1,184										
6	5391360			1,103										
7	3201120			0,937	-280800,000									
8	5054400	3201120,000		0,916	1608819,732	2416816,552	2637583,448	2637583,448	2637583,448	2637583,448	2637583,448	1,000	6956846446618,790	0,522
9	5117040	5374371,600		0,916	1608819,732	2416816,552	2637583,448	2637583,448	2637583,448	2637583,448	2637583,448	-0,226	10962386847292,500	0,647
10	5170400	4870805,526		0,982	280293,063	4685740,319	-3310949,539	-673366,090	3310949,539	5948532,987	2974266,493	-0,088	235515779927,487	0,094
11	4250480	5240114,683		0,982	280293,063	4685740,319	-3310949,539	-673366,090	3310949,539	5948532,987	2974266,493	-0,088	235515779927,487	0,094
12	4687578	4034156,453		1,082	-864120,432	6535655,148	-2285175,148	-2473241,558	2285175,148	8719007,815	2179751,954	-1,135	5222025456262,120	0,538
13	6516180	4000158,808		1,157	-224925,887	3497970,782	1189607,218	-1283634,339	1189607,218	9908615,033	1981723,007	-0,648	1415165333500,940	0,254
14	7750080	6224363,673		1,023	1660904,792	3536568,771	2979611,229	1695976,889	2979611,229	1288826,262	2148037,710	0,790	8878083074475,420	0,457
15	5930280	8331046,385		0,927	2004153,791	7219991,899	530088,101	2226064,990	530088,101	13418314,363	1916902,052	1,161	280993394689,735	0,068
16	5321160	6585890,904		0,941	-882822,048	11213161,832	-5282881,832	-3056816,842	5282881,832	18701196,195	2337649,524	-1,308	27908840450976,600	0,891
17	5447520	5483539,482		0,973	-1051851,966	5601156,080	-279996,080	-3336812,922	279996,080	18981192,275	2109021,364	-1,582	78397804968,365	0,053
18	6518880	4894965,669		1,106	-695127,789	4796352,048	651167,952	-2685644,971	651167,952	19632360,227	1963236,023	-1,368	424019701069,509	0,120
19	2575440	5305120,233		1,213	155939,623	4858372,634	1660507,366	-1025137,604	1660507,366	2129867,593	1935715,236	-0,530	2757284713025,960	0,255
20	6518880	3195190,286		0,854	-1588779,946	5584810,911	-3009370,911	-4034508,516	3009370,911	2430238,504	2025186,542	-1,992	9056313280828,240	1,168
21	3830400	3550988,749		1,045	-91454,571	1489215,184	2341184,816	-1693323,700	2341184,816	26643423,200	2049494,102	-0,826	5481146342648,990	0,611
22	4706400	4691045,946		0,999	856809,491	3255568,686	1505071,314	-188252,385	1505071,314	28148494,634	2010606,760	-0,094	2265239661099,990	0,316
23	7599240	7289969,767		1,027	2198237,525	5397905,395	2201334,605	2013082,220	2201334,605	30349829,239	2023321,949	0,995	4845874043063,110	0,290
24	7517160	7415039,342		1,034	601898,203	10495389,466	-2978229,466	-965147,246	2978229,466	33328058,705	2083003,669	-0,463	8869850749275,570	0,396
25	7426600	6685373,333		1,157	-423406,240	9724163,647	-2097563,647	-3062710,893	2097563,647	35425622,352	2083860,138	-1,470	439977325782,730	0,275
26	4840200	5481225,859		0,825	-1024576,990	5345802,544	-865602,544	-3928313,437	865602,544	36291224,896	2016179,161	-1,948	749267763389,530	0,193
27	4910039	4641829,105		1,055	-881988,208	4658644,890	251394,110	-3676919,327	251394,110	36542619,006	1923295,737	-1,912	63198989568,323	0,051
28	6580080	5938522,960		1,084	795596,980	3754581,054	2825498,946	-851420,381	2825498,946	39368117,952	1968405,898	-0,433	7983444293251,770	0,429
29	5013720	5307388,220		0,963	-302986,444	6916914,367	-1903194,367	-2754614,748	1903194,367	41271312,319	1965300,587	-1,402	3622148799077,270	0,380
30	4596480	4573607,117		1,011	-634698,331	5175029,083	-578549,083	-3333163,831	578549,083	41849861,401	1902266,427	-1,752	334719041221,657	0,126
31	4856400	4138888,811		1,170	-480713,712	4555997,562	300402,438	-3032761,393	300402,438	42150563,839	1832620,167	-1,655	90241624492,074	0,062
32	5472000	5946335,819		0,899	1281170,043	3019321,353	2452678,647	-580082,746	2452678,647	44602942,486	1858455,937	-0,312	6015632543058,940	0,448
33	6994440	6734233,987		1,037	901350,699	7625312,579	-675872,579	-1259955,326	675872,579	45278815,065	1811152,603	-0,693	456803743115,694	0,097
34	7702400	7275849,019		1,071	624354,236	8276653,469	-506413,469	-1762368,795	506413,469	45785228,534	1760970,328	-1,001	256454601776,514	0,065
35	5745600	6412033,147		0,911	-521536,747	7606417,297	-1860817,297	-3623186,091	1860817,297	47646045,830	1764668,364	-2,053	3462641011067,240	0,324
36	5745600	5729051,881		1,005	-645849,027	5957658,808	-212058,808	-3835244,899	212058,808	47858104,638	1709218,023	-2,244	44968997882,210	0,037
37	8262720	6608455,643		1,233	528595,621	5945750,401	2316969,599	-1518275,300	2316969,599	50175074,237	1730174,974	-0,878	5368348123922,510	0,280
38	5796900	6604623,075		0,882	118625,915	6418775,879	-621875,879	-2140151,178	621875,879	50796950,116	1693231,671	-1,264	386729608304,259	0,107
39	6511680	6381227,220		1,024	-144692,348	6972247,322	-460567,322	-2600718,500	460567,322	51257517,437	1653468,304	-1,573	21212257883,890	0,071
40	5472000	5366801,135		1,031	-814425,825	6682322,655	-1210322,655	-3811041,155	1210322,655	52467840,093	1639620,003	-2,324	1464880929566,440	0,221
41	6549300	6584199,858		0,976	750079,077	4146074,511	2403225,489	-1407815,666	2403225,489	54871065,582	1662759,563	-0,847	5775492751105,330	0,367
42	6019200	6299704,682		0,966	-46543,098	7369200,354	-1350000,354	-2757816,021	1350000,354	56221065,936	1653560,763	-1,668	1822500957105,530	0,224

Valores Iniciales			Medidas de Desempeño Finales						
Alpha	Beta	Gamma	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,77	0,77	0,78	1653560,763	0,307	3,486	-81112,236	4063157421126,330	2046040,910	5

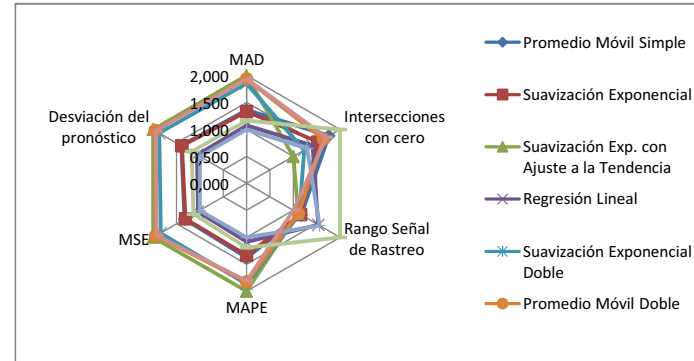
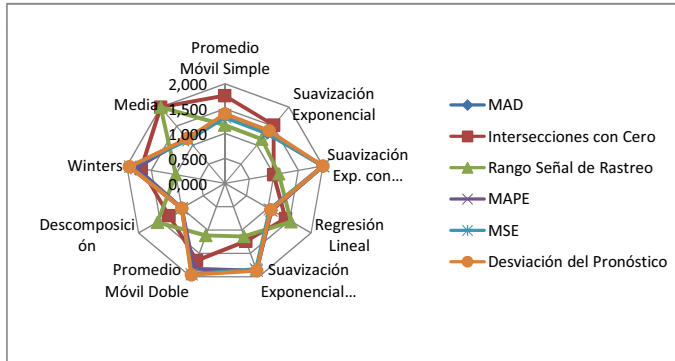


COMPARACIONES

Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	Intersecciones con cero (%)
Promedio Móvil Simple	1179830,000	4	4,839	0,235	2246108042940,250	1517794,636	0,098
Suavización Exponencial	1155458,706	8	4,772	0,229	2199199008137,050	1504005,740	0,195
Suavización Exp. con Ajuste a la Tendencia	1705231,610	17	4,332	0,339	4276554080452,580	2095016,701	0,415
Regresión Lineal	949900,543	10	7,780	0,187	1394748845637,200	1195666,160	0,244
Suavización Exponencial Doble	1587330,752	13	4,554	0,317	3783958517273,600	1972072,128	0,317
Promedio Móvil Doble	1653764,037	6	4,383	0,310	4106121801149,370	2055100,865	0,146
Descomposición	885483,266	12	7,979	0,174	1257441992216,330	1135287,647	0,293
Winters	1653560,763	5	3,486	0,307	4063157421126,330	2046040,910	0,122
Media	1023633,643	0	11,479	0,205	1670317440154,640	1308462,982	0,000



- [PM Simple](#)
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- [SET](#)
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- [SE Doble](#)
- [PM Doble](#)
- [Descomposicion](#)
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- [Media](#)



Datos Normalizados						
Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico
Promedio Móvil Simple	1,359	1,765	1,169	1,373	1,327	1,399
Suavización Exponencial	1,329	1,529	1,161	1,335	1,312	1,384
Suavización Exp. con Ajuste a la Tendencia	2,000	1,000	1,106	2,000	2,000	2,000
Regresión Lineal	1,079	1,412	1,537	1,082	1,045	1,063
Suavización Exponencial Doble	1,856	1,235	1,134	1,865	1,837	1,872
Promedio Móvil Doble	1,937	1,647	1,112	1,826	1,944	1,958
Descomposición	1,000	1,294	1,562	1,000	1,000	1,000
Winters	1,937	1,706	1,000	1,806	1,929	1,949
Media	1,169	2,000	2,000	1,191	1,137	1,180

8. PF 30 GR

Periodo	Demanda
1	2.561.792
2	2.702.240
3	1.334.256
4	2.983.968
5	2.510.964
6	2.519.168
7	2.208.864
8	2.755.152
9	2.279.088
10	2.217.072
11	2.349.312
12	2.310.096
13	1.883.907
14	2.802.192

FOR TSM

NÚMERO DE PERIODOS DE DEMANDA

Elegir Modelos

Datos	14,000
Desviación Estándar	417.687,324
Promedio	2.387.005,071
Coefficiente Correlación	(0,070)
Coefficiente de Variación	0,175

Creado por:
 Rosana Builes Palacio
 María Cristina Bravo Gómez

[Comparaciones](#)

Modelos Pronosticados

[PM Simple](#)

[SE](#)

[SET](#)

[Reg Lineal](#)

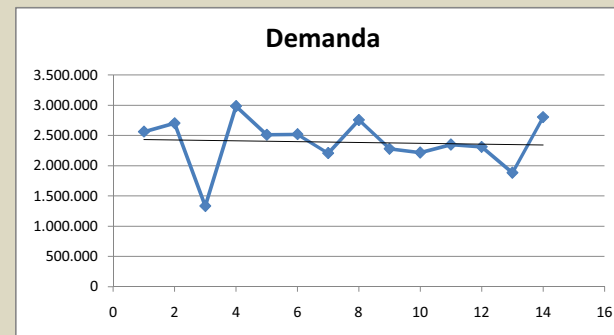
[SE Doble](#)

[PM Doble](#)

[Descomposicion](#)

[Winters](#)

[Media](#)



MODELO MEDIA

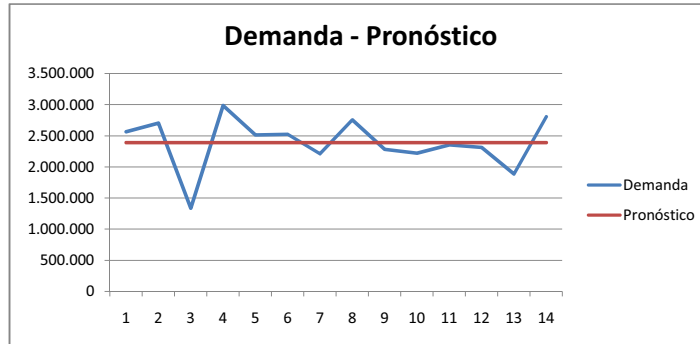
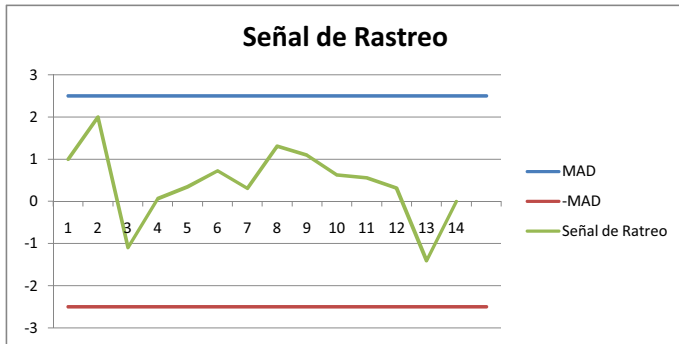
Datos Iniciales Media	
Periodo	Demanda
1	2.561.792
2	2.702.240
3	1.334.256
4	2.983.968
5	2.510.964
6	2.519.168
7	2.208.864
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Pronóstico	Análisis del Error								
	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
2387005,071	174786,929	174786,929	174786,929	174786,929	174786,929	174786,929	1,000	30550470399,434	0,068
2387005,071	315234,929	490021,857	315234,929	490021,857	245010,929	2,000	99373060191,434	0,117	
2387005,071	-1052749,071	-562727,214	1052749,071	1542770,929	514256,976	-1,094	1108280607393,720	0,789	
2387005,071	596962,929	34235,714	596962,929	2139733,857	534933,464	0,064	356364738088,577	0,200	
2387005,071	123958,929	158194,643	123958,929	2263692,786	452738,557	0,349	15365815972,577	0,049	
2387005,071	132162,929	290357,571	132162,929	2395855,714	399309,286	0,727	17467039688,577	0,052	
2387005,071	-178141,071	112216,500	178141,071	2573996,786	367713,827	0,305	31734241329,719	0,081	
2387005,071	368146,929	480363,429	368146,929	2942143,714	367767,964	1,306	135532161016,577	0,134	
2387005,071	-107917,071	372446,357	107917,071	3050060,786	338895,643	1,099	11646094305,719	0,047	
2387005,071	-169933,071	202513,286	169933,071	3219993,857	321999,386	0,629	28877248765,148	0,077	
2387005,071	-37693,071	164820,214	37693,071	3257686,929	296153,357	0,557	1420767633,719	0,016	
2387005,071	-76909,071	87911,143	76909,071	3334596,000	277883,000	0,316	5915005268,005	0,033	
2387005,071	-503098,071	-415186,929	503098,071	3837694,071	295207,236	-1,406	253107669475,148	0,267	
2387005,071	415186,929	0,000	415186,929	4252881,000	303777,214	0,000	172380185656,577	0,148	
2387005,071									
2387005,071									
2387005,071									
2387005,071									
2387005,071									
2387005,071									
2387005,071									

Medidas de Desempeño Finales						
MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
303777,214	0,148	3,406	0,000	162001078941,781	417687,324	4



MODELO PMS

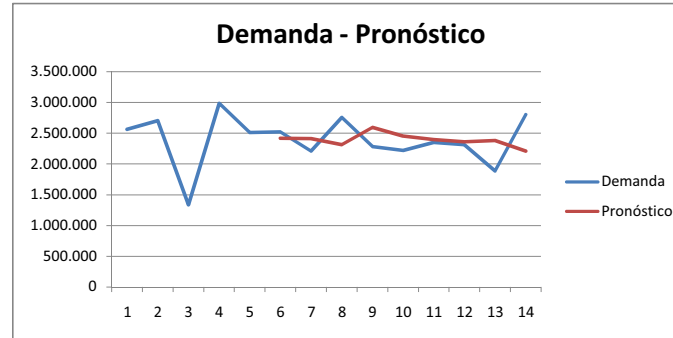
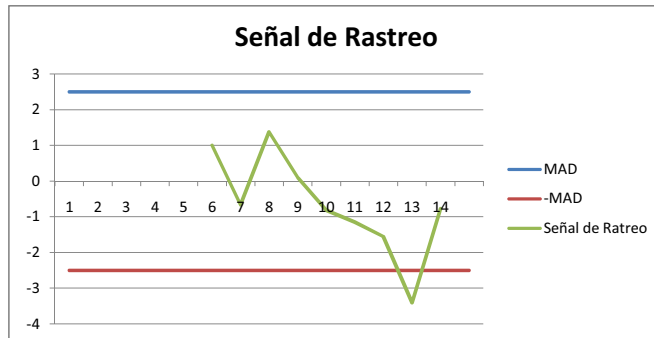
Datos Iniciales PMS	
Periodo	Demanda
1	2.561.792
2	2.702.240
3	1.334.256
4	2.983.968
5	2.510.964
6	2.519.168
7	2.208.864
8	2.755.152
9	2.279.088
10	2.217.072
11	2.349.312
12	2.310.096
13	1.883.907
14	2.802.192



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Periodo	Ft (Pronóstico)	Análisis del Error							
		et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
6	2418644,000	100524,000	100524,000	100524,000	100524,000	100524,000	1,000	10105074576,000	0,040
7	2410119,200	-201255,200	-100731,200	201255,200	301779,200	150889,600	-0,668	40503655527,040	0,091
8	2311444,000	443708,000	342976,800	443708,000	745487,200	248495,733	1,380	196876789264,000	0,161
9	2595623,200	-316535,200	26441,600	316535,200	1062022,400	265505,600	0,100	100194532839,040	0,139
10	2454647,200	-237575,200	-211133,600	237575,200	1299597,600	259919,520	-0,812	56441975655,040	0,107
11	2395868,800	-46556,800	-257690,400	46556,800	1346154,400	224359,067	-1,149	2167535626,240	0,020
12	2361897,600	-51801,600	-309492,000	51801,600	1397956,000	199708,000	-1,550	2683405762,560	0,022
13	2382144,000	-498237,000	-807729,000	498237,000	1896193,000	237024,125	-3,408	248240108169,000	0,264
14	2207895,000	594297,000	-213432,000	594297,000	2490490,000	276721,111	-0,771	353188924209,000	0,212
	2312515,800								
	2312515,800								
	2312515,800								
	2312515,800								
	2312515,800								
	2312515,800								

Valores Iniciales	Medidas de Desempeño Finales						
N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
5	276721,111	0,117	4,788	-23714,667	112266889069,769	355387,465	3



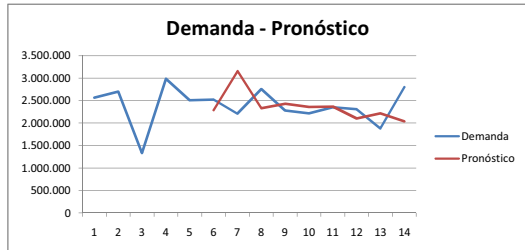
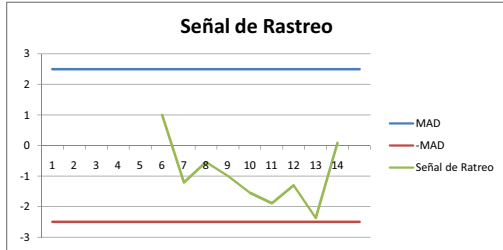
MODELO PMD

Datos Iniciales PMD		Pronóstico					Análisis del Error							
Periodo	Demanda	St'	St''	a	b	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et*2 (Error Cuadrático)	Fracción Abs. del Error
1	2.561.792													
2	2.702.240													
3	1.334.256													
4	2.983.968	2199429,333												
5	2.510.964	2340154,667												
6	2.519.168	2276396,000	2271993,333	2280798,667	4402,667	2285201,333	233966,667	233966,667	233966,667	233966,667	233966,667	1,000	54740401111,111	0,093
7	2.208.864	2671366,667	2429305,778	2913427,556	242060,889	3155488,444	-946624,444	-712657,778	946624,444	1180591,111	590295,556	-1,207	896097838819,753	0,429
8	2.755.152	2412998,667	2453587,111	2372410,222	-40588,444	2331821,778	423330,222	-289327,556	423330,222	1603921,333	534640,444	-0,541	179208477046,715	0,154
9	2.279.088	2494394,667	2526253,333	2462536,000	-31858,667	2430677,333	-151589,333	-440916,889	151589,333	1755510,667	438877,667	-1,005	22979325980,444	0,067
10	2.217.072	2414368,000	2440587,111	2388148,889	-26219,111	2361929,778	-144857,778	-585774,667	144857,778	1900368,444	380073,689	-1,541	20983775782,716	0,065
11	2.349.312	2417104,000	2441955,556	2392252,444	-24851,556	2367400,889	-18068,889	-603863,556	18068,889	1918457,333	319742,889	-1,889	327207901,235	0,008
12	2.310.096	2281824,000	2371098,667	2192549,333	-89274,667	2103274,667	206821,333	-397042,222	206821,333	2125278,667	303611,238	-1,308	42775063921,778	0,090
13	1.883.907	2292160,000	2330362,667	2253957,333	-38202,667	2215754,667	-331847,667	-728889,889	331847,667	2457126,333	307140,792	-2,373	110122873872,111	0,176
14	2.802.192	2181105,000	2251696,333	2110513,667	-70591,333	2039922,333	762269,667	33379,778	762269,667	3219396,000	357710,667	0,093	581055044720,112	0,272
15		2332065,000	2268443,333	2395686,667	63621,667	2459308,333								
16						2522930,000								
17						2586551,667								
18						2650173,333								
19						2713795,000								
20						2777416,667								




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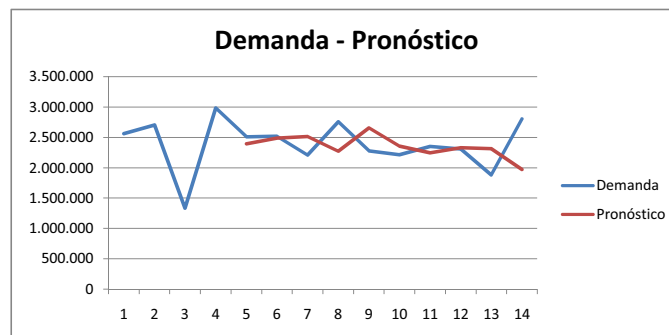
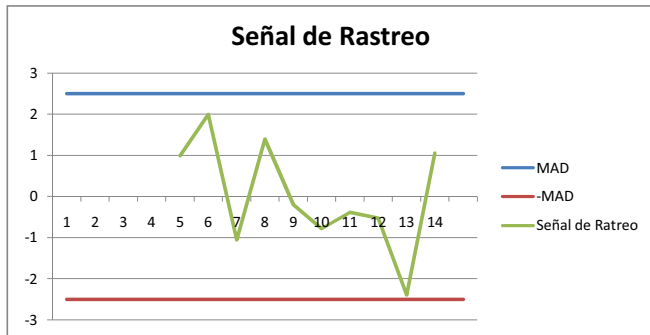
Valores Iniciales N (Periodos de Promedio)	Medidas de Desempeño Finales						
	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
3	357710,667	0,150	3,373	3708,864	212032223239,553	488401,731	2



MODELO SE

Datos Iniciales SE		 PM Simple SET Reg Lineal SE Doble PM Doble Descomposicion Winters Media Comparaciones	Análisis del Error							
Periodo	Demanda		Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)
1	2.561.792									
2	2.702.240									
3	1.334.256									
4	2.983.968									
5	2.510.964	2395564,000	115400,000	115400,000	115400,000	115400,000	115400,000	1,000	13317160000,000	0,046
6	2.519.168	2487884,000	31284,000	146684,000	31284,000	146684,000	73342,000	2,000	978688656,000	0,012
7	2.208.864	2512911,200	-304047,200	-157363,200	304047,200	450731,200	150243,733	-1,047	92444699827,840	0,138
8	2.755.152	2269673,440	485478,560	328115,360	485478,560	936209,760	234052,440	1,402	235689432219,674	0,176
9	2.279.088	2658056,288	-378968,288	-50852,928	378968,288	1315178,048	263035,610	-0,193	143616963309,651	0,166
10	2.217.072	2354881,658	-137809,658	-188662,586	137809,658	1452987,706	242164,618	-0,779	18991501727,829	0,062
11	2.349.312	2244633,932	104678,068	-83984,517	104678,068	1557665,774	222523,682	-0,377	10957498020,704	0,045
12	2.310.096	2328376,386	-18280,386	-102264,903	18280,386	1575946,160	196993,270	-0,519	334172523,423	0,008
13	1.883.907	2313752,077	-429845,077	-532109,981	429845,077	2005791,238	222865,693	-2,388	184766790445,343	0,228
14	2.802.192	1969876,015	832315,985	300206,004	832315,985	2838107,222	283810,722	1,058	692749898133,840	0,297
		2635728,803								
		2635728,803								
		2635728,803								
		2635728,803								
		2635728,803								
		2635728,803								

Valores Iniciales		Medidas de Desempeño Finales						
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,800	4,000	283810,722	0,118	4,388	30020,600	139384680486,430	393537,631	4



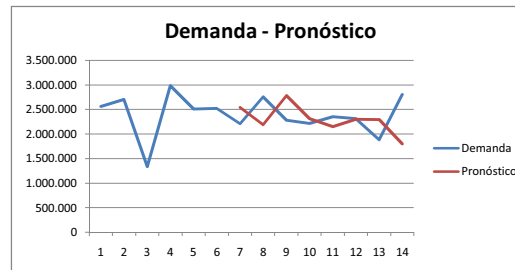
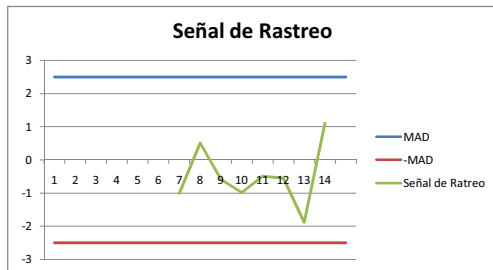
MODELO SED

Datos Iniciales SED		Pronóstico				Análisis del Error								
Periodo	Demanda	St'	St''	a	b	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	2.561.792													
2	2.702.240													
3	1.334.256													
4	2.983.968													
5	2.510.964													
6	2.519.168													
7	2.208.864													
8	2.755.152													
9	2.279.088													
10	2.217.072													
11	2.349.312													
12	2.310.096													
13	1.883.907													
14	2.802.192													
15		2395564,000	2395564,000											
16		2468490,360	2438590,552	2498390,168	43026,552									
17		2315310,808	2365855,503	2264766,112	-72735,049	2541416,720	-332552,720	-332552,720	332552,720	332552,720	332552,720	-1,000	110591311579,398	0,151
18		2574817,111	2489142,852	2660491,370	123287,349	2192031,063	563120,937	230568,217	563120,937	895673,657	447836,829	0,515	317105189913,006	0,204
19		2400336,936	2436747,361	2363926,510	-52395,491	2783778,719	-504690,719	-274122,502	504690,719	1400364,376	466788,125	-0,587	254712722111,214	0,221
20		2292210,624	2351470,686	2232950,561	-85276,675	2311531,019	-94459,019	-368581,521	94459,019	1494823,396	373705,849	-0,986	8922506334,637	0,043
		2325900,436	2336384,238	2315416,633	-15086,448	2147673,886	201638,114	-166943,407	201638,114	1696461,510	339292,302	-0,492	40657929037,497	0,086
		2316575,819	2324697,271	2308454,367	-11686,968	2300330,185	9765,815	-157177,593	9765,815	1706227,325	284371,221	-0,553	95371136,203	0,004
		2061301,216	2169293,598	1953308,833	-155403,672	2296767,399	-412860,399	-570037,992	412860,399	2119087,723	302726,818	-1,883	170453709013,662	0,219
		2498426,778	2363482,175	2633371,382	194188,576	1797905,161	1004286,839	434248,848	1004286,839	3123374,563	390421,820	1,112	1008592055836,470	0,358
						2827559,959								
						3021748,535								
						3215937,111								
						3410125,688								
						3604314,264								
						3798502,840								



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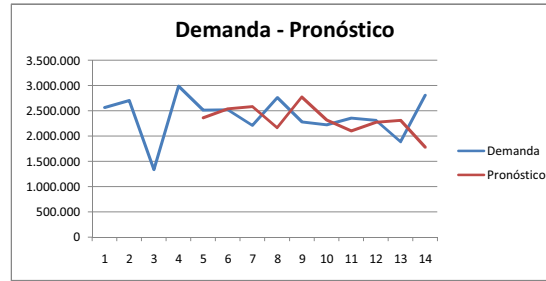
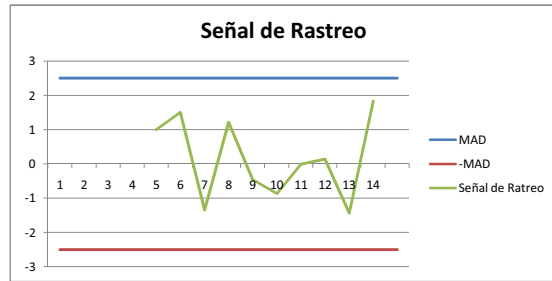
Valores Iniciales		Medidas de Desempeño Finales						
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,590	4,000	390421,820	0,161	2,995	54281,106	238891349370,261	522511,899	3,000




MODELO SET

Datos Iniciales SET		Pronóstico			Análisis del Error							
Periodo	Demanda	St	Tt	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	2.561.792											
2	2.702.240											
3	1.334.256											
4	2.983.968											
5	2.510.964	2370200,000	-10145,600	2360054,400	150909,600	150909,600	150909,600	150909,600	150909,600	1,000	22773707372,160	0,060
6	2.519.168	2471727,504	69142,304	2540869,808	-21701,808	129207,792	21701,808	172611,408	86305,704	1,497	470968463,524	0,009
7	2.208.864	2524810,470	57740,174	2582550,644	-373686,644	-244478,852	373686,644	546298,052	182099,351	-1,343	139641707933,328	0,169
8	2.755.152	2306022,527	-138594,789	2167427,739	587724,261	343245,409	587724,261	1134022,313	283505,578	1,211	345419807352,552	0,213
9	2.279.088	2602343,692	170195,538	2772539,230	-493451,230	-150205,821	493451,230	1627473,543	325494,709	-0,461	243494116565,033	0,217
10	2.217.072	2407385,320	-89063,738	2318321,582	-101249,582	-251455,402	101249,582	1728723,125	288120,521	-0,873	10251477781,152	0,046
11	2.349.312	2243396,891	-142260,268	2101136,623	248175,377	-3280,025	248175,377	1976898,502	282414,072	-0,012	61591017837,361	0,106
12	2.310.096	2284786,402	-11868,925	2272917,477	37178,523	33898,498	37178,523	2014077,025	251759,628	0,135	1382242594,753	0,016
13	1.883.907	2300429,584	7664,671	2308094,255	-424187,255	-390288,757	424187,255	2438264,280	270918,253	-1,441	179934827177,354	0,225
14	2.802.192	1994195,686	-215203,313	1778992,373	1023199,627	632910,870	1023199,627	3461463,907	346146,391	1,828	1046937475729,270	0,365
		2536160,097	322385,771	2858545,868								
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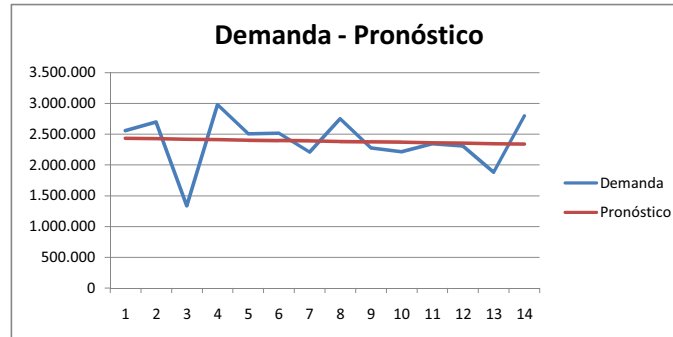
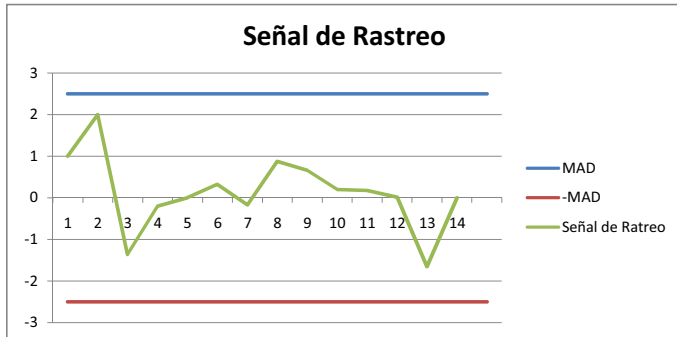
Valores Iniciales			Medidas de Desempeño Finales								
Alpha	Beta	N (Periodos de Promedio)	MAD	MAPE	Pendiente	Intercepto	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,74	0,71	4	346146,391	0,143	-10145,600	2420928,000	3,269	63291,087	205189734880,649	477481,512	6



MODELO REGRESION

Datos Iniciales Reg. Lineal		 PM Simple SE SET SE Doble PM Doble Descomposicion Winters Media Comparaciones	Análisis del Error							
Periodo	Demanda		Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)
1	2.561.792	2432432,314	129359,686	129359,686	129359,686	129359,686	129359,686	1,000	16733928288,099	0,050
2	2.702.240	2425443,508	276796,492	406156,178	276796,492	406156,178	203078,089	2,000	76616298153,842	0,102
3	1.334.256	2418454,701	-1084198,701	-678042,523	1084198,701	1490354,879	496784,960	-1,365	1175486823464,540	0,813
4	2.983.968	2411465,895	572502,105	-105540,418	572502,105	2062856,985	515714,246	-0,205	327758660795,642	0,192
5	2.510.964	2404477,088	106486,912	946,495	106486,912	2169343,897	433868,779	0,002	11339462446,019	0,042
6	2.519.168	2397488,281	121679,719	122626,213	121679,719	2291023,615	381837,269	0,321	14805953938,365	0,048
7	2.208.864	2390499,475	-181635,475	-59009,262	181635,475	2472659,090	353237,013	-0,167	32991445678,676	0,082
8	2.755.152	2383510,668	371641,332	312632,070	371641,332	2844300,422	355537,553	0,879	138117279552,719	0,135
9	2.279.088	2376521,862	-97433,862	215198,209	97433,862	2941734,284	326859,365	0,658	9493357374,296	0,043
10	2.217.072	2369533,055	-152461,055	62737,154	152461,055	3094195,338	309419,534	0,203	23244373274,959	0,069
11	2.349.312	2362544,248	-13232,248	49504,905	13232,248	3107427,587	282493,417	0,175	175092396,440	0,006
12	2.310.096	2355555,442	-45459,442	4045,464	45459,442	3152887,029	262740,586	0,015	2066560844,971	0,020
13	1.883.907	2348566,635	-464659,635	-460614,171	464659,635	3617546,664	278272,820	-1,655	215908576551,518	0,247
14	2.802.192	2341577,829	460614,171	0,000	460614,171	4078160,835	291297,203	0,000	212165414920,829	0,164
15		2334589,022								
16		2327600,215								
17		2320611,409								
18		2313622,602								
19		2306633,796								
20		2299644,989								

Medidas de Desempeño Finales										
Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero	
2439421,121	-6988,807	-0,070	291297,203	0,144	3,655	0,000	161207373405,780	416662,862		6

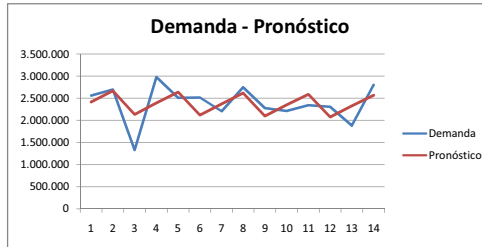
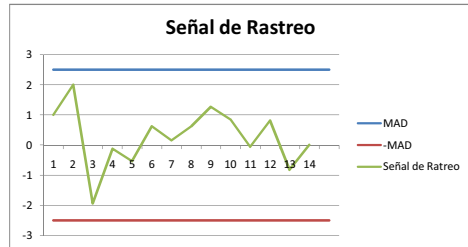


MODELO DESCOMPOSICION

Datos Iniciales Descomp.		Pronóstico							Análisis del Error						
Periodo	Demanda	Promedio	Razón	Índice Estacional	Suavización	Ft sin ajuste	Ft ajustado	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et ² (Error Cuadrático)	Fracción Abs. del Error
1	2.561.792	2387005,071	1,073	0,993	2578953,806	2436927,799	2420711,113	141080,887	141080,887	141080,887	141080,887	141080,887	1,000	19903816551,009	0,055
2	2.702.240	2387005,071	1,132	1,099	2458204,807	2429247,379	2670407,860	31832,140	172913,027	31832,140	172913,027	86456,513	2,000	1013285154,967	0,012
3	1.334.256	2387005,071	0,559	0,884	1508953,555	2421566,960	2141212,521	-806956,521	-634043,494	806956,521	979869,548	326623,183	-1,941	651178826569,482	0,605
4	2.983.968	2387005,071	1,250	0,993	3003958,023	2413886,540	2397823,184	586144,816	-47898,678	586144,816	1566014,364	391503,591	-0,122	343565745132,648	0,196
5	2.510.964	2387005,071	1,052	1,099	2284202,652	2406206,120	2645079,209	-134115,209	-182013,887	134115,209	1700129,573	340025,915	-0,535	17986889275,050	0,053
6	2.519.168	2387005,071	1,055	0,884	2849009,117	2398525,701	2120838,840	398329,160	216315,273	398329,160	2098458,732	349743,122	0,618	158666119476,119	0,158
7	2.208.864	2387005,071	0,925	0,993	2232661,492	2390845,281	2374935,255	-166071,255	50244,018	166071,255	2264529,987	323504,284	0,155	27579661697,558	0,075
8	2.755.152	2387005,071	1,154	1,099	2506338,405	2383164,862	2619750,558	135401,442	185645,459	135401,442	2399931,429	299991,429	0,619	18333550439,487	0,049
9	2.279.088	2387005,071	0,955	0,884	2577494,828	2375484,442	2100465,160	178622,840	364268,300	178622,840	2578554,269	286506,030	1,271	31906119072,888	0,078
10	2.217.072	2387005,071	0,929	0,993	2231924,478	2367804,022	2352047,326	-134975,326	229292,974	134975,326	2713529,595	271352,959	0,845	18218338520,257	0,061
11	2.349.312	2387005,071	0,984	1,099	2137149,199	2360123,603	2594421,907	-245109,907	-15816,933	245109,907	2958639,502	268967,227	-0,059	60078866731,385	0,104
12	2.310.096	2387005,071	0,968	0,884	2612562,785	2352443,183	2080091,479	230004,521	214187,588	230004,521	3188644,023	265720,335	0,806	52902079619,175	0,100
13	1.883.907	2387005,071	0,789	0,993	1896527,559	2344762,764	2329159,396	-445252,396	-231064,809	445252,396	3633896,419	279530,494	-0,827	198249696424,572	0,236
14	2.802.192	2387005,071	1,174	1,099	2549130,294	2337082,344	2569093,257	233098,743	2033,935	233098,743	3866995,163	276213,940	0,007	54335024129,185	0,083
15				0,884		2329401,925	2059717,799								
16				0,973		2321721,505	2259907,312								
17				1,091		2314041,085	2524795,714								
18				0,993		2306360,666	2289399,332								
19				0,881		2298680,246	2025454,636								
20				1,104		2290999,827	2529550,208								

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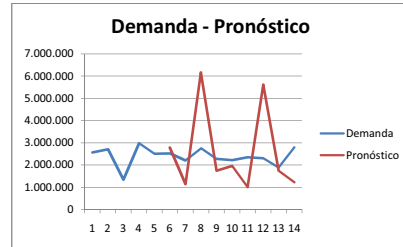
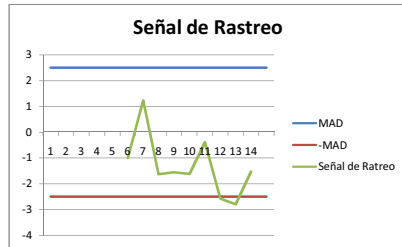
Valores Iniciales	Medidas de Desempeño Finales										
Estacionalidad	Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero	
3	2444608,218	-7680,420	-0,084	276213,940	0,133	3,941	145,281	118137001342,413	356685,384	6,000	



MODELO WINTERS

Datos Iniciales Winters		Pronóstico				Análisis del Error							
Periodo	Demanda	St	It	Tt	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	2.561.792		1,069										
2	2.702.240		1,128										
3	1.334.256		0,557										
4	2.983.968		1,246										
5	2.510.964	2510964,000	1,008	-50828,000									
6	2.519.168	2262761,500	1,115	-222543,815	2775078,397	-255910,397	-255910,397	255910,397	255910,397	255910,397	-1,000	65490131209,179	0,102
7	2.208.864	3715528,181	0,590	1234976,316	1136338,953	1072525,047	816614,650	1072525,047	1328435,444	664217,722	1,229	1150309976191,780	0,486
8	2.755.152	2567890,632	1,092	-837897,746	6166458,923	-3411306,923	-2594692,273	3411306,923	4739742,367	1579914,122	-1,642	11637014921871,000	1,238
9	2.279.088	2192685,733	1,036	-435354,969	1743197,733	535890,267	-2058802,006	535890,267	5275632,633	1318908,158	-1,561	287178377791,805	0,235
10	2.217.072	1958469,602	1,130	-260364,180	1959306,101	257765,899	-1801036,107	257765,899	5533398,533	1106679,707	-1,627	66443258942,740	0,116
11	2.349.312	3682837,269	0,633	1466352,527	1002506,165	1346805,835	-454230,272	1346805,835	6880204,367	1146700,728	-0,396	1813885956335,350	0,573
12	2.310.096	2509988,940	0,939	-829752,217	5622508,435	-3312412,435	-3766642,707	3312412,435	10192616,802	1456088,115	-2,587	10972076139498,900	1,434
13	1.883.907	1800613,891	1,045	-725024,081	1740573,788	143333,212	-3623309,495	143333,212	10335950,015	1291993,752	-2,804	20544409792,644	0,076
14	2.802.192	2296959,206	1,210	337567,293	1215589,646	1586602,354	-2036707,141	1586602,354	11922552,369	1324728,041	-1,537	2517307029818,170	0,566

Valores Iniciales			Medidas de Desempeño Finales						
Alpha	Beta	Gamma	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,87	0,87	0,89	1324728,041	0,536	4,034	-226300,793	3170027800161,280	1888460,027	2

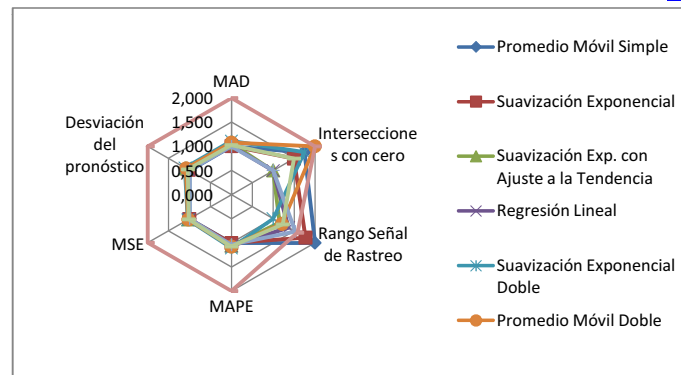
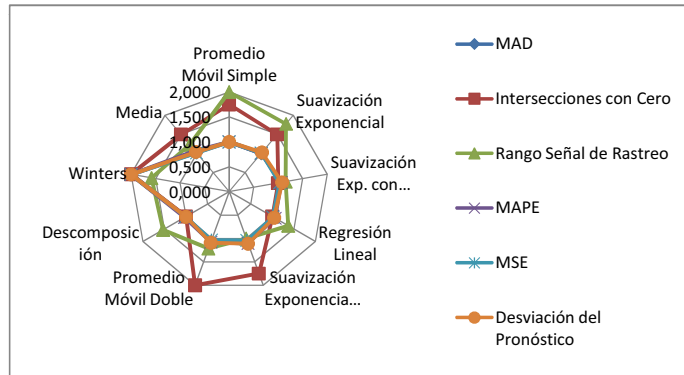


COMPARACIONES

Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	Intersecciones con cero (%)
Promedio Móvil Simple	276721,111	3	4,788	0,117	112266889069,769	355387,465	0,214
Suavización Exponencial	283810,722	4	4,388	0,118	139384680486,430	393537,631	0,286
Suavización Exp. con Ajuste a la Tendencia	346146,391	6	3,269	0,143	205189734880,649	477481,512	0,429
Regresión Lineal	291297,203	6	3,655	0,144	161207373405,780	416662,862	0,429
Suavización Exponencial Doble	390421,820	3	2,995	0,161	238891349370,261	522511,899	0,214
Promedio Móvil Doble	357710,667	2	3,373	0,150	212032223239,553	488401,731	0,143
Descomposición	276213,940	6	3,941	0,133	118137001342,413	356685,384	0,429
Winters	1324728,041	2	4,034	0,536	3170027800161,280	1888460,027	0,143
Media	303777,214	4	3,406	0,148	162001078941,781	417687,324	0,286



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Datos Normalizados							
Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	
Promedio Móvil Simple	1,000	1,750	2,000	1,000	1,000	1,000	
Suavización Exponencial	1,007	1,500	1,777	1,001	1,009	1,025	
Suavización Exp. con Ajuste a la Tendencia	1,067	1,000	1,153	1,060	1,030	1,080	
Regresión Lineal	1,014	1,000	1,368	1,063	1,016	1,040	
Suavización Exponencial Doble	1,109	1,750	1,000	1,104	1,041	1,109	
Promedio Móvil Doble	1,078	2,000	1,211	1,078	1,033	1,087	
Descomposición	1,000	1,000	1,528	1,038	1,002	1,001	
Winters	2,000	2,000	1,579	2,000	2,000	2,000	
Media	1,026	1,500	1,229	1,074	1,016	1,041	

Periodo	Demanda
1	4.777.600
2	2.524.880
3	2.864.720
4	5.481.280
5	3.567.360
6	6.028.992
7	4.172.256
8	4.798.278
9	4.674.096
10	4.448.464
11	4.860.768
12	3.062.880
13	4.632.528
14	4.298.746

FOR TSM

NÚMERO DE PERIODOS DE DEMANDA

Elegir Modelos



Datos	14,000
Desviación Estándar	990.060,872
Promedio	4.299.489,143
Coefficiente Correlación	0,143
Coefficiente de Variación	0,230

Creado por:
 Rosana Builes Palacio
 María Cristina Bravo Gómez

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Modelos Pronosticados

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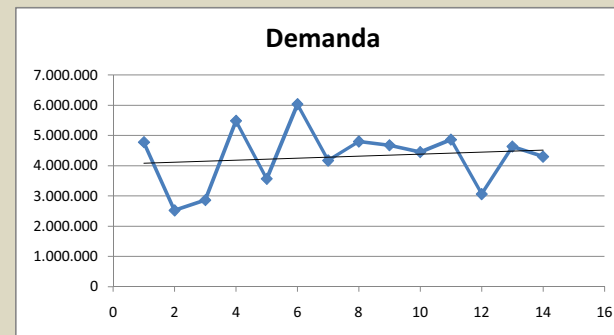
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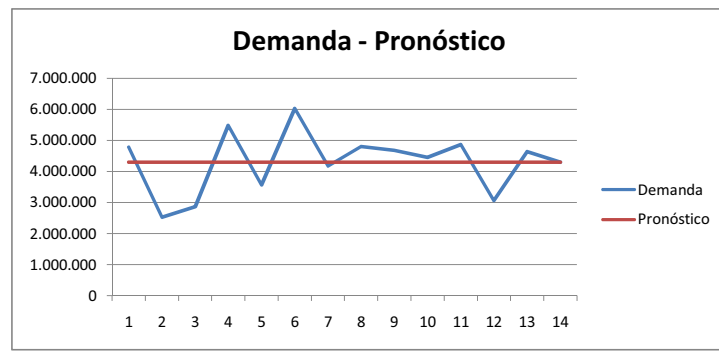
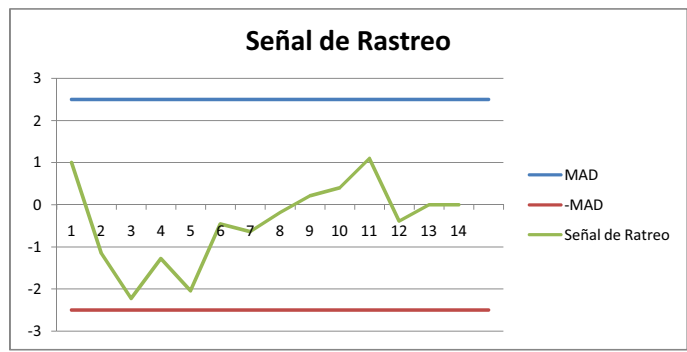
MODELO MEDIA

Datos Iniciales Media		Pronóstico	Análisis del Error							
Periodo	Demanda		Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)
1	4.777.600	4299489,143	478110,857	478110,857	478110,857	478110,857	478110,857	1,000	228589991717,878	0,100
2	2.524.880	4299489,143	-1774609,143	-1296498,286	1774609,143	2252720,000	1126360,000	-1,151	3149237609912,160	0,703
3	2.864.720	4299489,143	-1434769,143	-2731267,429	1434769,143	3687489,143	1229163,048	-2,222	2058562493295,020	0,501
4	5.481.280	4299489,143	1181790,857	-1549476,571	1181790,857	4869280,000	1217320,000	-1,273	1396629630026,450	0,216
5	3.567.360	4299489,143	-732129,143	-2281605,714	732129,143	5601409,143	1120281,829	-2,037	536013081820,734	0,205
6	6.028.992	4299489,143	1729502,857	-552102,857	1729502,857	7330912,000	1221818,667	-0,452	2991180132865,310	0,287
7	4.172.256	4299489,143	-127233,143	-679336,000	127233,143	7458145,143	1065449,306	-0,638	16188272641,306	0,030
8	4.798.278	4299489,143	498788,857	-180547,143	498788,857	7956934,000	994616,750	-0,182	248790324009,878	0,104
9	4.674.096	4299489,143	374606,857	194059,714	374606,857	8331540,857	925726,762	0,210	140330297418,449	0,080
10	4.448.464	4299489,143	148974,857	343034,571	148974,857	8480515,714	848051,571	0,404	22193508060,735	0,033
11	4.860.768	4299489,143	561278,857	904313,429	561278,857	9041794,571	821981,325	1,100	315033955475,592	0,115
12	3.062.880	4299489,143	-1236609,143	-332295,714	1236609,143	10278403,714	856533,643	-0,388	1529202172197,880	0,404
13	4.632.528	4299489,143	333038,857	743,143	333038,857	10611442,571	816264,813	0,001	110914880367,020	0,072
14	4.298.746	4299489,143	-743,143	0,000	743,143	10612185,714	758013,265	0,000	552261,306	0,000
		4299489,143								
		4299489,143								
		4299489,143								
		4299489,143								
		4299489,143								
		4299489,143								



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Medidas de Desempeño Finales						
MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
758013,265	0,204	3,322	0,000	910204778719,265	990060,872	4



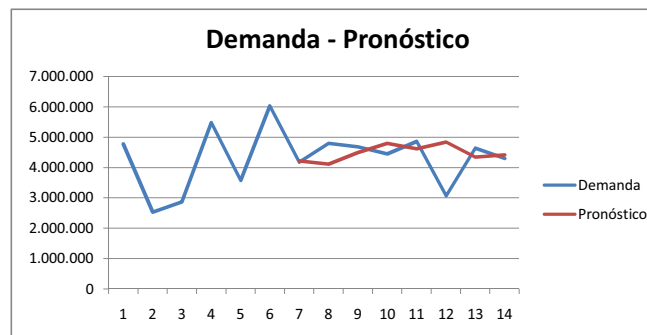
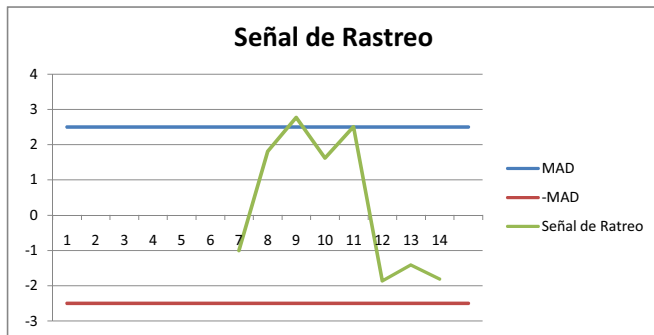
MODELO PMS

Datos Iniciales PMS		Análisis del Error								
Periodo	Demanda	Pronóstico	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	4.777.600									
2	2.524.880									
3	2.864.720									
4	5.481.280									
5	3.567.360									
6	6.028.992									
7	4.172.256	4207472,000	-35216,000	-35216,000	35216,000	35216,000	35216,000	-1,000	1240166656,000	0,008
8	4.798.278	4106581,333	691696,667	656480,667	691696,667	726912,667	363456,333	1,806	478444278677,778	0,144
9	4.674.096	4485481,000	188615,000	845095,667	188615,000	915527,667	305175,889	2,769	35575618225,000	0,040
10	4.448.464	4787043,667	-338579,667	506516,000	338579,667	1254107,333	313526,833	1,616	114636190680,111	0,076
11	4.860.768	4614907,667	245860,333	752376,333	245860,333	1499967,667	299993,533	2,508	60447303506,778	0,051
12	3.062.880	4830475,667	-1767595,667	-1015219,333	1767595,667	3267563,333	544593,889	-1,864	3124394440818,780	0,577
13	4.632.528	4336123,667	296404,333	-718815,000	296404,333	3563967,667	509138,238	-1,412	87855528818,778	0,064
14	4.298.746	4412835,667	-114089,667	-832904,667	114089,667	3678057,333	459757,167	-1,812	13016452040,111	0,027
		4329580,333								
		4329580,333								
		4329580,333								
		4329580,333								
		4329580,333								
		4329580,333								



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Valores Iniciales	Medidas de Desempeño Finales						
N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
6	459757,167	0,123	4,633	-104113,083	489451247427,917	747912,331	2



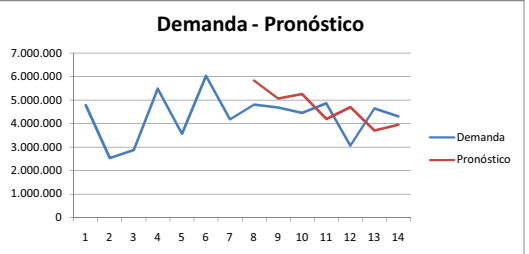
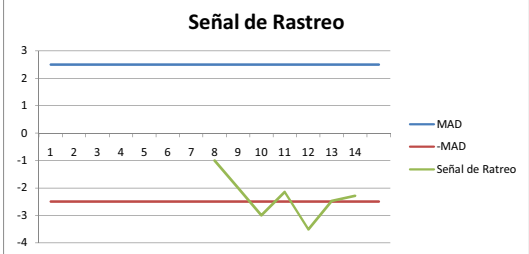
MODELO PMD

Datos Iniciales PMD		Pronóstico					Análisis del Error							
Periodo	Demanda	St'	St''	a	b	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	4.777.600													
2	2.524.880													
3	2.864.720													
4	5.481.280													
5	3.567.360													
6	6.028.992													
7	4.172.256													
8	4.798.278													
9	4.674.096													
10	4.448.464													
11	4.860.768													
12	3.062.880													
13	4.632.528													
14	4.298.746													
15		4213730,500	4355461,000	4072000,000	-94487,000	3977513,000								
16						3883026,000								
17						3788539,000								
18						3694052,000								
19						3599565,000								
20						3505078,000								



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Valores Iniciales	Medidas de Desempeño Finales							
N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstica	Intersecciones con cero	
4	831231,851	0,205	2,518	-272126,423	854250472377,610	998311,350	0	



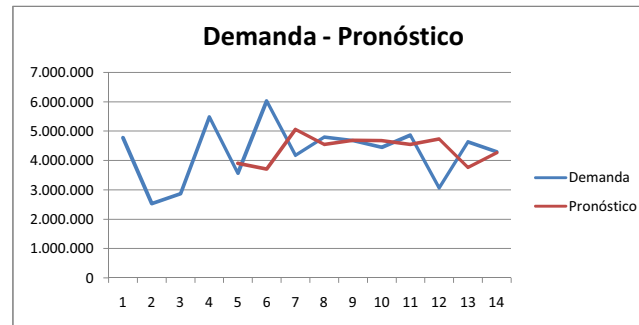
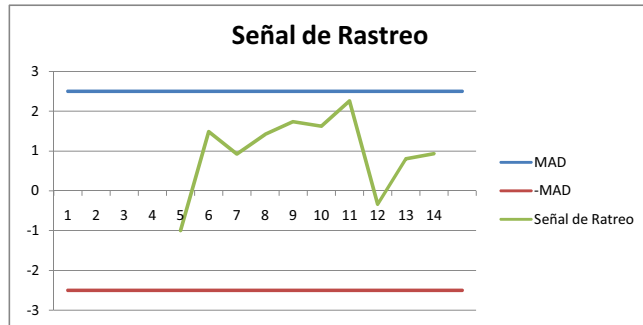
MODELO SE

Datos Iniciales SE		Pronóstico	Análisis del Error								
Periodo	Demanda		Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	4.777.600										
2	2.524.880										
3	2.864.720										
4	5.481.280										
5	3.567.360										
6	6.028.992	3912120,000	-344760,000	-344760,000	344760,000	344760,000	344760,000	-1,000	118859457600,000	0,097	
7	4.172.256	3712159,200	2316832,800	1972072,800	2316832,800	2661592,800	1330796,400	1,482	5367714223155,840	0,384	
8	4.798.278	5055922,224	-883666,224	1088406,576	883666,224	3545259,024	1181753,008	0,921	780865995438,419	0,212	
9	4.674.096	4543395,814	254882,186	1343288,762	254882,186	3800141,210	950035,302	1,414	64964928699,358	0,053	
10	4.448.464	4691227,482	-17131,482	1326157,280	17131,482	3817272,692	763454,538	1,737	293487672,556	0,004	
11	4.860.768	4681291,222	-232827,222	1093330,058	232827,222	4050099,914	675016,652	1,620	54208515492,227	0,052	
12	3.062.880	4546251,433	314516,567	1407846,624	314516,567	4364616,481	623516,640	2,258	98920670659,840	0,065	
13	4.632.528	4728671,042	-1665791,042	-257944,418	1665791,042	6030407,523	753800,940	-0,342	2774859795714,100	0,544	
14	4.298.746	3762512,238	870015,762	612071,345	870015,762	6900423,285	766713,698	0,798	756927426731,455	0,188	
		4267121,380	31624,620	643695,965	31624,620	6932047,905	693204,791	0,929	1000116601,880	0,007	
		4285463,660									
		4285463,660									
		4285463,660									
		4285463,660									
		4285463,660									
		4285463,660									



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Valores Iniciales		Medidas de Desempeño Finales						
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,580	4,000	693204,791	0,161	3,258	64369,596	1001861461776,570	1055073,174	3



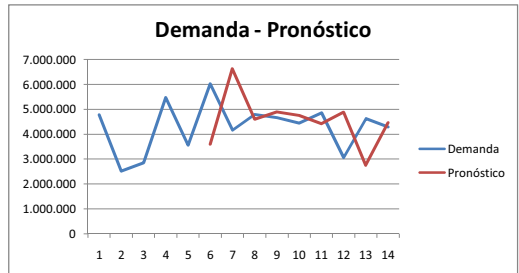
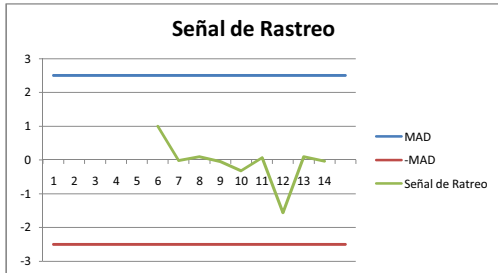
MODELO SED

Datos Iniciales SED		Pronóstico					Análisis del Error							
Periodo	Demanda	St'	St''	a	b	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	4.777.600													
2	2.524.880													
3	2.864.720													
4	5.481.280													
5	3.567.360													
6	6.028.992													
7	4.172.256													
8	4.798.278													
9	4.674.096													
10	4.448.464													
11	4.860.768													
12	3.062.880													
13	4.632.528													
14	4.298.746													
15														
16														
17														
18														
19														
20														



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Valores Iniciales		Medidas de Desempeño Finales						
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,610	3,000	1100181,650	0,253	2,560	-3983,700	2128175124734,540	1547319,300	7,000



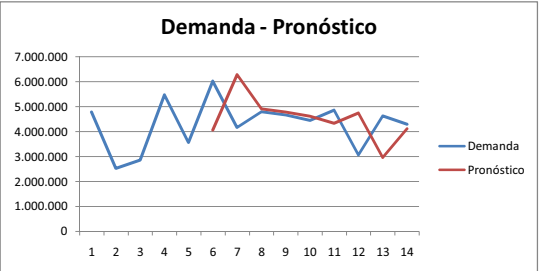
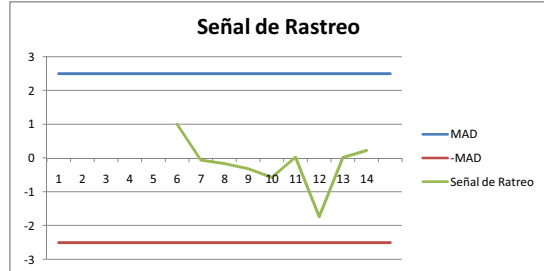
MODELO SET

Datos Iniciales SET		Pronóstico							Análisis del Error			
Periodo	Demanda	St	Tt	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	4.777.600											
2	2.524.880											
3	2.864.720											
4	5.481.280											
5	3.567.360											
6	6.028.992	4003944,000	53592,000	4057536,000	1971456,000	1971456,000	1971456,000	1971456,000	1971456,000	1,000	3886638759936,000	0,327
7	4.172.256	5338982,400	937790,016	6276772,416	-2104516,416	-133060,416	2104516,416	4075972,416	2037986,208	-0,065	4428989345213,490	0,504
8	4.798.278	4908836,746	-6085,597	4902751,149	-104473,149	-237533,565	104473,149	4180445,565	1393481,855	-0,170	10914638866,991	0,022
9	4.674.096	4834843,602	-52941,804	4781901,798	-107805,798	-345339,363	107805,798	4288251,363	1072062,841	-0,322	11622090135,271	0,023
10	4.448.464	4711828,029	-101292,704	4610535,325	-162071,325	-507410,688	162071,325	4450322,688	890064,538	-0,570	26267114374,157	0,036
11	4.860.768	4505188,964	-173981,694	4331207,270	529560,730	22150,042	529560,730	4979883,418	829980,570	0,027	280434566689,002	0,109
12	3.062.880	4675421,745	63526,294	4738948,038	-1676068,038	-1653917,997	1676068,038	6655951,456	950850,208	-1,739	2809204068769,410	0,547
13	4.632.528	3649503,813	-688190,221	2961313,592	1671214,408	17296,412	1671214,408	8327165,864	1040895,733	0,017	2792957597708,390	0,361
14	4.298.746	4047602,957	61349,441	4108952,398	189793,602	207090,014	189793,602	8516959,467	946328,830	0,219	36021611453,577	0,044
		4232318,239	146471,871	4378790,110								
				4378790,110								
				4378790,110								
				4378790,110								
				4378790,110								
				4378790,110								




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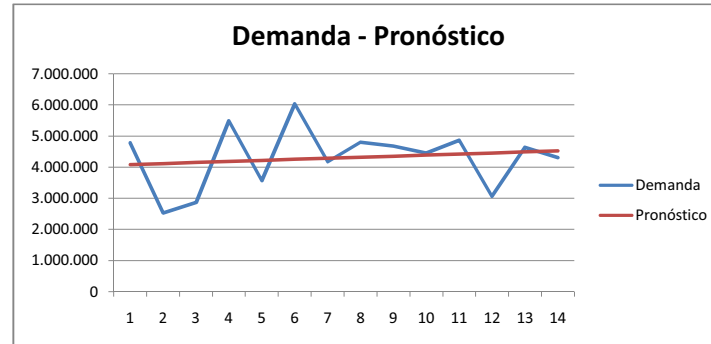
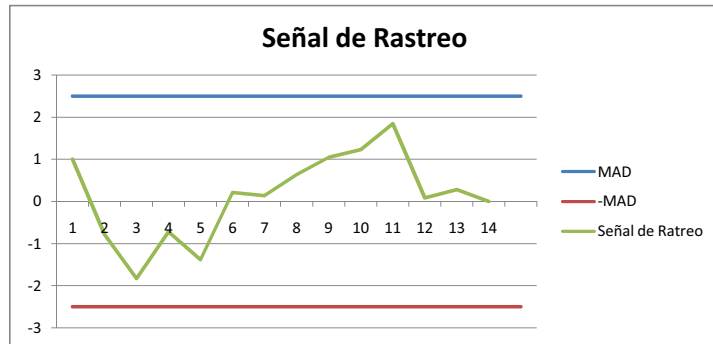
Valores Iniciales			Medidas de Desempeño Finales									
Alpha	Beta	N (Periodos de Promedio)	MAD	MAPE	Pendiente	Intercepto	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero	
0,65	0,69	5	946328,830	0,219	53592,000	3682392,000	2,739	23010,002	1587005532571,810	1336181,584	4	



MODELO REGRESION

Datos Iniciales Reg. Lineal		 PM Simple SE SET SE Doble PM Doble Descomposicion Winters Media Comparaciones	Análisis del Error							
Periodo	Demanda		Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)
1	4.777.600	4079978,629	697621,371	697621,371	697621,371	697621,371	697621,371	1,000	486675577873,880	0,146
2	2.524.880	4113749,477	-1588869,477	-891248,105	1588869,477	2286490,848	1143245,424	-0,780	2524506214697,810	0,629
3	2.864.720	4147520,325	-1282800,325	-2174048,431	1282800,325	3569291,174	1189763,725	-1,827	1645576674524,940	0,448
4	5.481.280	4181291,174	1299988,826	-874059,604	1299988,826	4869280,000	1217320,000	-0,718	1689970948696,280	0,237
5	3.567.360	4215062,022	-647702,022	-1521761,626	647702,022	5516982,022	1103396,404	-1,379	419517909274,419	0,182
6	6.028.992	4248832,870	1780159,130	258397,503	1780159,130	7297141,152	1216190,192	0,212	3168966526948,620	0,295
7	4.172.256	4282603,719	-110347,719	148049,785	110347,719	7407488,870	1058212,696	0,140	12176619018,171	0,026
8	4.798.278	4316374,567	481903,433	629953,218	481903,433	7889392,303	986174,038	0,639	232230918705,412	0,100
9	4.674.096	4350145,415	323950,585	953903,802	323950,585	8213342,888	912593,654	1,045	104943981272,649	0,069
10	4.448.464	4383916,264	64547,736	1018451,538	64547,736	8277890,624	827789,062	1,230	4166410256,773	0,015
11	4.860.768	4417687,112	443080,888	1461532,426	443080,888	8720971,512	792815,592	1,843	196320673232,964	0,091
12	3.062.880	4451457,960	-1388577,960	72954,466	1388577,960	10109549,473	842462,456	0,087	1928148752218,490	0,453
13	4.632.528	4485228,809	147299,191	220253,657	147299,191	10256848,664	788988,359	0,279	21697051730,764	0,032
14	4.298.746	4518999,657	-220253,657	0,000	220253,657	10477102,321	748364,451	0,000	48511673484,803	0,051
15		4552770,505								
16		4586541,354								
17		4620312,202								
18		4654083,051								
19		4687853,899								
20		4721624,747								

Medidas de Desempeño Finales									
Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
4046207,780	33770,848	0,143	748364,451	0,198	3,671	0,000	891672137995,427	979929,744	3

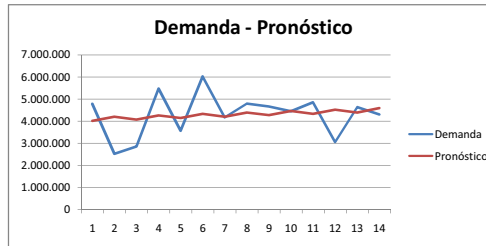
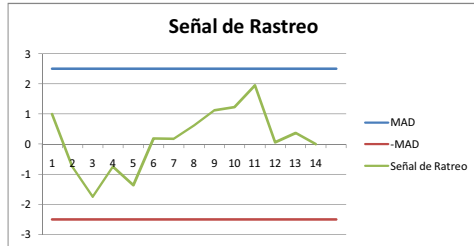


MODELO DESCOMPOSICION

Datos Iniciales Descomp.		Pronóstico						Análisis del Error							
Periodo	Demanda	Promedio	Razón	Índice Estacional	Suavización	Ft sin ajuste	Ft ajustado	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et2 (Error Cuadrático)	Fracción Abs. del Error
1	4.777.600	4299489,143	1,111	0,982	4866055,678	4089558,058	4015217,636	762382,364	762382,364	762382,364	762382,364	762382,364	1,000	581226868773,480	0,160
2	2.524.880	4299489,143	0,587	1,018	2479801,897	4121855,148	4196782,670	-1671902,670	-909520,306	1671902,670	2434285,034	1217142,517	-0,747	2795258536839,610	0,662
3	2.864.720	4299489,143	0,666	0,982	2917759,340	4154152,238	4078637,616	-1213917,616	-2123437,922	1213917,616	3648202,650	1216067,550	-1,746	1473595978936,890	0,424
4	5.481.280	4299489,143	1,275	1,018	5383419,625	4186449,328	4262551,050	1218728,950	-904708,972	1218728,950	4866931,600	1216732,900	-0,744	1485300254717,740	0,222
5	3.567.360	4299489,143	0,830	0,982	3633408,486	4218746,418	4142057,596	-574697,596	-1479406,568	574697,596	5441629,197	1088325,839	-1,359	330277327199,082	0,161
6	6.028.992	4299489,143	1,402	1,018	5921353,014	4251043,508	4328319,429	1700672,571	221266,003	1700672,571	7142301,767	1190383,628	0,186	2892287192426,250	0,282
7	4.172.256	4299489,143	0,970	0,982	4249503,935	4283340,598	4205477,576	-33221,576	188044,426	33221,576	7175523,344	1025074,763	0,183	1103673138,761	0,008
8	4.798.278	4299489,143	1,116	1,018	4712611,644	4315637,688	4394087,809	404190,191	592234,617	404190,191	7579713,534	947464,192	0,625	163369710297,671	0,084
9	4.674.096	4299489,143	1,087	0,982	4760635,336	4347934,778	4268897,557	405198,443	997433,061	405198,443	7984911,978	887212,442	1,124	164185778612,766	0,087
10	4.448.464	4299489,143	1,035	1,018	4369043,070	4380231,868	4459856,189	-11392,189	986040,872	11392,189	7996304,167	799630,417	1,233	129781972,773	0,003
11	4.860.768	4299489,143	1,131	0,982	4950763,506	4412528,958	4332317,537	528450,463	1514491,335	528450,463	8524754,630	774977,694	1,954	279259892266,449	0,109
12	3.062.880	4299489,143	0,712	1,018	3008196,680	4444826,048	4525624,569	-1462744,569	51746,766	1462744,569	9987499,199	832291,600	0,062	2139621674062,230	0,478
13	4.632.528	4299489,143	1,077	0,982	4718297,718	4477123,138	4395737,517	236790,483	288537,249	236790,483	10224289,683	786483,822	0,367	56069732981,551	0,051
14	4.298.746	4299489,143	1,000	1,018	4221998,070	4509420,228	4591392,949	-292646,949	-4109,700	292646,949	10516936,631	751209,759	-0,005	85642236662,501	0,068
15				0,982			4541717,318								
16				1,018			4574014,408								
17				0,960			4606311,498								
18				1,090			4638608,588								
19				1,019			4670905,678								
20				1,053			4703202,768								

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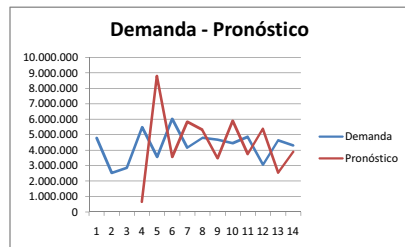
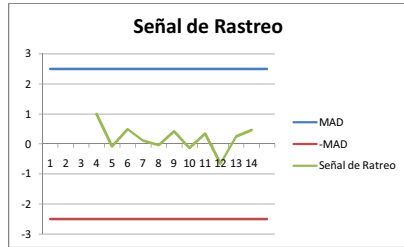
Valores Iniciales		Medidas de Desempeño Finales									
Estacionalidad	Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero	
2	4057260,968	32297,090	0,138	751209,759	0,200	3,700	-293,550	889094902777,697	978512,554	3,000	



MODELO WINTERS

Datos Iniciales Winters		Pronóstico				Análisis del Error							
Periodo	Demanda	St	It	Tt	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	4.777.600					1,308							
2	2.524.880					0,692							
3	2.864.720	2864720,000		-1912880,000									
4	5.481.280	5973597,329	0,872	2305396,157	658209,753	4823070,247	4823070,247	4823070,247	4823070,247	4823070,247	1,000	23262006605762,800	0,880
5	3.567.360	4737356,661	0,815	-669578,776	8789785,825	-5222425,825	-399355,578	5222425,825	10045496,072	5022748,036	-0,080	27273731500002,000	1,464
6	6.028.992	6114932,319	0,963	1050030,948	3548608,050	2480383,950	2081028,371	2480383,950	12525880,022	4175293,341	0,498	6152304538341,280	0,411
7	4.172.256	5693188,056	0,749	-186260,229	5837736,260	-1665480,260	415548,112	1665480,260	14191360,282	3547840,070	0,117	2773824495927,570	0,399
8	4.798.278	5128578,157	0,941	-504073,952	5304441,910	-506163,910	-90615,799	506163,910	14697524,192	2939504,838	-0,031	256201904233,523	0,105
9	4.674.096	5786588,426	0,796	472076,794	3464829,963	1209266,037	1118650,238	1209266,037	15906790,229	2651131,705	0,422	1462324349117,890	0,259
10	4.448.464	5155694,345	0,878	-454418,741	5890174,176	-1441710,176	-323059,368	1441710,176	17348500,405	2478357,201	-0,130	2078528231641,790	0,324
11	4.860.768	5712790,532	0,840	395253,798	3742420,698	1118347,302	795287,365	1118347,302	18466847,708	2308355,963	0,345	1250700688687,020	0,230
12	3.062.880	4220567,083	0,756	-1190227,089	5365824,877	-2302944,877	-1507657,512	2302944,877	20769792,585	2307754,732	-0,653	5303555105588,040	0,752
13	4.632.528	4819732,912	0,937	312862,962	2545165,472	2087362,528	579705,016	2087362,528	22857155,113	2285715,511	0,254	4357082324373,290	0,451
14	4.298.746	5529764,607	0,773	646484,698	3881575,557	417170,443	996875,459	417170,443	23274325,555	2115847,778	0,471	174031178142,322	0,097
					5786563,770								
					5786563,770								
					5786563,770								
					5786563,770								
					5786563,770								

Valores Iniciales			Medidas de Desempeño Finales						
Alpha	Beta	Gamma	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,72	0,84	0,8	2115847,778	0,488	1,653	90625,042	6758571901983,420	2726614,951	8

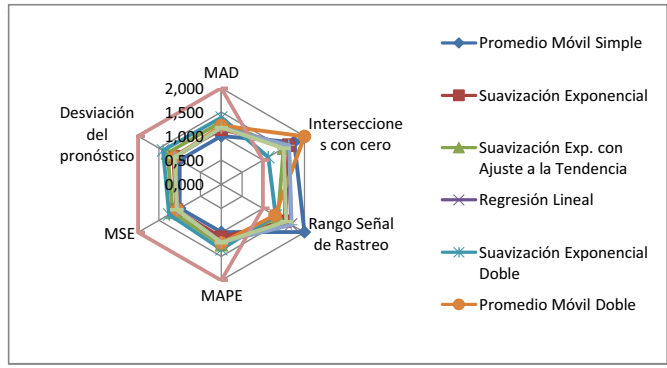
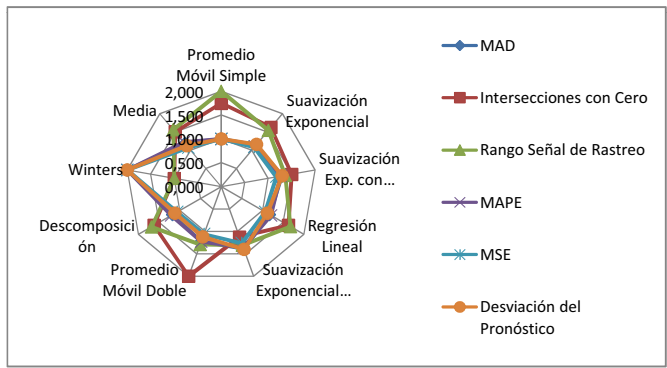


COMPARACIONES

Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	Intersecciones con cero (%)
Promedio Móvil Simple	459757,167	2	4,633	0,123	489451247427,917	747912,331	0,143
Suavización Exponencial	693204,791	3	3,258	0,161	1001861461776,570	1055073,174	0,214
Suavización Exp. con Ajuste a la Tendencia	946328,830	4	2,739	0,219	1587005532571,810	1336181,584	0,286
Regresión Lineal	748364,451	3	3,671	0,198	891672137995,427	979929,744	0,214
Suavización Exponencial Doble	1100181,650	7	2,560	0,253	2128175124734,540	1547319,300	0,500
Promedio Móvil Doble	831231,851	0	2,518	0,205	854250472377,610	998311,350	0,000
Descomposición	751209,759	3	3,700	0,200	889094902777,697	978512,554	0,214
Winters	2115847,778	8	1,653	0,488	6758571901983,420	2726614,951	0,571
Media	758013,265	4	3,322	0,204	910204778719,265	990060,872	0,286



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Datos Normalizados						
Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico
Promedio Móvil Simple	1,000	1,750	2,000	1,000	1,000	1,000
Suavización Exponencial	1,141	1,625	1,538	1,102	1,082	1,155
Suavización Exp. con Ajuste a la Tendencia	1,294	1,500	1,364	1,263	1,175	1,297
Regresión Lineal	1,174	1,625	1,677	1,205	1,064	1,117
Suavización Exponencial Doble	1,387	1,125	1,304	1,355	1,261	1,404
Promedio Móvil Doble	1,224	2,000	1,290	1,223	1,058	1,127
Descomposición	1,176	1,625	1,687	1,209	1,064	1,117
Winters	2,000	1,000	1,000	2,000	2,000	2,000
Media	1,180	1,500	1,560	1,220	1,067	1,122

Periodo	Demanda
1	4.000.000
2	4.950.000
3	4.580.000
4	2.625.770
5	5.145.331
6	4.457.800
7	4.651.888
8	4.289.344
9	4.123.890
10	3.896.000
11	4.697.725
12	3.581.098

FOR TSM

NÚMERO DE PERIODOS DE DEMANDA

12

Elegir Modelos



Datos	12,000
Desviación Estándar	680.674,173
Promedio	4.249.903,833
Coefficiente Correlación	(0,121)
Coefficiente de Variación	0,160

Creado por:
Rosana Builes Palacio
María Cristina Bravo Gómez



[Comparaciones](#)

Modelos Pronosticados

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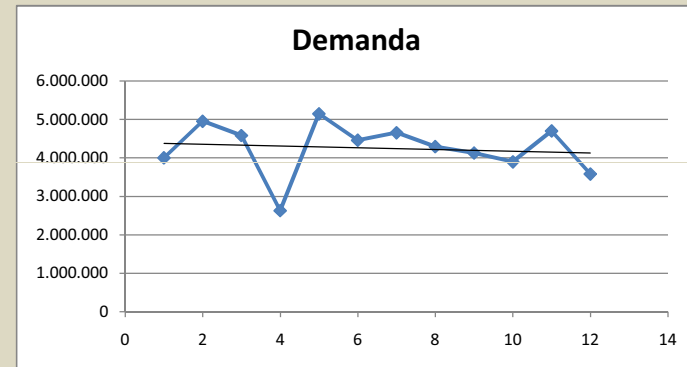
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MODELO MEDIA

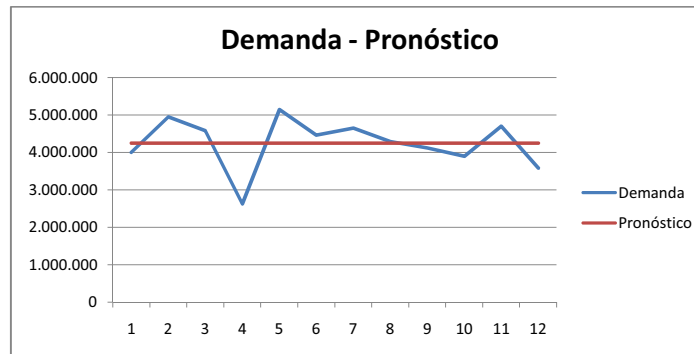
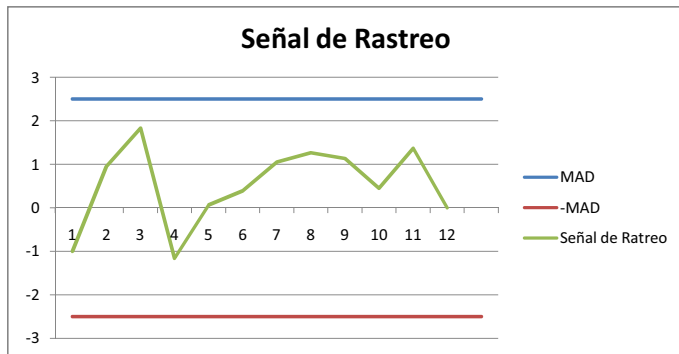
Datos Iniciales Media	
Periodo	Demanda
1	4.000.000
2	4.950.000
3	4.580.000
4	2.625.770
5	5.145.331
6	4.457.800
7	4.651.888
8	4.289.344
9	4.123.890
10	3.896.000
11	4.697.725
12	3.581.098



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Pronóstico		Análisis del Error							
Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error	
4249903,833	-249903,833	-249903,833	249903,833	249903,833	249903,833	249903,833	-1,000	62451925914,694	0,062
4249903,833	700096,167	450192,333	700096,167	950000,000	475000,000	0,948	490134642581,362	0,141	
4249903,833	330096,167	780288,500	330096,167	1280096,167	426698,722	1,829	108963479248,028	0,072	
4249903,833	-1624133,833	-843845,333	1624133,833	2904230,000	726057,500	-1,162	2637810708578,030	0,619	
4249903,833	895427,167	51581,833	895427,167	3799657,167	759931,433	0,068	801789810804,695	0,174	
4249903,833	207896,167	259478,000	207896,167	4007553,333	667925,556	0,388	43220816114,695	0,047	
4249903,833	401984,167	661462,167	401984,167	4409537,500	629933,929	1,050	161591270250,695	0,086	
4249903,833	39440,167	700902,333	39440,167	4448977,667	556122,208	1,260	1555526746,694	0,009	
4249903,833	-126013,833	574888,500	126013,833	4574991,500	508332,389	1,131	15879486191,361	0,031	
4249903,833	-353903,833	220984,667	353903,833	4928895,333	492889,533	0,448	125247923248,028	0,091	
4249903,833	447821,167	668805,833	447821,167	5376716,500	488792,409	1,368	200543797314,695	0,095	
4249903,833	-668805,833	0,000	668805,833	6045522,333	503793,528	0,000	447301242700,694	0,187	
4249903,833									
4249903,833									
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4249903,833									

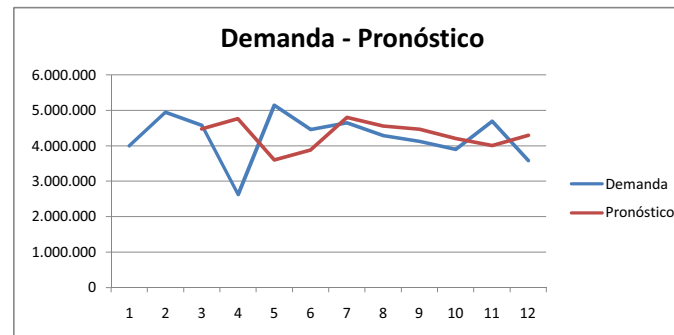
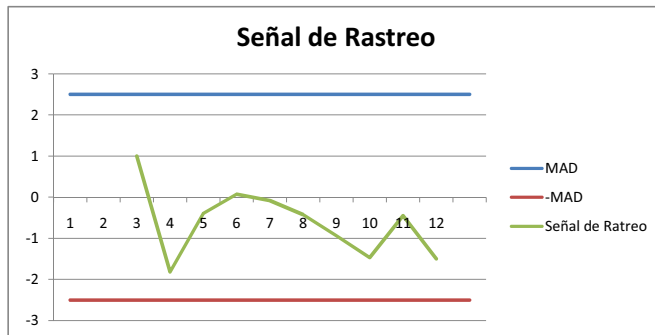
Medidas de Desempeño Finales						
MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
503793,528	0,135	2,991	0,000	424707552474,472	680674,173	3



MODELO PMS

Datos Iniciales PMS		Análisis del Error								
Período	Demanda	Pt (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	4.000.000									
2	4.950.000									
3	4.580.000									
4	2.625.770	4475000,000	105000,000	105000,000	105000,000	105000,000	105000,000	1,000	1102500000,000	0,023
5	5.145.331	4765000,000	-2139230,000	-2034230,000	2139230,000	2244230,000	1122115,000	-1,813	4576304992900,000	0,815
6	4.457.800	3602885,000	1542446,000	-491784,000	1542446,000	3786676,000	1262225,333	-0,390	2379139662916,000	0,300
7	4.651.888	3885550,500	572249,500	80465,500	572249,500	4358925,500	1089731,375	0,074	327469490250,250	0,128
8	4.289.344	4801565,500	-149677,500	-69212,000	149677,500	4508603,000	901720,600	-0,077	22403354006,250	0,032
9	4.123.890	4554844,000	-265500,000	-334712,000	265500,000	4774103,000	795683,833	-0,421	70490250000,000	0,062
10	3.896.000	4470616,000	-346726,000	-681438,000	346726,000	5120829,000	731547,000	-0,932	120218919076,000	0,084
11	4.697.725	4206617,000	-310617,000	-992055,000	310617,000	5431446,000	678930,750	-1,461	96482920689,000	0,080
12	3.581.098	4009945,000	687780,000	-304275,000	687780,000	6119226,000	679914,000	-0,448	473041328400,000	0,146
		4296862,500	-715764,500	-1020039,500	715764,500	6834990,500	683499,050	-1,492	512318819460,250	0,200
		4139411,500								
		4139411,500								
		4139411,500								
		4139411,500								
		4139411,500								
		4139411,500								

Valores Iniciales N (Períodos de Promedio)	Medidas de Desempeño Finales						
	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	683499,050	0,187	2,813	-102003,950	858889473769,775	976893,872	3



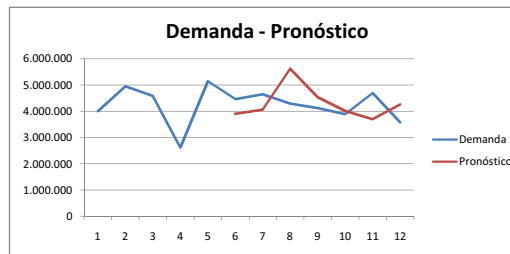
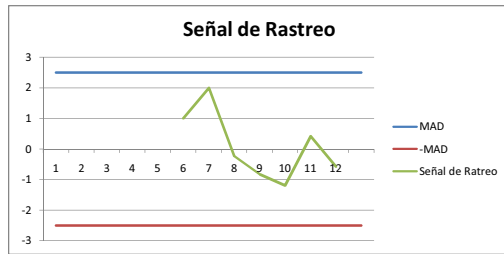
MODELO PMD

Datos Iniciales PMD		Pronóstico					Análisis del Error							
Periodo	Demanda	St'	St''	a	b	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	4.000.000													
2	4.950.000													
3	4.580.000													
4	2.625.770													
5	5.145.331	4510000,000												
6	4.457.800	4051923,333												
7	4.651.888	4117033,667	4226319,000	4007748,333	-109285,333	3898463,000	559337,000	559337,000	559337,000	559337,000	559337,000	1,000	312857879569,001	0,125
8	4.289.344	4076300,333	4081752,444	4070848,222	-5452,111	4065396,111	586491,889	1145828,889	586491,889	1145828,889	572914,444	2,000	343972735732,456	0,126
9	4.123.890	4751673,000	4315002,333	5188343,667	436670,667	5625014,333	-1335670,333	-189841,444	1335670,333	2481499,222	827166,407	-0,230	1784015239346,780	0,311
10	3.896.000	4466344,000	4431439,111	4501248,889	34904,889	4536153,778	-412263,778	-602105,222	412263,778	2893763,000	723440,750	-0,832	169961422467,605	0,100
11	4.697.725	4355040,667	4524352,556	4185728,778	-169311,889	4016416,889	-120416,889	-722522,111	120416,889	3014179,889	602835,978	-1,199	14500227129,679	0,031
12	3.581.098	4103078,000	4308154,222	3898001,778	-205076,222	3692925,556	1004799,444	282277,333	1004799,444	4018979,333	669829,889	0,421	1009621923555,870	0,214
13		4239205,000	4232441,222	4245968,778	6763,778	4252732,556	-671634,556	-389357,222	671634,556	4690613,889	670087,698	-0,581	451092976216,307	0,188
14		4058274,333	4133519,111	3983029,556	-75244,778	3907784,778								
15						3832540,000								
16						3757295,222								
17						3682050,444								
18						3606805,667								
						3531560,889								



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Valores Iniciales		Medidas de Desempeño Finales					
N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
3	670087,698	0,156	3,199	-55622,460	583717486288,242	825229,504	3



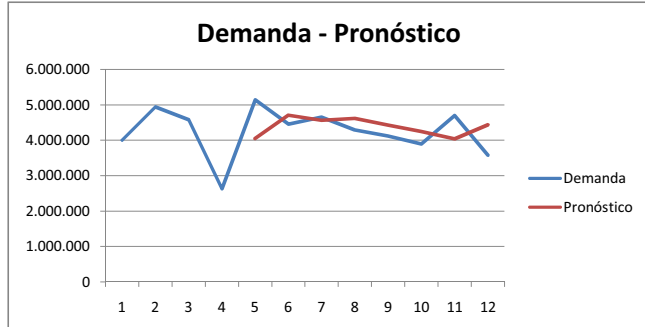
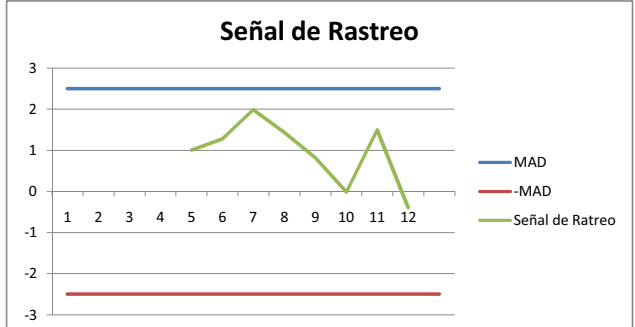
MODELO SE

Datos Iniciales SE		Pronóstico	Análisis del Error								
Periodo	Demanda		Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	4.000.000										
2	4.950.000										
3	4.580.000										
4	2.625.770										
5	5.145.331	4038942,500	1106388,500	1106388,500	1106388,500	1106388,500	1106388,500	1,000	1224095512932,250	0,215	
6	4.457.800	4702775,600	-244975,600	861412,900	244975,600	1351364,100	675682,050	1,275	60013044595,360	0,055	
7	4.651.888	4555790,240	96097,760	957510,660	96097,760	1447461,860	482487,287	1,985	9234779477,018	0,021	
8	4.289.344	4613448,896	-324104,896	633405,764	324104,896	1771566,756	442891,689	1,430	105043983611,171	0,076	
9	4.123.890	4418985,958	-295095,958	338309,806	295095,958	2066662,714	413332,543	0,818	87081624664,015	0,072	
10	3.896.000	4241928,383	-345928,383	-7618,578	345928,383	2412591,098	402098,516	-0,019	119666446414,063	0,089	
11	4.697.725	4034371,353	663353,647	655735,069	663353,647	3075944,744	439420,678	1,492	440038060531,813	0,141	
12	3.581.098	4432383,541	-851285,541	-195550,472	851285,541	3927230,286	490903,786	-0,398	724687072890,451	0,238	
		3921612,217									
		3921612,217									
		3921612,217									
		3921612,217									
		3921612,217									
		3921612,217									



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Valores Iniciales		Medidas de Desempeño Finales						
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,600	4,000	490903,786	0,113	2,383	-24443,809	346232565639,518	629042,416	3



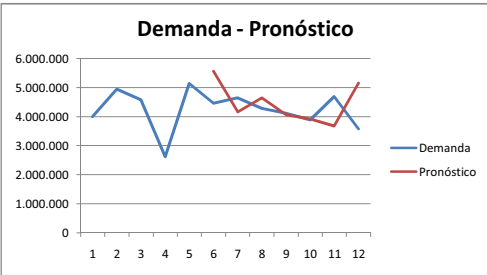
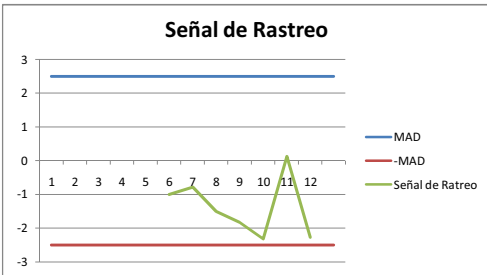
MODELO SED

Datos Iniciales SED		Pronóstico					Análisis del Error							
Periodo	Demanda	St'	St''	a	b	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	4.000.000													
2	4.950.000													
3	4.580.000													
4	2.625.770													
5	5.145.331													
6	4.457.800													
7	4.651.888													
8	4.289.344													
9	4.123.890													
10	3.896.000													
11	4.697.725													
12	3.581.098													
13														
14														
15														
16														
17														
18														



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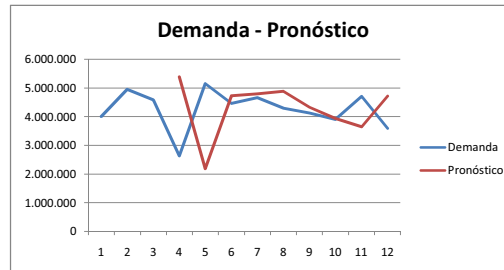
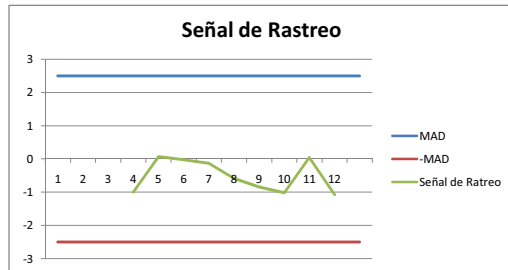
Valores Iniciales		Medidas de Desempeño Finales						
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,830	3,000	661990,574	0,159	2,454	-214832,147	728638422295,941	921996,833	2,000




MODELO SET

Datos Iniciales SET		Pronóstico			Análisis del Error							
Periodo	Demanda	St	Tt	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	4.000.000											
2	4.950.000											
3	4.580.000											
4	2.625.770	5090000,000	290000,000	5380000,000	-2754230,000	-2754230,000	2754230,000	2754230,000	2754230,000	-1,000	7585782892900,000	1,049
5	5.145.331	3396954,400	-1217114,656	2179839,744	2965491,256	211261,256	2965491,256	5719721,256	2859860,628	0,074	8794138389412,450	0,576
6	4.457.800	4314993,448	405602,159	4720595,608	-262795,608	-51534,352	262795,608	5982516,864	1994172,288	-0,026	69061531375,535	0,059
7	4.651.888	4531382,770	261800,403	4793183,173	-141295,173	-192829,525	141295,173	6123812,037	1530953,009	-0,126	19964325893,778	0,030
8	4.289.344	4691450,648	184483,684	4875934,333	-586590,333	-779419,857	586590,333	6710402,369	1342080,474	-0,581	344088218294,381	0,137
9	4.123.890	4453589,293	-136498,546	4317090,747	-193200,747	-972620,604	193200,747	6903603,116	1150600,519	-0,845	37326528759,231	0,047
10	3.896.000	4177986,209	-242217,995	3935768,214	-39768,214	-1012388,819	39768,214	6943371,331	991910,190	-1,021	1581510884,393	0,010
11	4.697.725	3907135,100	-263979,162	3643155,938	1054569,062	42180,243	1054569,062	7997940,393	999742,549	0,042	1112115905812,490	0,224
12	3.581.098	4402445,663	313081,029	4715526,692	-1134428,692	-1092248,449	1134428,692	9132369,084	1014707,676	-1,076	1286928456223,840	0,317
		3898738,034	-307678,351									
				3591059,682								
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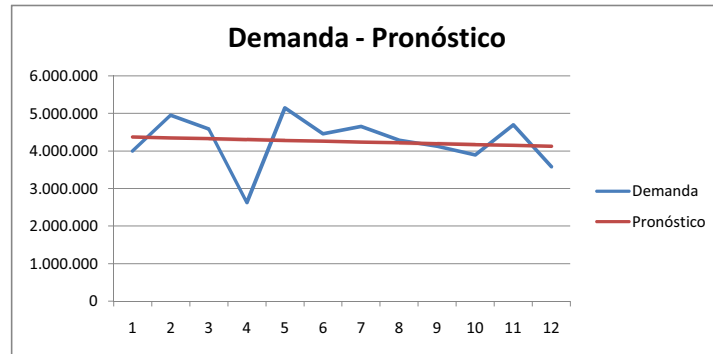
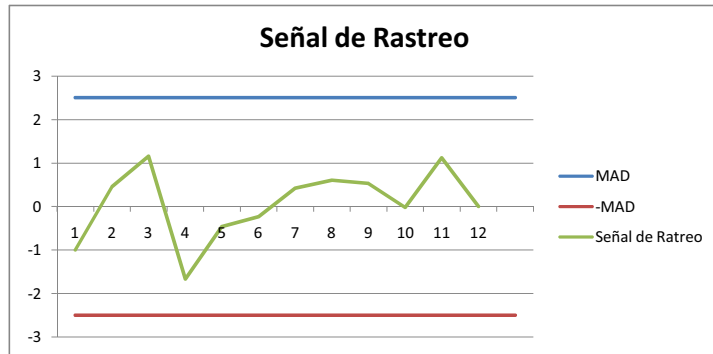
Valores Iniciales			Medidas de Desempeño Finales								
Alpha	Beta	N (Periodos de Promedio)	MAD	MAPE	Pendiente	Intercepto	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,72	0,76	3	1014707,676	0,272	290000,000	3930000,000	1,150	-121360,939	2138998639950,680	1551249,003	4



MODELO REGRESION

Datos Iniciales Reg. Lineal			Análisis del Error								
Periodo	Demanda		Pt (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	4.000.000		4375859,026	-375859,026	-375859,026	375859,026	375859,026	375859,026	-1,000	141270007155,821	0,094
2	4.950.000	PM Simple	4352958,082	597041,918	221182,893	597041,918	972900,944	486450,472	0,455	356459052344,566	0,121
3	4.580.000	SE	4330057,138	249942,862	471125,755	249942,862	1222843,807	407614,602	1,156	62471434500,129	0,055
4	2.625.770	SET	4307156,193	-1681386,193	-1210260,438	1681386,193	2904230,000	726057,500	-1,667	2827059531602,280	0,640
5	5.145.331	SE Doble	4284255,249	861075,751	-349184,688	861075,751	3765305,751	753061,150	-0,464	741451448241,648	0,167
6	4.457.800	PM Doble	4261354,305	196445,695	-152738,993	196445,695	3961751,445	660291,908	-0,231	38590910942,079	0,044
7	4.651.888	Descomposicion	4238453,361	413434,639	260695,646	413434,639	4375186,084	625026,583	0,417	170928200472,566	0,089
8	4.289.344	Winters	4215552,417	73791,583	334487,228	73791,583	4448977,667	556122,208	0,601	5445197684,836	0,017
9	4.123.890	Media	4192651,473	-68761,473	265725,755	68761,473	4517739,140	501971,016	0,529	4728140195,737	0,017
10	3.896.000	Comparaciones	4169750,529	-273750,529	-8024,774	273750,529	4791489,669	479148,967	-0,017	74939352203,077	0,070
11	4.697.725		4146849,585	550875,415	542850,641	550875,415	5342365,084	485669,553	1,118	303463722761,536	0,117
12	3.581.098		4123948,641	-542850,641	0,000	542850,641	5885215,725	490434,644	0,000	294686818461,949	0,152
13			4101047,697								
14			4078146,753								
15			4055245,809								
16			4032344,865								
17			4009443,921								
18			3986542,977								

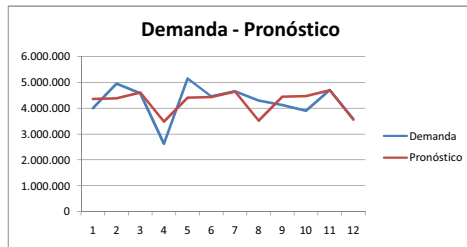
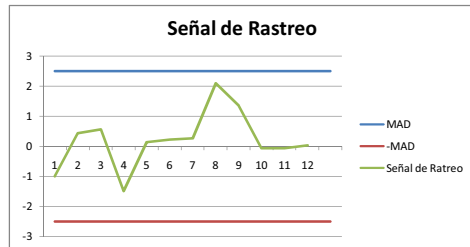
Medidas de Desempeño Finales										
Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviacion Pronóstico	Intersecciones con cero	
4398759,970	-22900,944	-0,121	490434,644	0,132	2,823	0,000	418457818047,185	675647,421		5



MODELO DESCOMPOSICION

Datos Iniciales Descomp.		Pronóstico	Análisis del Error												
Periodo	Demanda		Promedio	Razón	Índice Estacional	Suavización	Ft sin ajuste	Ft ajustado	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et ² (Error Cuadrático)
1	4.000.000	4249903,833	0,941	1,041	3843394,122	4191884,734	4362690,477	-362690,477	-362690,477	362690,477	362690,477	362690,477	-1,000	131544381830,243	0,091
2	4.950.000	4249903,833	1,165	1,043	4743837,996	4202433,661	4385066,826	564933,174	202242,697	564933,174	927623,651	463811,825	0,436	319149491045,250	0,114
3	4.580.000	4249903,833	1,078	1,093	4192053,194	4212982,588	4602866,271	-22866,271	179376,426	22866,271	950489,922	316829,974	0,566	522866355,233	0,005
4	2.625.770	4249903,833	0,618	0,823	3189513,509	4223531,515	3477026,298	-851256,298	-671879,872	851256,298	1801746,219	450436,555	-1,492	724637284486,581	0,324
5	5.145.331	4249903,833	1,211	1,041	4943883,731	4234080,443	4406605,524	738725,476	66845,605	738725,476	2540471,696	508094,339	0,132	545715329000,106	0,144
6	4.457.800	4249903,833	1,049	1,043	4272137,579	4244629,370	4429096,314	28703,686	95549,291	28703,686	2569175,382	428195,897	0,223	823901589,758	0,006
7	4.651.888	4249903,833	1,095	1,093	4257851,954	4255178,297	4648966,914	2921,086	98470,377	2921,086	2572096,468	367442,353	0,268	8532745,472	0,001
8	4.289.344	4249903,833	1,009	0,823	5210250,948	4265727,224	3511763,955	777580,045	876050,422	777580,045	3349676,513	418709,564	2,092	604630726889,764	0,181
9	4.123.890	4249903,833	0,970	1,041	3962433,647	4276276,151	4450520,571	-326630,571	549419,851	326630,571	3676307,084	408478,565	1,345	106687530064,460	0,079
10	3.896.000	4249903,833	0,917	1,043	3733735,925	4286825,078	4473125,802	-577125,802	-27705,951	577125,802	4253432,886	425343,289	-0,065	333074191301,992	0,148
11	4.697.725	4249903,833	1,105	1,093	4299806,352	4297374,006	4695067,556	2657,444	-25048,507	2657,444	4256090,330	386917,303	-0,065	7062007,706	0,001
12	3.581.098	4249903,833	0,843	0,823	4349947,043	4307922,933	3546501,612	34596,388	9547,881	34596,388	4290686,719	357557,227	0,027	1196910091,633	0,010
13				1,041		4318471,860	4494435,619								
14				1,043		4329020,787	4517155,290								
15				1,093		4339569,714	4741168,199								
16				0,823		4350118,641	3581239,268								
17				1,091		4360667,569	4755400,709								
18				0,983		4371216,496	4296128,782								

Valores Iniciales	Medidas de Desempeño Finales									
Estacionalidad	Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
4	4181335,807	10548,927	0,069	357557,227	0,092	3,584	795,657	230666517284,016	501633,532	5,000



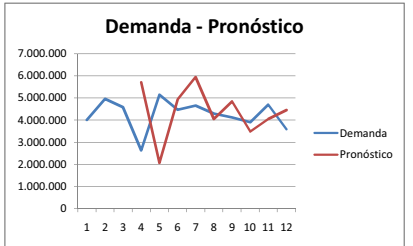
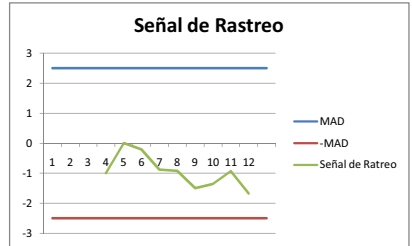
MODELO WINTERS

Periodo	Demanda
1	4.000.000
2	4.950.000
3	4.580.000
4	2.625.770
5	5.145.331
6	4.457.800
7	4.651.888
8	4.289.344
9	4.123.890
10	3.896.000
11	4.697.725
12	3.581.098

- 
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- [SE Doble](#)
- [PM Doble](#)
- [Descomposicion](#)
- [Media](#)
- [Comparaciones](#)

Pronóstico				Análisis del Error								
St	It	Tt	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et ² (Error Cuadrático)	Fracción Abs. del Error	
				0,894								
				1,106								
4580000,000		580000,000										
3070351,629	0,928	-945443,311	5707709,497	-3081939,497	-3081939,497	3081939,497	3081939,497	3081939,497	-1,000	9498351064442,710	1,174	
4512786,171	1,091	797707,522	2059499,129	3085831,871	3892,374	3085831,871	6167771,368	3083885,684	0,001	9522358337298,250	0,600	
4930466,986	0,911	520288,026	4928007,219	-470207,219	-466314,845	470207,219	6637978,587	2212659,529	-0,211	221094828826,936	0,105	
4561791,825	1,040	-128655,101	5944549,440	-1292661,440	-1758976,285	1292661,440	7930640,027	1982660,007	-0,887	1670973598535,880	0,278	
4639392,836	0,921	21911,861	4038798,491	250545,509	-1508430,776	250545,509	8181185,537	1636237,107	-0,922	62773052169,789	0,058	
4138444,023	1,009	-359776,431	4849128,626	-725238,626	-2233669,402	725238,626	8906424,163	1484404,027	-1,505	525971064831,921	0,176	
4118569,100	0,939	-111648,330	3478767,145	417232,855	-1816436,547	417232,855	9323657,018	1331951,003	-1,364	174083255430,577	0,107	
4492945,180	1,035	243149,489	4043738,057	653986,943	-1162449,604	653986,943	9977643,961	1247205,495	-0,932	427698921404,107	0,139	
4045498,907	0,901	-260985,417	4445369,361	-864271,361	-2026720,965	864271,361	10841915,322	1204657,258	-1,682	746964986151,074	0,241	
			3917066,380									
			3917066,380									
			3917066,380									
			3917066,380									
			3917066,380									
			3917066,380									

Valores Iniciales			Medidas de Desempeño Finales						
Alpha	Beta	Gamma	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,75	0,73	0,71	1204657,258	0,320	1,684	-225191,218	2538918789899,030	1690054,330	2

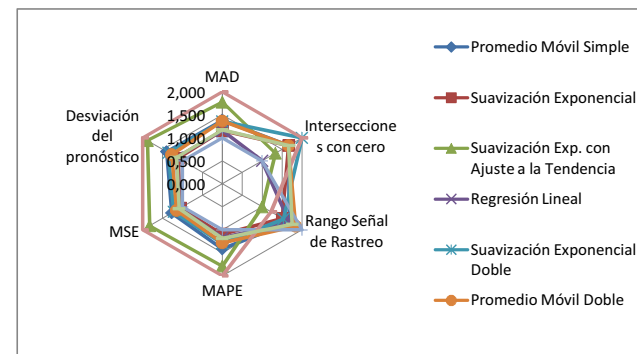
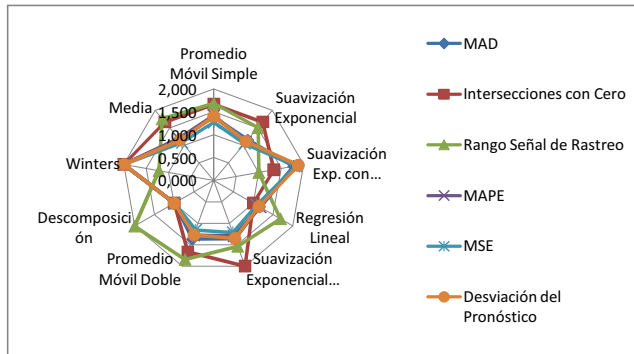


COMPARACIONES

Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	Intersecciones con cero (%)
Promedio Móvil Simple	683499,050	3	2,813	0,187	858889473769,775	976893,872	0,250
Suavización Exponencial	490903,786	3	2,383	0,113	346232565639,518	629042,416	0,250
Suavización Exp. con Ajuste a la Tendencia	1014707,676	4	1,150	0,272	2138998639950,680	1551249,003	0,333
Regresión Lineal	490434,644	5	2,823	0,132	418457818047,185	675647,421	0,417
Suavización Exponencial Doble	661990,574	2	2,454	0,159	728638422295,941	921996,833	0,167
Promedio Móvil Doble	670087,698	3	3,199	0,156	583717486288,242	825229,504	0,250
Descomposición	357557,227	5	3,584	0,092	230666517284,016	501633,532	0,417
Winters	1204657,258	2	1,684	0,320	2538918789899,030	1690054,330	0,167
Media	503793,528	3	2,991	0,135	424707552474,472	680674,173	0,250



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Datos Normalizados						
Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico
Promedio Móvil Simple	1,385	1,667	1,683	1,417	1,272	1,400
Suavización Exponencial	1,157	1,667	1,506	1,093	1,050	1,107
Suavización Exp. con Ajuste a la Tendencia	1,776	1,333	1,000	1,791	1,827	1,883
Regresión Lineal	1,157	1,000	1,687	1,175	1,081	1,146
Suavización Exponencial Doble	1,359	2,000	1,536	1,295	1,216	1,354
Promedio Móvil Doble	1,369	1,667	1,842	1,283	1,153	1,272
Descomposición	1,000	1,000	2,000	1,000	1,000	1,000
Winters	2,000	2,000	1,219	2,000	2,000	2,000
Media	1,173	1,667	1,756	1,187	1,084	1,151

11. PF 47.5 GR


Periodo	Demanda
1	787249
2	817525
3	1075262
4	1167421
5	852504
6	1211109
7	882300
8	709726
9	788082
10	1103879
11	1117252
12	452829
13	499150
14	941359
15	1582981
16	946099
17	1105617
18	958495
19	779687
20	719172
21	716702
22	756723
23	728923
24	825600
25	967455
26	825000
27	890000
28	725678
29	912000
30	780145

FOR TSM

NÚMERO DE PERIODOS DE DEMANDA

30

Elegir Modelos



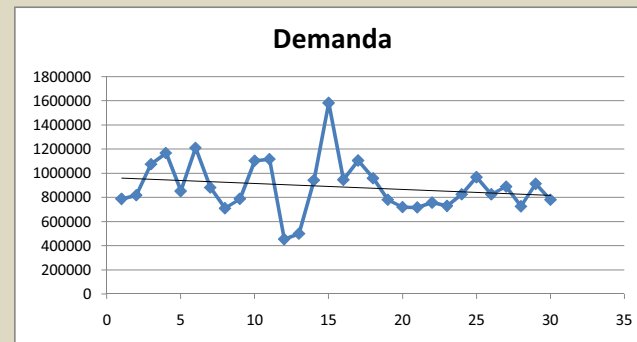
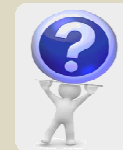
Datos	30,000
Desviación Estándar	#####
Promedio	#####
Coefficiente de Correlación	(0,199)
Coefficiente de Variación	0,249

Creado por:
Rosana Builes Palacio
María Cristina Bravo Gómez


[Comparaciones](#)

Modelos Pronosticados

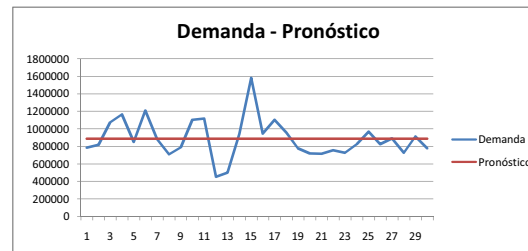
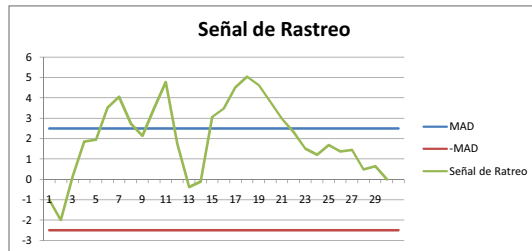
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MODELO MEDIA

Datos Iniciales Media		 PM Simple SE SET Reg Lineal SE Doble PM Doble Descomposicion Winters Comparaciones	Pronóstico							Análisis del Error			
Periodo	Demanda		Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error		
1	787249	887530,800	-100281,800	-100281,800	100281,800	100281,800	100281,800	-1,000	10056439411,240	0,127			
2	817525	887530,800	-70005,800	-170287,600	70005,800	170287,600	85143,800	-2,000	4900812033,640	0,086			
3	1075262	887530,800	187731,200	17443,600	187731,200	358018,800	119339,600	0,146	35243003453,440	0,175			
4	1167421	887530,800	279890,200	297333,800	279890,200	637909,000	159477,250	1,864	78338524056,040	0,240			
5	852504	887530,800	-35026,800	262307,000	35026,800	672935,800	134587,160	1,949	1226876718,240	0,041			
6	1211109	887530,800	323578,200	585885,200	323578,200	996514,000	166085,667	3,528	104702851515,240	0,267			
7	882300	887530,800	-5230,800	580654,400	5230,800	1001744,800	143106,400	4,058	27361268,640	0,006			
8	709726	887530,800	-177804,800	402849,600	177804,800	1179549,600	147443,700	2,732	31614546903,040	0,251			
9	788082	887530,800	-99448,800	303400,800	99448,800	1278998,400	142110,933	2,135	9890063821,440	0,126			
10	1103879	887530,800	216348,200	519749,000	216348,200	1495346,600	149534,660	3,476	46806543643,240	0,196			
11	1117252	887530,800	229721,200	749470,200	229721,200	1725067,800	156824,345	4,779	52771829729,440	0,206			
12	452829	887530,800	-434701,800	314768,400	434701,800	2159769,600	179980,800	1,749	188965654923,240	0,960			
13	499150	887530,800	-388380,800	-73612,400	388380,800	2548150,400	196011,569	-0,376	150839645808,640	0,778			
14	941359	887530,800	53828,200	-19784,200	53828,200	2601978,600	185855,614	-0,106	2897475115,240	0,057			
15	1582981	887530,800	695450,200	675666,000	695450,200	3297428,800	219828,587	3,074	483650980680,040	0,439			
16	946099	887530,800	58568,200	734234,200	58568,200	3355997,000	209749,813	3,501	3430234051,240	0,062			
17	1105617	887530,800	218086,200	952320,400	218086,200	3574083,200	210240,188	4,530	47561590630,440	0,197			
18	958495	887530,800	70964,200	1023284,600	70964,200	3645047,400	202502,633	5,053	5035917681,640	0,074			
19	779687	887530,800	-107843,800	915440,800	107843,800	3752891,200	197520,589	4,635	11630285198,440	0,138			
20	719172	887530,800	-168358,800	747082,000	168358,800	3921250,000	196062,500	3,810	28344685537,440	0,234			
21	716702	887530,800	-170828,800	576253,200	170828,800	4092078,800	194860,895	2,957	29182478909,440	0,238			
22	756723	887530,800	-130807,800	445445,400	130807,800	4222886,600	191949,391	2,321	17110680540,840	0,173			
23	728923	887530,800	-158607,800	286837,600	158607,800	4381494,400	190499,757	1,506	25156434220,840	0,218			
24	825600	887530,800	-61930,800	224906,800	61930,800	4443425,200	185142,717	1,215	3835423988,640	0,075			
25	967455	887530,800	79924,200	304831,000	79924,200	4523349,400	180933,976	1,685	6387877745,640	0,083			
26	825000	887530,800	-62530,800	242300,200	62530,800	4588880,200	176380,008	1,374	3910100948,640	0,076			
27	890000	887530,800	2469,200	244769,400	2469,200	4588349,400	169938,867	1,440	6096948,640	0,003			
28	725678	887530,800	-161852,800	82916,600	161852,800	4750202,200	169650,079	0,489	26196328867,840	0,223			
29	912000	887530,800	24469,200	107385,800	24469,200	4774671,400	164643,841	0,652	598741748,640	0,027			
30	780145	887530,800	-107385,800	0,000	107385,800	4882057,200	162735,240	0,000	11531710041,640	0,138			
		887530,800			887530,800								
		887530,800			887530,800								
		887530,800			887530,800								
		887530,800			887530,800								
		887530,800			887530,800								
		887530,800			887530,800								

Medidas de Desempeño Finales						
MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
162735,240	0,197	7,053	0,000	47395039871,360	221425,725	4



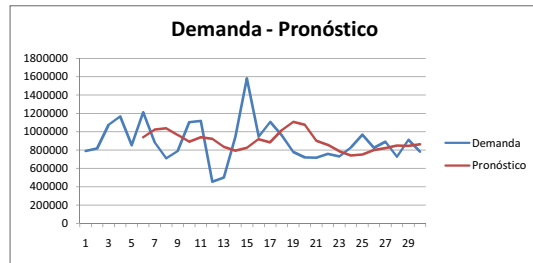
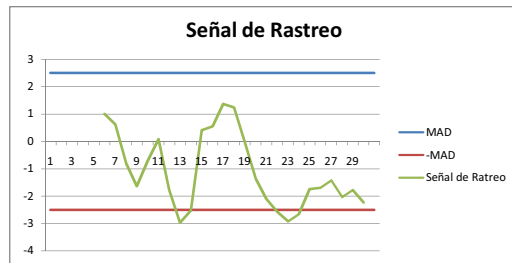
MODELO PMS

Datos Iniciales PMS		Pronóstico							Análisis del Error		
Periodo	Demanda	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et ² (Error Cuadrático)	Fracción Abs. del Error		
1	787249										
2	817525										
3	1075262										
4	1167421										
5	852504										
6	1211109										
7	882300	939992,200	271116,800	271116,800	271116,800	271116,800	1,000	73504319242,240	0,224		
8	709726	1024764,200	-142464,200	128652,600	142464,200	413581,000	0,622	20296048281,640	0,161		
9	788082	1037719,200	-327993,200	-199340,600	327993,200	741574,200	-0,806	107579539246,240	0,462		
10	1103879	964612,000	-176530,000	-375870,600	176530,000	918104,200	-1,638	31162840900,000	0,224		
11	1117252	888744,200	215134,800	-160735,800	215134,800	1133239,000	-0,709	46282982171,040	0,195		
12	452829	939019,200	178232,800	17497,000	178232,800	1311471,800	0,080	31766930995,840	0,160		
13	491150	920247,800	-467418,800	-449921,800	467418,800	1778890,600	-1,770	218480334593,440	1,032		
14	941359	834353,600	-335203,600	-785125,400	335203,600	2114094,200	-2,971	112361453452,960	0,672		
15	1582981	792238,400	149120,600	-636004,800	149120,600	2263214,800	-2,529	22236953344,360	0,158		
16	946099	822893,800	760087,200	124082,400	760087,200	3023302,000	0,410	577732551603,840	0,480		
17	1105617	918714,200	27384,800	151467,200	27384,800	3050686,800	0,546	749927271,040	0,029		
18	958495	884483,600	221133,400	372600,600	221133,400	3271820,200	1,367	48899980595,560	0,200		
19	779687	1015041,200	-56546,200	316054,400	56546,200	3328366,400	1,234	3197472734,440	0,059		
20	719172	1106910,200	-327223,200	-11168,800	327223,200	3655589,600	-0,043	107075022618,240	0,420		
21	716702	1074575,800	-355403,800	-366572,600	355403,800	4010993,400	-1,371	126311861054,440	0,494		
22	756723	901814,000	-185112,000	-551684,600	185112,000	4196105,400	-2,104	34266452544,000	0,258		
23	728923	855934,600	-99211,600	-650896,200	99211,600	4295317,000	-2,576	9842941574,560	0,131		
24	825600	786155,800	-57232,800	-708129,000	57232,800	4352549,800	-2,928	3275593393,840	0,079		
25	967455	740241,400	85358,600	-622770,400	85358,600	4437908,400	-2,666	7286090593,960	0,103		
26	825000	749424,000	218031,000	-404739,400	218031,000	4655939,400	-1,739	47537516961,000	0,225		
27	890000	799080,600	25919,400	-378820,000	25919,400	4681858,800	-1,699	671815296,360	0,031		
28	725678	820740,200	69259,800	-309560,200	69259,800	4751118,600	-1,433	4796919896,040	0,078		
29	912000	847395,600	-121717,600	-431277,800	121717,600	4872836,200	-2,036	14815174149,760	0,168		
30	780145	846746,600	65253,400	-366024,400	65253,400	4938089,600	-1,779	4258006211,560	0,072		
		864026,600	-83881,600	-449906,000	83881,600	5021971,200	-2,240	7036122818,560	0,108		
		826564,600									
		826564,600									
		826564,600									
		826564,600									
		826564,600									
		826564,600									



- [SE](#)
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- [Reg Lineal](#)
- [SE Doble](#)
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- [Descomposicion](#)
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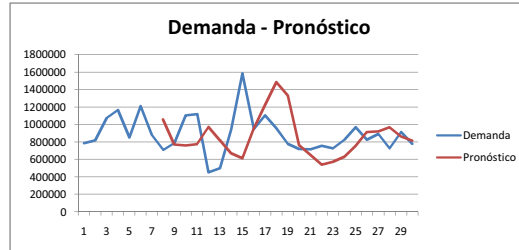
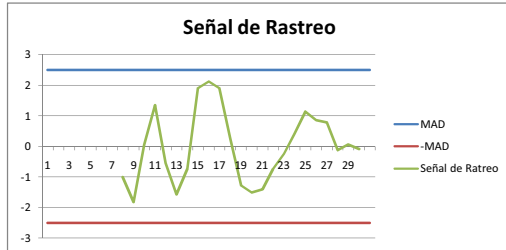
Valores Iniciales	Medidas de Desempeño Finales						
N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstica	Intersecciones con cero
5	200878,848	0,249	4,338	-17996,240	66456994061,878	263108,410	5



MODELO PMD

Datos Iniciales PMD		Pronóstico					Análisis del Error							
Periodo	Demanda	St'	St''	a	b	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	787249													
2	817525													
3	1075262													
4	1167421													
5	852504													
6	1211109													
7	882300													
8	709726													
9	788082													
10	1103879													
11	1117252													
12	452829													
13	499150													
14	941359													
15	1582981													
16	946099													
17	1105617													
18	958495													
19	779687													
20	719172													
21	716702													
22	756723													
23	728923													
24	825600													
25	967455													
26	825000													
27	890000													
28	725678													
29	912000													
30	780145													
31														
32														
33														
34														
35														
36														

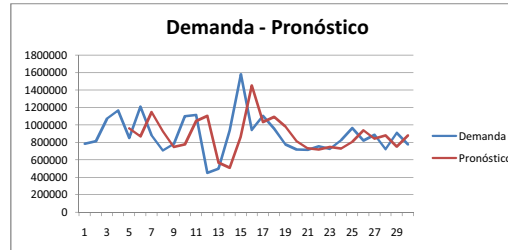
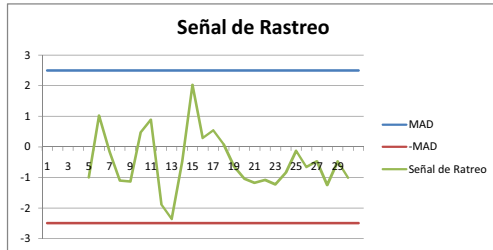
Valores Iniciales	Medidas de Desempeño Finales						
N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
4	246041,074	0,299	3,940	-903,234	111460373479,567	341360,153	8



MODELO SE

Datos Iniciales		Análisis del Error								
Periodo	Demanda	Pt (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	787249									
2	817525									
3	1075262									
4	1167421									
5	852504									
6	1211109									
7	882300									
8	709726									
9	788082									
10	1103879									
11	1117252									
12	452829									
13	499150									
14	941359									
15	1582981									
16	946099									
17	1105617									
18	958495									
19	779687									
20	719172									
21	716702									
22	756723									
23	728923									
24	825600									
25	967455									
26	825000									
27	890000									
28	725678									
29	912000									
30	780145									

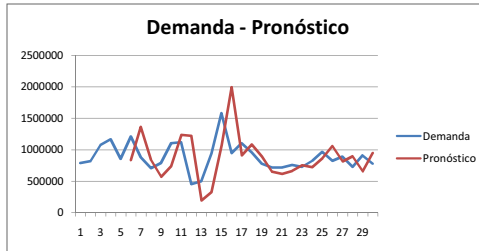
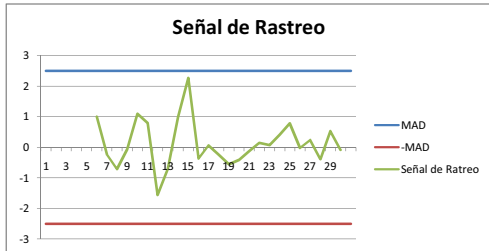
Valores Iniciales		Medidas de Desempeño Finales						
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,820	4,000	198328,689	0,236	4,396	-7650,589	74267336061,587	277917,307	6



MODELO SED

Datos Iniciales SED		Pronóstico					Análisis del Error													
Periodo	Demanda	St'	St''	a	b	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et ² (Error Cuadrático)	Fracción Abs. del Error						
1	787249																			
2	817525																			
3	1075262																			
4	1167421																			
5	852504	893345,333	893345,333																	
6	1211109	863531,160	871580,987	855481,333		-21764,347	179347,857	833716,987	377392,013	377392,013	377392,013	377392,013	1,000	142424731727,787	0,312					
7	882300	1117262,983	1050928,844	1183597,122		179347,857	-76787,852	1362944,980	-480644,980	-103252,966	480644,980	858036,993	429018,496	-0,241	231019596414,684	0,545				
8	709726	945740,005	974140,992	917339,019		-76787,852	773449,781	827636,408	719263,155	-146504,584	840551,167	-130825,167	-234078,133	130825,167	988862,160	329620,720	-0,710	17115224256,735	0,184	
9	788082	784131,301	795877,680	772384,922		-31758,728	784131,301	795877,680	772384,922	-31758,728	572758,571	215323,429	-18754,704	215323,429	1204185,589	301046,397	-0,062	46364179061,073	0,273	
10	1103879	1017547,121	957696,372	1077397,870		161818,692	1017547,121	957696,372	1077397,870	161818,692	740626,194	363252,806	344498,102	363252,806	1567438,395	313487,679	1,099	131952601282,934	0,329	
11	1117252	1090331,683	1054520,149	1126143,217		96823,777	1090331,683	1054520,149	1126143,217	96823,777	1239216,563	-121964,563	222533,540	121964,563	1689402,958	281567,160	0,790	14875354523,117	0,109	
12	452829	624954,724	740937,389	508972,060		-313582,760	624954,724	740937,389	508972,060	-313582,760	1222966,993	-770137,993	-547604,454	770137,993	2459540,951	351362,993	-1,559	593112528827,935	1,701	
13	499150	533117,276	589228,706	477005,845		-151708,683	533117,276	589228,706	477005,845	-151708,683	195389,300	303760,700	-243843,754	303760,700	2763301,651	345412,706	-0,706	92270562981,763	0,609	
14	941359	831133,734	765819,377	896448,092		176590,671	831133,734	765819,377	896448,092	176590,671	325297,162	616061,838	372218,084	616061,838	3379363,489	375484,832	0,991	379532188019,044	0,654	
15	1582981	1379982,238	1214158,266	1545806,211		448338,889	1379982,238	1214158,266	1545806,211	448338,889	1073038,763	509942,237	882160,322	509942,237	3889305,726	388930,573	2,268	260041085463,220	0,322	
16	946099	1063247,474	1103993,388	1022501,561		-110164,878	1063247,474	1103993,388	1022501,561	-110164,878	1994145,100	-1048046,100	-165885,778	1048046,100	4937351,826	448850,166	-0,370	1098400627290,080	1,108	
17	1105617	1094177,228	1096827,591	1091526,865		-7165,797	1094177,228	1096827,591	1091526,865	-7165,797	912336,683	193280,317	27394,539	193280,317	5130632,143	427552,679	0,064	37357280942,389	0,175	
18	958495	995129,202	1022587,767	967670,636		-74239,824	995129,202	1022587,767	967670,636	-74239,824	1084361,068	-125866,068	-98471,529	125866,068	5256498,211	404346,016	-0,244	15842267109,342	0,131	
19	779687	837856,394	887733,865	787978,924		-134853,902	837856,394	887733,865	787978,924	-134853,902	893430,812	-113743,812	-212215,341	113743,812	5370242,023	383588,716	-0,553	12937654746,932	0,146	
20	719172	751216,786	788076,398	714357,175		-99657,467	751216,786	788076,398	714357,175	-99657,467	653125,022	66046,978	-146168,363	66046,978	5436289,001	362419,267	-0,403	4362203294,769	0,092	
21	716702	726020,992	742775,952	709266,033		-45300,446	726020,992	742775,952	709266,033	-45300,446	614699,708	102002,292	-44166,071	102002,292	5538291,293	346143,206	-0,128	10404667568,068	0,142	
22	756723	748433,458	746905,931	749960,985		4129,979	748433,458	746905,931	749960,985	4129,979	663965,587	92757,413	48591,342	92757,413	5631048,706	331238,159	0,147	8603937661,737	0,123	
23	728923	734190,824	737623,903	730757,745		-9282,029	734190,824	737623,903	730757,745	-9282,029	754090,964	-25167,964	23423,378	25167,964	6566216,670	314234,259	0,075	633426415,865	0,035	
24	825600	800919,522	783829,705	818009,340		46205,802	800919,522	783829,705	818009,340	46205,802	721475,716	104124,284	127547,662	104124,284	5760340,954	303175,840	0,421	10841866516,778	0,126	
25	967455	922490,421	885052,028	959928,814		101222,323	922490,421	885052,028	959928,814	101222,323	864215,142	103239,858	230787,520	103239,858	5863580,812	293179,041	0,787	10658468266,818	0,107	
26	825000	851322,414	860429,409	842215,418		-24622,618	851322,414	860429,409	842215,418	-24622,618	1061151,137	-236151,137	-5363,617	236151,137	6099731,949	290463,426	-0,018	55767395914,470	0,286	
27	890000	879557,052	874392,588	884721,515		13963,179	879557,052	874392,588	884721,515	13963,179	817592,800	72407,200	67043,583	72407,200	6172139,149	280551,780	0,239	5242802665,012	0,081	
28	725678	767225,344	796160,500	738290,188		-78232,088	767225,344	796160,500	738290,188	-78232,088	898684,694	-173006,694	-105963,111	173006,694	6345145,843	275875,906	-0,384	29931316138,769	0,238	
29	912000	872910,843	852188,250	893633,435		56027,570	872910,843	852188,250	893633,435	56027,570	660058,100	251941,900	145978,789	251941,900	6597087,744	274878,656	0,531	63474721167,144	0,276	
30	780145	805191,778	817880,825	792502,730		-34307,425	805191,778	817880,825	792502,730	-34307,425	949661,186	-169516,186	-23537,396	169516,186	6766603,930	270664,157	-0,087	28735737251,051	0,217	
31											758195,305									
32											723887,880									
33											689580,455									
34											655273,030									
35											620965,605									
36											586658,180									

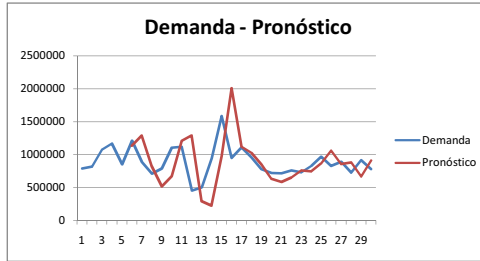
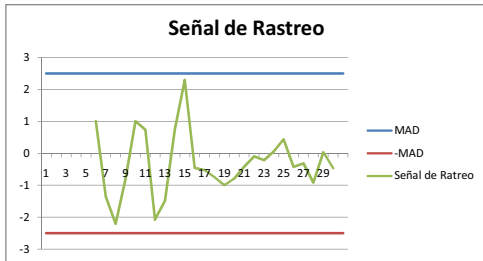
Valores Iniciales		Medidas de Desempeño Finales						
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,730	3,000	270664,157	0,333	3,827	-941,496	132076087564,300	370916,780	13,000



MODELO SET

Datos Iniciales SET		Pronóstico			Análisis del Error							
Periodo	Demanda	St	Tt	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et*2 (Error Cuadrático)	Fracción Abs. del Error
1	787249											
2	817525											
3	1075262											
4	1167421											
5	852504											
6	1211109	1084114,000	48040,600	1132154,600	78954,400	78954,400	78954,400	78954,400	78954,400	1,000	6233797279,360	0,065
7	882300	1192949,488	95460,613	1288410,101	-406110,101	-327155,701	406110,101	485064,501	242532,250	-1,349	164925413841,831	0,460
8	709726	975705,323	-148449,114	827256,209	-117530,209	-444685,910	117530,209	602594,710	200864,903	-2,214	13813350108,166	0,166
9	788082	736757,948	-219037,758	517720,191	270361,809	-174324,101	270361,809	872956,519	218239,130	-0,799	73095507974,922	0,343
10	1103879	725898,784	-56658,455	669240,329	434638,671	260314,570	434638,671	1307595,190	261519,038	0,995	188910774308,583	0,394
11	1117252	1003912,106	204385,531	1208297,637	-91045,637	169268,934	91045,637	1398640,827	233106,804	0,726	8289307952,293	0,081
12	452829	1138192,496	149703,522	1287896,018	-835067,018	-665798,084	835067,018	2233707,845	319101,121	-2,086	697336924601,092	1,844
13	499150	644894,414	-351837,729	293056,685	206093,315	-459704,769	206093,315	2439801,160	304975,145	-1,507	42744454603,382	0,413
14	941359	451748,537	-228058,084	223690,453	717668,547	257963,778	717668,547	3157469,707	350829,967	0,735	515048143043,779	0,762
15	1582981	776295,234	202973,645	979268,879	603712,121	861675,899	603712,121	3761181,828	376118,183	2,291	364468324838,999	0,381
16	946099	1444127,212	565563,145	2009690,357	-1063591,357	-201915,458	1063591,357	4824773,185	438615,744	-0,460	1131226574491,570	1,124
17	1105617	1190725,012	-73229,824	1117495,188	-11878,188	-213793,646	11878,188	4836651,373	403054,281	-0,530	141091346,120	0,011
18	958495	1108348,983	-80363,864	1027985,119	-69490,119	-283283,765	69490,119	4906141,492	377395,499	-0,751	4828876684,637	0,072
19	779687	974477,727	-122099,630	852378,098	-72691,098	-355974,863	72691,098	4978832,590	355630,899	-1,001	5283995714,791	0,093
20	719172	796405,953	-165757,903	630648,050	88523,950	-267450,913	88523,950	5067356,540	337823,769	-0,792	7836489798,679	0,123
21	716702	698811,491	-112590,418	586221,073	130480,927	-136969,986	130480,927	5197837,467	324864,842	-0,422	17025272288,674	0,182
22	756723	686691,387	-34223,574	652467,813	104255,187	-32714,799	104255,187	5302092,654	311887,803	-0,105	10869143975,319	0,138
23	728923	732744,307	28392,092	761136,399	-32213,399	-64928,198	32213,399	5334306,053	296350,336	-0,219	1037703050,441	0,044
24	825600	736332,082	9044,724	745376,806	80223,194	15294,996	80223,194	5414529,247	284975,224	0,054	6435760846,889	0,097
25	967455	807148,665	57226,775	864375,440	103079,560	118374,556	103079,560	5517608,807	275880,440	0,429	10625395679,780	0,107
26	825000	943746,701	119136,358	1062883,060	-237883,060	-119508,504	237883,060	5755491,866	274071,041	-0,436	56588350032,353	0,288
27	890000	879713,104	-23736,207	855976,896	34023,104	-85485,400	34023,104	5789514,970	263159,771	-0,325	1157571572,807	0,038
28	725678	882174,686	-3301,931	878872,755	-153194,755	-238680,155	153194,755	5942709,725	258378,684	-0,924	23468632942,804	0,211
29	912000	760912,794	-95310,701	665602,093	246397,907	7717,752	246397,907	6189107,632	257879,485	0,030	60711928785,301	0,270
30	780145	855328,481	52675,882	908004,363	-127859,363	-120141,611	127859,363	6316966,995	252678,680	-0,475	16348016815,917	0,164
		809552,654	-24116,452	785436,202								
				785436,202								
				785436,202								
				785436,202								
				785436,202								
				785436,202								

Valores Iniciales			Medidas de Desempeño Finales								
Alpha	Beta	N (Periodos de Promedio)	MAD	MAPE	Pendiente	Intercepto	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstica	Intersecciones con cero
0,77	0,78	5	252678,680	0,315	48040,600	795870,400	4,505	-4805,664	137127232103,140	377942,941	9

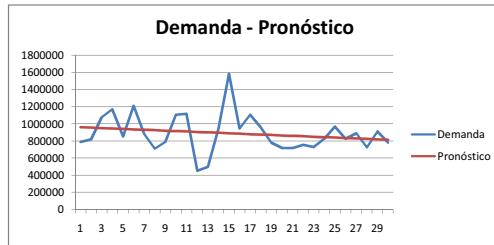
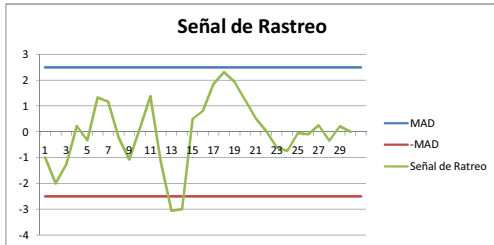


MODELO REGRESION

Datos Iniciales Reg. Lineal		Análisis del Error									
Periodo	Demanda	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et ² (Error Cuadrático)	Fracción Abs. del Error	
1	787249	960005,445	-172756,445	-172756,445	172756,445	172756,445	172756,445	-1,000	29844789344,766	0,219	
2	817525	955007,194	-137482,194	-310238,639	137482,194	310238,639	155119,319	-2,000	18901353604,047	0,168	
3	1075262	950008,942	125253,058	-184985,581	125253,058	435491,697	145163,899	-1,274	15688328443,053	0,116	
4	1167421	945010,691	222410,309	37424,728	222410,309	657902,006	164475,501	0,228	49466345553,929	0,191	
5	852504	940012,440	-87508,440	-50083,712	87508,440	745410,445	149082,089	-0,336	7657727001,149	0,103	
6	1211109	935014,188	276094,812	226011,100	276094,812	1021505,257	170250,876	1,328	76228345097,841	0,228	
7	882300	930015,937	-47715,937	178295,163	47715,937	1069221,194	152745,885	1,167	2276810626,485	0,054	
8	709726	925017,685	-215291,685	-36996,522	215291,685	1284512,879	160564,110	-0,230	46350509814,538	0,303	
9	788082	920019,434	-131937,434	-168933,956	131937,434	1416450,313	157383,368	-1,073	17407486500,484	0,167	
10	1103879	915021,183	188857,817	19923,861	188857,817	1605308,131	160530,813	0,124	35667275175,193	0,171	
11	1117252	910022,931	207229,069	227152,930	207229,069	1812537,199	164776,109	1,379	42943886932,111	0,185	
12	452829	905024,680	-452195,680	-225042,750	452195,680	2264732,879	188727,740	-1,192	204480932889,943	0,999	
13	499150	900026,428	-400876,428	-625919,179	400876,428	2665609,308	205046,870	-3,053	160701910907,741	0,803	
14	941359	895028,177	46330,823	-579588,356	46330,823	2711940,131	193710,009	-2,992	2146545151,921	0,049	
15	1582981	890029,926	692951,074	113362,719	692951,074	3404891,205	226992,747	0,499	480181191380,153	0,438	
16	946099	885031,674	61067,326	174430,044	61067,326	3465958,531	216622,408	0,805	3729218267,566	0,065	
17	1105617	880033,423	225583,577	400013,621	225583,577	3691542,108	217149,536	1,842	50887950250,758	0,204	
18	958495	875035,172	83459,828	483473,450	83459,828	3775001,936	209722,330	2,305	6965542969,257	0,087	
19	779687	870036,920	-90349,920	393123,530	90349,920	3865351,856	203439,571	1,932	8163108068,127	0,116	
20	719172	865038,669	-145866,669	247256,861	145866,669	4011218,525	200560,926	1,233	21277085050,194	0,203	
21	716702	860040,417	-143338,417	103918,444	143338,417	4154556,942	197836,045	0,525	20545901889,152	0,200	
22	756773	855042,166	-98319,166	5599,278	98319,166	4252876,108	193312,550	0,029	9666658395,499	0,130	
23	728923	850043,915	-121120,915	-115521,637	121120,915	4373997,023	190173,784	-0,607	14670275946,696	0,166	
24	825600	845045,663	-19445,663	-134967,300	19445,663	4393442,686	183060,112	-0,737	378133816,561	0,024	
25	967455	840047,412	127407,588	-7559,712	127407,588	4520850,274	180834,011	-0,042	16232693533,265	0,132	
26	825000	835049,160	-10049,160	-17608,872	10049,160	4530899,435	174265,363	-0,101	100985624,754	0,012	
27	890000	830050,909	59949,091	42340,219	59949,091	4590848,526	170031,427	0,249	3593893510,526	0,067	
28	725678	825052,658	-99374,658	-57034,439	99374,658	4690223,183	167507,971	-0,340	9875322577,008	0,137	
29	912000	820054,406	91945,594	34911,155	91945,594	4782168,777	164902,372	0,212	8453992213,875	0,101	
30	780145	815056,155	-34911,155	0,000	34911,155	4817079,932	160569,331	0,000	1218788732,172	0,045	
31		810057,903									
32		805059,652									
33		800061,401									
34		795063,149									
35		790064,898									
36		785066,646									

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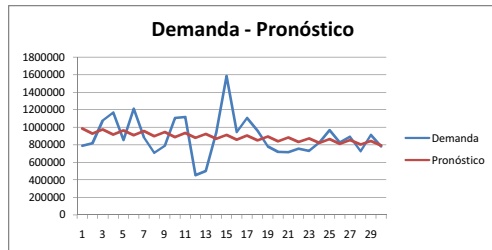
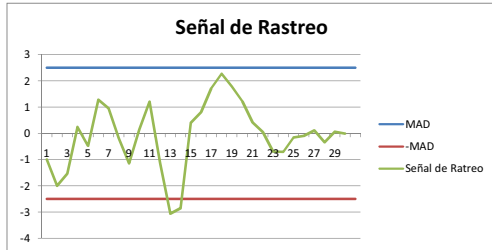
Medidas de Desempeño Finales									
Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
965003,697	-4998,251	-0,199	160569,331	0,196	5,358	0,000	45523432975,626	217009,692	12



MODELO DESCOMPOSICION

Datos Iniciales Descomp.		Pronóstico						Análisis del Error							
Periodo	Demanda	Promedio	Razón	Índice Estacional	Suavización	Ft sin ajuste	Ft ajustado	et (Error del Pronóstico)	RSFE (Error Acumulado)	letI (Error Absoluto)	letI acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	787249	887530,800	0,887	1,028	765837,810	959215,331	986032,945	-198783,945	-198783,945	198783,945	198783,945	198783,945	-1,000	39515056643,310	0,253
2	817525	887530,800	0,921	0,972	841038,645	954271,571	927592,175	-110067,175	-308851,119	110067,175	308851,119	154425,560	-2,000	12114782910,576	0,135
3	1075262	887530,800	1,212	1,028	1046017,581	949327,810	975868,989	99393,011	-209458,108	99393,011	408244,130	136081,377	-1,539	9878970625,657	0,092
4	1167421	887530,800	1,315	0,972	1200998,350	944384,049	917981,087	249439,913	39981,805	249439,913	657684,043	164421,011	0,243	62220270221,723	0,214
5	852504	887530,800	0,961	1,028	829318,038	939440,288	965705,033	-113201,033	-73219,229	113201,033	770885,077	154177,015	-0,475	12814473978,422	0,133
6	1211109	887530,800	1,365	0,972	1245942,904	934496,528	908369,999	302739,001	229519,772	302739,001	1073624,077	178937,346	1,283	91650902505,116	0,250
7	882300	887530,800	0,994	1,028	858303,662	929552,767	955541,078	-73241,078	156278,694	73241,078	1146865,155	163837,879	0,954	5364255490,124	0,083
8	709726	887530,800	0,800	0,972	730139,132	924609,006	898758,912	-189032,912	-32754,218	189032,912	1335898,067	166987,258	-0,196	35733441735,972	0,266
9	788082	887530,800	0,888	1,028	766648,154	919665,245	945377,122	-157295,122	-190049,340	157295,122	1493193,189	165910,354	-1,145	24741755501,301	0,200
10	1103879	887530,800	1,244	0,972	1135628,756	914721,484	889147,824	214731,176	24681,836	214731,176	1707924,365	170792,437	0,145	46109477862,976	0,195
11	1117252	887530,800	1,259	1,028	1086865,559	909777,724	935213,167	182038,833	206720,669	182038,833	1889963,198	171814,836	1,203	33138136820,211	0,163
12	452829	887530,800	0,510	0,972	465853,263	904833,963	879536,737	-426707,737	-219987,068	426707,737	2316670,935	193055,911	-1,139	182079492481,446	0,942
13	499150	887530,800	0,562	1,028	485574,377	899890,202	925049,211	-425899,211	-645886,279	425899,211	2742570,146	210966,934	-3,062	181390138052,557	0,853
14	941359	887530,800	1,061	0,972	968434,357	894946,441	869925,649	71433,351	-574452,928	71433,351	2814003,497	201000,250	-2,858	5102723631,855	0,076
15	1582981	887530,800	1,784	1,028	1539927,903	890002,680	914885,256	668095,744	93642,817	668095,744	3482099,241	232139,949	0,403	446351923736,152	0,422
16	946099	887530,800	1,066	0,972	973310,689	885058,920	860314,561	85784,439	179427,255	85784,439	3567883,680	222992,730	0,805	7358968989,587	0,091
17	1105617	887530,800	1,246	1,028	1075547,002	880115,159	904721,300	200895,700	380322,955	200895,700	3768779,380	221692,905	1,716	40359082286,270	0,182
18	958495	887530,800	1,080	0,972	986063,223	875171,398	850703,474	107791,526	488114,481	107791,526	3876570,906	215365,050	2,266	11619013109,496	0,112
19	779687	887530,800	0,878	1,028	758481,477	870227,637	894557,344	-114870,344	373244,137	114870,344	3991441,251	210075,855	1,777	13195196022,405	0,147
20	719172	887530,800	0,810	0,972	739856,817	865283,876	841092,386	-121920,386	251323,751	121920,386	4113361,637	205668,082	1,222	14864580587,109	0,170
21	716702	887530,800	0,808	1,028	697209,510	860340,116	884393,389	-167691,389	83632,362	167691,389	4281053,026	203859,668	0,410	28120401883,672	0,234
22	756723	887530,800	0,853	0,972	778487,859	855396,355	831481,299	-74758,299	8874,063	74758,299	4355811,324	197991,424	0,045	5588803221,480	0,099
23	728923	887530,800	0,821	1,028	709098,130	850452,594	874229,433	-145306,433	-136432,370	145306,433	4501117,758	195700,772	-0,697	21113959539,918	0,199
24	825600	887530,800	0,930	0,972	849345,898	845508,833	821870,211	3729,789	-132702,581	3729,789	4504847,547	187701,981	-0,707	13911325,284	0,007
25	967455	887530,800	1,090	1,028	941142,660	840565,072	864065,478	103389,522	-29313,059	103389,522	4608237,069	184329,483	-0,159	10689393330,698	0,105
26	825000	887530,800	0,930	0,972	848728,641	835621,312	812259,124	12740,876	-16572,182	12740,876	4620977,945	177729,921	-0,093	162329933,779	0,015
27	890000	887530,800	1,003	1,028	865794,241	830677,551	853901,522	16098,478	19526,296	36098,478	4657076,423	172484,312	0,113	1303100108,591	0,041
28	725678	887530,800	0,818	0,972	746549,943	825733,790	802648,036	-76970,036	-57443,740	76970,036	4734046,459	169073,088	-0,340	5924386429,904	0,106
29	912000	887530,800	1,028	1,028	887195,897	820790,029	843737,566	68262,434	10818,693	68262,434	4802308,893	165596,858	0,065	4659759828,380	0,075
30	780145	887530,800	0,879	0,972	802583,522	815846,269	793036,948	-12891,948	-2073,255	12891,948	4815200,841	160506,695	-0,013	166202331,917	0,017
31				1,028	810902,508		833573,611								
32				0,972	805958,747		783425,861								
33				1,038	801014,986		831474,018								
34				0,976	796071,225		776710,151								
35				1,025	791127,465		810652,300								
36				0,950	786183,704		746520,782								

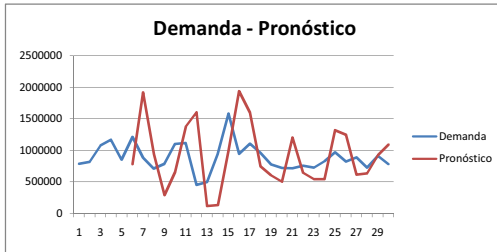
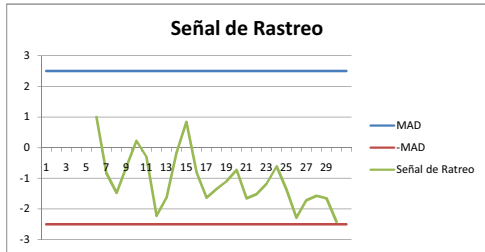
Valores Iniciales		Medidas de Desempeño Finales									
Estacionalidad	Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronósticos	Intersecciones con cero	
2	964159,092	-4943,761	-0,199	160506,695	0,196	5,328	-69,108	45111496401,196	216025,612	12,000	



MODELO WINTERS

Datos Iniciales Winters		Pronóstico				Análisis del Error							
Periodo	Demanda	St	It	Tt	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et*2 (Error Cuadrático)	Fracción Abs. del Error
1	787249					0,818							
2	817525					0,850							
3	1075262					1,118							
4	1167421					1,214							
5	852504	852504,000	0,964	65255,000									
6	1211109	1323502,211	0,902	389849,569	780038,271	431070,729	431070,729	431070,729	431070,729	431070,729	1,000	185821973429,015	0,356
7	882300	974072,063	0,948	-201574,205	1915345,187	-1033045,187	-601974,458	1033045,187	1464115,916	732057,958	-0,822	1067182358734,420	1,171
8	709726	622306,861	1,155	-321727,003	937585,758	-227859,758	-829834,216	227859,758	1691975,674	563991,891	-1,471	51920069406,502	0,321
9	788082	714334,731	1,075	9276,895	289666,504	498415,496	-331418,720	498415,496	2190391,171	547597,793	-0,605	248418006884,583	0,632
10	1103879	1123717,347	0,966	329361,472	652734,414	451144,586	119725,865	451144,586	2641535,756	528307,151	0,227	203531437039,809	0,409
11	1117252	1233238,774	0,914	153489,436	1377819,297	-260567,297	-140841,432	260567,297	2902103,053	483683,842	-0,291	67895316426,160	0,233
12	452829	590960,288	0,844	-483124,901	1601840,363	-1149011,363	-1289852,795	1149011,363	4051114,416	578730,631	-2,229	1320227112044,830	2,537
13	499150	392913,638	1,231	-255062,301	115958,599	383191,401	-906661,393	383191,401	4434305,818	554288,227	-1,636	146835650023,501	0,768
14	941359	806932,270	1,127	280202,446	133203,924	808155,076	-98506,318	808155,076	5242460,893	582495,655	-0,169	653114626541,976	0,858
15	1582981	1602360,780	0,973	692383,297	994077,004	588903,996	490397,678	588903,996	5831364,889	583136,489	0,841	346807916164,192	0,372
16	946099	1355691,011	0,727	-58859,156	1936837,668	-990738,668	-500340,990	990738,668	6822103,557	620191,232	-0,807	981563108459,413	1,047
17	1105617	977666,388	1,151	-314191,530	1596880,758	-491263,758	-991604,748	491263,758	7313367,315	609447,276	-1,627	241340079880,412	0,444
18	958495	813366,163	1,168	-194278,486	747423,827	211071,173	-780533,575	211071,173	7524438,488	578802,961	-1,349	44551039891,815	0,220
19	779687	764740,952	1,010	-77755,866	602498,959	171788,041	-603345,535	171788,041	7701626,528	550116,181	-1,097	31395601751,189	0,227
20	719172	928669,640	0,765	115591,777	499509,700	219662,300	-383683,235	219662,300	7921288,828	528085,922	-0,727	48251526056,090	0,305
21	716702	707006,135	1,041	-154212,448	1201916,627	-485214,627	-868897,861	485214,627	8046053,455	525406,466	-1,654	235433233774,867	0,677
22	756723	628840,081	1,196	-93375,333	645690,534	111032,466	-757865,395	111032,466	8517535,921	501031,525	-1,513	12328208513,835	0,147
23	728923	684299,934	1,054	25692,816	540967,218	187955,782	-569909,613	187955,782	8705491,703	483638,428	-1,178	35327376018,884	0,258
24	825600	1005427,937	0,810	262040,965	543108,699	282491,301	-287418,313	282491,301	8987983,004	473051,737	-0,608	79801334915,586	0,342
25	967455	996856,676	0,985	45551,185	1319645,232	-352190,232	-639608,545	352190,232	9340173,236	467008,662	-1,370	124037959756,187	0,364
26	825000	760182,421	1,107	-180229,167	1247033,042	-422033,042	-1061641,587	422033,042	9762206,278	464866,966	-2,284	17811888799,427	0,512
27	890000	791369,542	1,111	-11096,137	611400,693	278599,907	-783041,693	278599,907	10040806,185	456400,281	-1,716	77617908142,040	0,313
28	725678	872858,437	0,827	62971,888	631946,739	93731,261	-689310,419	93731,261	10134537,447	440632,063	-1,564	8785549345,094	0,129
29	912000	928149,313	0,983	56827,079	921453,766	-9453,766	-698764,185	9453,766	10143991,213	422666,301	-1,653	89373692,732	0,010
30	780145	760545,033	1,042	-122718,009	1090834,520	-310689,520	-1009453,705	310689,520	10454680,733	418187,229	-2,414	96527978115,369	0,398

Valores Iniciales			Medidas de Desempeño Finales						
Alpha	Beta	Gamma	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,8	0,8	0,8	418187,229	0,522	3,414	-40378,148	259476665352,317	519892,482	5

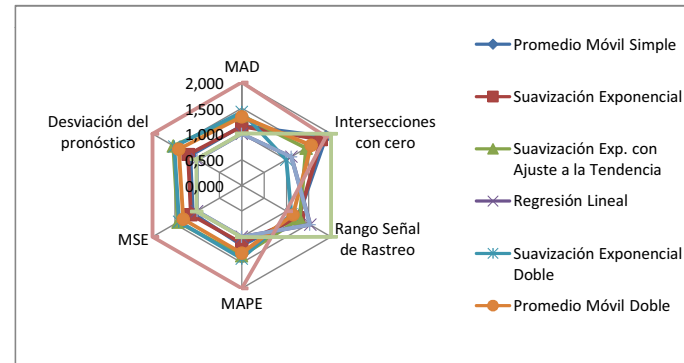
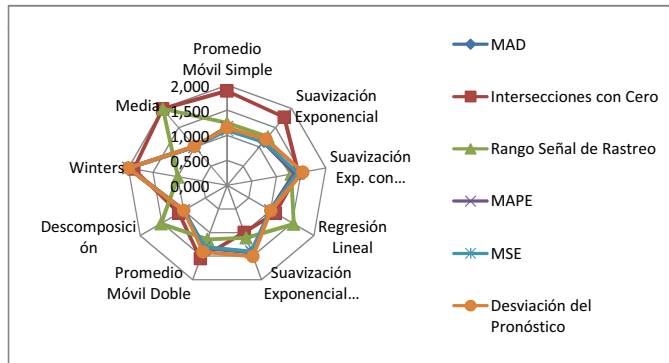


COMPARACIONES

Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	Intersecciones con cero (%)
Promedio Móvil Simple	200878,848	5	4,338	0,249	66456994061,878	263108,410	0,167
Suavización Exponencial	198328,689	6	4,396	0,236	74267336061,587	277917,307	0,200
Suavización Exp. con Ajuste a la Tendencia	252678,680	9	4,505	0,315	137127232103,140	377942,941	0,300
Regresión Lineal	160569,331	12	5,358	0,196	45523432975,626	217009,692	0,400
Suavización Exponencial Doble	270664,157	13	3,827	0,333	132076087564,300	370916,780	0,433
Promedio Móvil Doble	246041,074	8	3,940	0,299	111460373479,567	341360,153	0,267
Descomposición	160506,695	12	5,328	0,196	45111496401,196	216025,612	0,400
Winters	418187,229	5	3,414	0,522	259476665352,317	519892,482	0,167
Media	162735,240	4	7,053	0,197	47395039871,360	221425,725	0,133



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- [SE](#)
- [SET](#)
- [Reg Lineal](#)
- [SE Doble](#)
- [PM Doble](#)
- [Descomposicion](#)
- [Winters](#)
- [Media](#)



Datos Normalizados						
Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico
Promedio Móvil Simple	1,157	1,889	1,254	1,163	1,100	1,155
Suavización Exponencial	1,147	1,778	1,270	1,124	1,136	1,204
Suavización Exp. con Ajuste a la Tendencia	1,358	1,444	1,300	1,365	1,429	1,533
Regresión Lineal	1,000	1,111	1,534	1,001	1,002	1,003
Suavización Exponencial Doble	1,427	1,000	1,113	1,420	1,406	1,510
Promedio Móvil Doble	1,332	1,556	1,144	1,315	1,310	1,412
Descomposición	1,000	1,111	1,526	1,000	1,000	1,000
Winters	2,000	1,889	1,000	2,000	2,000	2,000
Media	1,009	2,000	2,000	1,004	1,011	1,018

12. PF 52 GR

Periodo	Demanda
1	1.341.728
2	1.295.853
3	1.275.461
4	1.477.843
5	1.483.184
6	1.346.770
7	2.093.724
8	1.076.554
9	2.409.043
10	3.438.759
11	2.474.731
12	2.168.717
13	2.636.725
14	2.165.442
15	2.667.253
16	1.965.291

FOR TSM

NÚMERO DE PERIODOS DE DEMANDA

16

Elegir Modelos



Datos	16,000
Desviación Estándar	664.497,072
Promedio	1.957.317,375
Coefficiente de Correlación	0,666
Coefficiente de Variación	0,339

Creado por:
 Rosana Builes Palacio
 María Cristina Bravo Gómez



[Comparaciones](#)

Modelos Pronosticados

[PM Simple](#)

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[Reg Lineal](#)

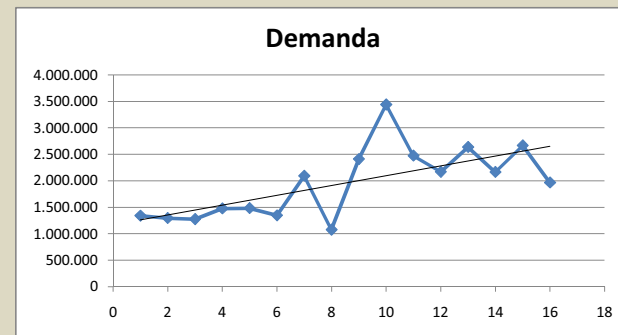
[SE Doble](#)

[PM Doble](#)



[Descomposicion](#)

[Winters](#)

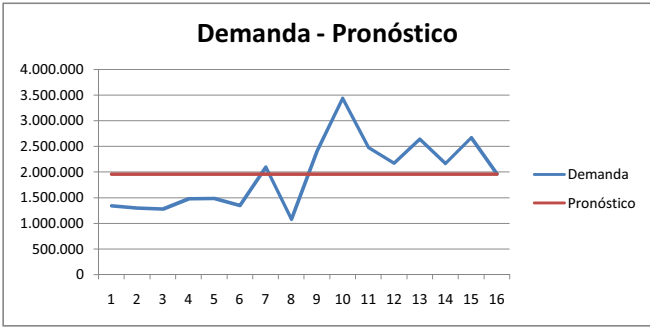
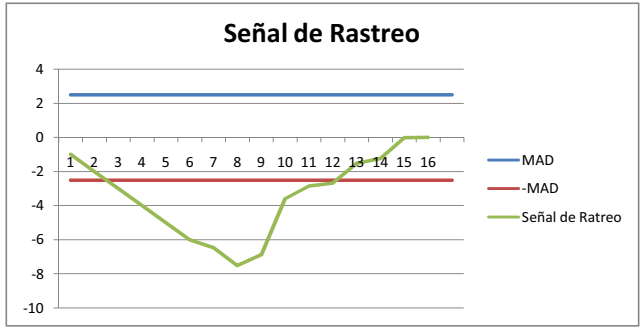
[Media](#)



MODELO MEDIA

Datos Iniciales Media			Análisis del Error									
Periodo	Demanda		Pt (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error	
1	1.341.728		1957317,375	-615589,375	-615589,375	615589,375	615589,375	615589,375	-1,000	378950278612,891	0,459	
2	1.295.853		PM Simple	1957317,375	-661464,375	-1277053,750	661464,375	1277053,750	638526,875	-2,000	437535119394,141	0,510
3	1.275.461		SE	1957317,375	-681856,375	-1958910,125	681856,375	1958910,125	652970,042	-3,000	464928116128,141	0,535
4	1.477.843		SET	1957317,375	-479474,375	-2438384,500	479474,375	2438384,500	609596,125	-4,000	229895676281,641	0,324
5	1.483.184		Reg Lineal	1957317,375	-474133,375	-2912517,875	474133,375	2912517,875	582503,575	-5,000	224802457288,891	0,320
6	1.346.770		SE Doble	1957317,375	-610547,375	-3523065,250	610547,375	3523065,250	587177,542	-6,000	372768097119,391	0,453
7	2.093.724		PM Doble	1957317,375	136406,625	-3386658,625	136406,625	3659471,875	522781,696	-6,478	18606767343,891	0,065
8	1.076.554		Descomposicion	1957317,375	-880763,375	-4267422,000	880763,375	4540235,250	567529,406	-7,519	775744122741,391	0,818
9	2.409.043		Winters	1957317,375	451725,625	-3815696,375	451725,625	4991960,875	554662,319	-6,879	204056040281,641	0,188
10	3.438.759		Comparaciones	1957317,375	1481441,625	-2334254,750	1481441,625	6473402,500	647340,250	-3,606	2194669288282,640	0,431
11	2.474.731			1957317,375	517413,625	-1816841,125	517413,625	6990816,125	635528,739	-2,859	267716859335,641	0,209
12	2.168.717			1957317,375	211399,625	-1605441,500	211399,625	7202215,750	600184,646	-2,675	44689801450,141	0,097
13	2.636.725			1957317,375	679407,625	-926033,875	679407,625	7881623,375	606278,721	-1,527	461594720908,141	0,258
14	2.165.442			1957317,375	208124,625	-717909,250	208124,625	8089748,000	577839,143	-1,242	43315859531,391	0,096
15	2.667.253			1957317,375	709935,625	-7973,625	709935,625	8799683,625	586645,575	-0,014	504008591644,141	0,266
16	1.965.291			1957317,375	7973,625	0,000	7973,625	8807657,250	550478,578	0,000	63578695,641	0,004
			1957317,375									
			1957317,375									
			1957317,375									
			1957317,375									
			1957317,375									
			1957317,375									
			1957317,375									

Medidas de Desempeño Finales						
MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
550478,578	0,315	7,519	0,000	413959085939,984	664497,072	1



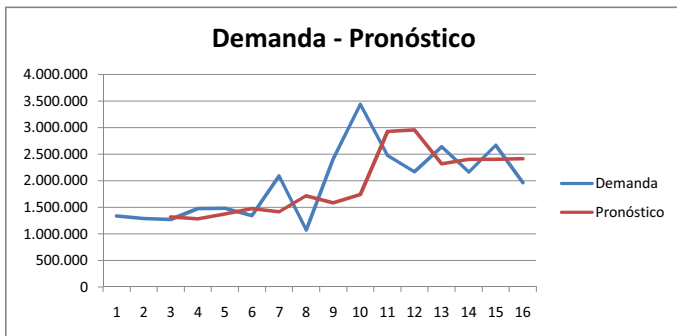
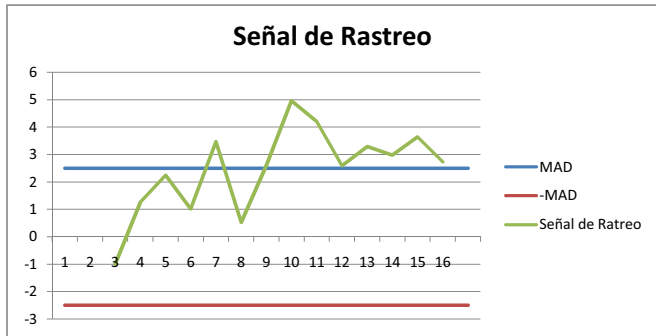
MODELO PMS

Datos Iniciales PMS		Análisis del Error								
Periodo	Demanda	Pronóstico	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	1.341.728									
2	1.295.853									
3	1.275.461									
4	1.477.843	1318790,500	-43329,500	-43329,500	43329,500	43329,500	43329,500	-1,000	1877445570,250	0,034
5	1.483.184	1285657,000	192186,000	148856,500	192186,000	235515,500	117757,750	1,264	36935458596,000	0,130
6	1.346.770	1376652,000	106532,000	255388,500	106532,000	342047,500	114015,833	2,240	11349067024,000	0,072
7	2.093.724	1480513,500	-133743,500	121645,000	133743,500	475791,000	118947,750	1,023	17887323792,250	0,099
8	1.076.554	1414977,000	678747,000	800392,000	678747,000	1154538,000	230907,600	3,466	460697490009,000	0,324
9	2.409.043	1720247,000	-643693,000	156699,000	643693,000	1798231,000	299705,167	0,523	414340678249,000	0,598
10	3.438.759	1585139,000	823904,000	980603,000	823904,000	2622135,000	374590,714	2,618	678817801216,000	0,342
11	2.474.731	1742798,500	1695960,500	2676563,500	1695960,500	4318095,500	539761,938	4,959	2876282017560,250	0,493
12	2.168.717	2923901,000	-449170,000	2227393,500	449170,000	4767265,500	529696,167	4,205	201753688900,000	0,182
13	2.636.725	2956745,000	-788028,000	1439365,500	788028,000	5555293,500	555529,350	2,591	620988128784,000	0,363
14	2.165.442	2321724,000	315001,000	1754366,500	315001,000	5870294,500	533663,136	3,287	99225630001,000	0,119
15	2.667.253	2402721,000	-237279,000	1517087,500	237279,000	6107573,500	508964,458	2,981	56301323841,000	0,110
16	1.965.291	2401083,500	266169,500	1783257,000	266169,500	6373743,000	490287,923	3,637	70846202730,250	0,100
		2416347,500	-451056,500	1332200,500	451056,500	6824799,500	487485,679	2,733	203451966192,250	0,230
		2316272,000								
		2316272,000								
		2316272,000								
		2316272,000								
		2316272,000								
		2316272,000								



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Valores Iniciales	Medidas de Desempeño Finales						
N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	487485,679	0,228	5,959	95157,179	410768158747,518	665105,788	1



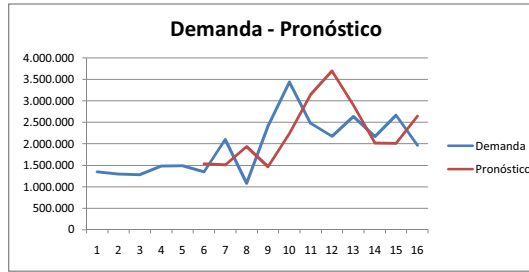
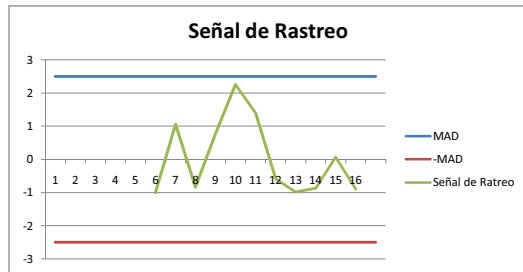
MODELO PMD

Datos Iniciales PMD		Pronóstico					Análisis del Error							
Periodo	Demanda	St'	St''	a	b	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	1.341.728													
2	1.295.853													
3	1.275.461													
4	1.477.843													
5	1.483.184													
6	1.346.770													
7	2.093.724													
8	1.076.554													
9	2.409.043													
10	3.438.759													
11	2.474.731													
12	2.168.717													
13	2.636.725													
14	2.165.442													
15	2.667.253													
16	1.965.291													
17														
18														
19														
20														
21														
22														



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Valores Iniciales N (Periodos de Promedio)	Medidas de Desempeño Finales						
	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstica	Intersecciones con cero
3	700142,323	0,335	3,254	-57084,545	653721620766,606	847993,976	6



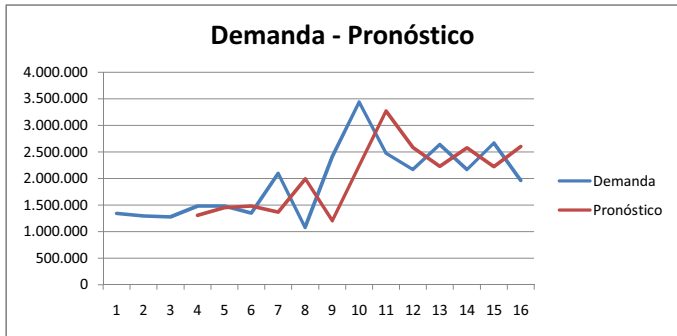
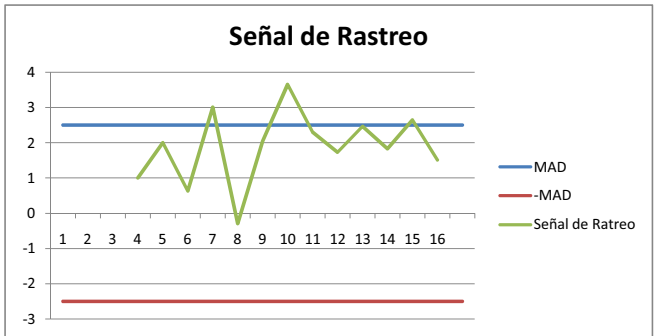
MODELO SE

Datos Iniciales SE		Análisis del Error								
Periodo	Demanda	Pronóstico Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	1.341.728									
2	1.295.853									
3	1.275.461									
4	1.477.843									
5	1.483.184									
6	1.346.770									
7	2.093.724									
8	1.076.554									
9	2.409.043									
10	3.438.759									
11	2.474.731									
12	2.168.717									
13	2.636.725									
14	2.165.442									
15	2.667.253									
16	1.965.291									
		1304347,333	173495,667	173495,667	173495,667	173495,667	173495,667	1,000	30100746352,111	0,117
		1453553,607	29630,393	203126,060	29630,393	203126,060	101563,030	2,000	877960209,088	0,020
		1479035,745	-132265,745	70860,315	132265,745	335391,805	111797,268	0,634	17494227282,770	0,098
		1365287,204	728436,796	799297,111	728436,796	1063828,601	265957,150	3,005	530620165343,281	0,348
		1991742,849	-915188,849	-115891,738	915188,849	1979017,449	395803,490	-0,293	837570628603,063	0,850
		1204680,439	1204362,561	1088470,823	1204362,561	3183380,010	530563,335	2,052	1450489178810,360	0,500
		2240432,241	1198326,759	2286797,582	1198326,759	4381706,769	625958,110	3,653	1435987020298,710	0,348
		3270993,254	-796262,254	1490535,328	796262,254	5177969,023	647246,128	2,303	634033576827,548	0,322
		2586207,716	-417490,716	1073044,613	417490,716	5595459,738	621717,749	1,726	174298497555,487	0,193
		2227165,700	409559,300	1482603,912	409559,300	6005019,038	600501,904	2,469	167738820073,561	0,155
		2579386,698	-413944,698	1068659,214	413944,698	6418963,736	583542,158	1,831	171350213022,536	0,191
		2223394,258	443858,742	1512517,957	443858,742	6862822,478	571901,873	2,645	197010583095,348	0,166
		2605112,776	-639821,776	872696,181	639821,776	7502644,255	577126,481	1,512	409371905147,802	0,326
		2054866,049								
		2054866,049								
		2054866,049								
		2054866,049								
		2054866,049								
		2054866,049								



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Valores Iniciales		Medidas de Desempeño Finales						
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,860	3,000	577126,481	0,280	3,946	67130,475	465918732509,359	710454,287	2



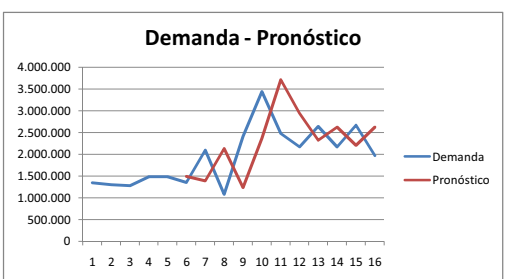
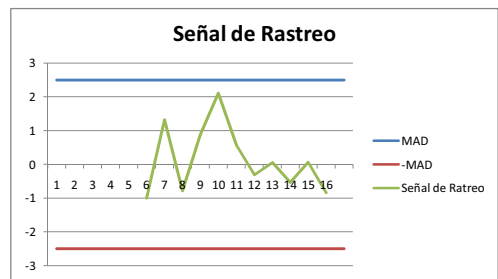
MODELO SED

Datos Iniciales SED		Pronóstico					Análisis del Error							
Periodo	Demanda	St'	St''	a	b	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	1.341.728													
2	1.295.853													
3	1.275.461													
4	1.477.843													
5	1.483.184													
6	1.346.770													
7	2.093.724													
8	1.076.554													
9	2.409.043													
10	3.438.759													
11	2.474.731													
12	2.168.717													
13	2.636.725													
14	2.165.442													
15	2.667.253													
16	1.965.291													
17														
18														
19														
20														
21														
22														



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Valores Iniciales		Medidas de Desempeño Finales						
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,520	3,000	731919,977	0,356	3,109	-55604,021	658339628764,027	850983,896	8,000



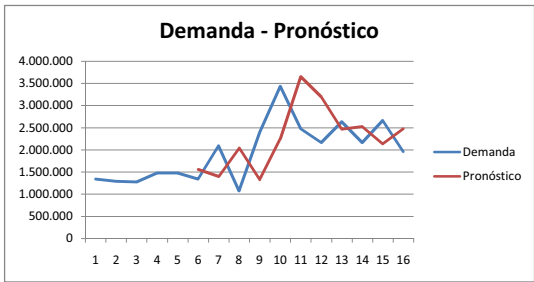
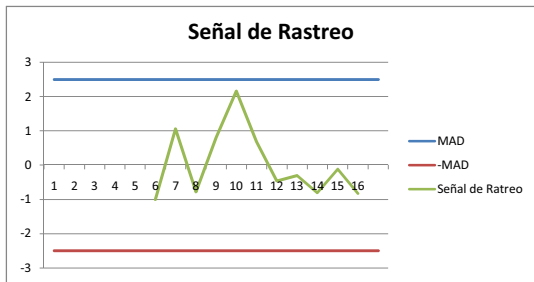
MODELO SET

Datos Iniciales SET		Pronóstico			Análisis del Error							
Periodo	Demanda	St	Tt	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	1.341.728											
2	1.295.853											
3	1.275.461											
4	1.477.843											
5	1.483.184											
6	1.346.770	1514284,400	46490,200	1560774,600	-214004,600	-214004,600	214004,600	214004,600	214004,600	-1,000	45797968821,160	0,159
7	2.093.724	1430231,794	-29224,627	1401007,167	692716,833	478712,233	692716,833	906721,433	453360,717	1,056	479856611386,558	0,331
8	1.076.554	1823564,435	215858,588	2039423,023	-962869,023	-484156,790	962869,023	1869590,457	623196,819	-0,777	927116755738,030	0,894
9	2.409.043	1452072,919	-124804,472	1327268,447	1081774,553	597617,763	1081774,553	2951365,010	737841,252	0,810	1170236183857,630	0,449
10	3.438.759	1987150,924	257927,365	2245078,289	1193680,711	1791298,474	1193680,711	4145045,721	829009,144	2,161	1424873639834,530	0,347
11	2.474.731	2973223,523	680251,600	3653475,123	-1178744,123	612554,352	1178744,123	5323789,844	887298,307	0,690	1389437707468,880	0,476
12	2.168.717	2934441,208	263211,930	3197653,138	-1028936,138	-416381,786	1028936,138	6352725,981	907532,283	-0,459	1058709575113,650	0,474
13	2.636.725	2570002,094	-100825,676	2469176,418	167548,582	-248833,204	167548,582	6520274,564	815034,320	-0,305	28072527415,948	0,064
14	2.165.442	2571381,053	-41546,987	2529834,065	-364392,065	-613225,269	364392,065	6884666,629	764962,959	-0,802	132781577348,389	0,168
15	2.667.253	2307554,906	-170468,900	2137086,005	530166,995	-83058,274	530166,995	7414833,624	741483,362	-0,112	281077042292,115	0,199
16	1.965.291	2460487,872	17104,182	2477592,055	-512301,055	-595359,329	512301,055	7927134,678	720648,607	-0,826	262452370494,857	0,261
		2165088,411	-164147,931	2000940,481								
				2000940,481								
				2000940,481								
				2000940,481								
				2000940,481								
				2000940,481								



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Valores Iniciales			Medidas de Desempeño Finales									
Alpha	Beta	N (Periodos de Promedio)	MAD	MAPE	Pendiente	Intercepto	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero	
0,61	0,58	5	720648,607	0,347	46490,200	1235343,200	3,161	-54123,575	654582905433,796	848552,412	4	



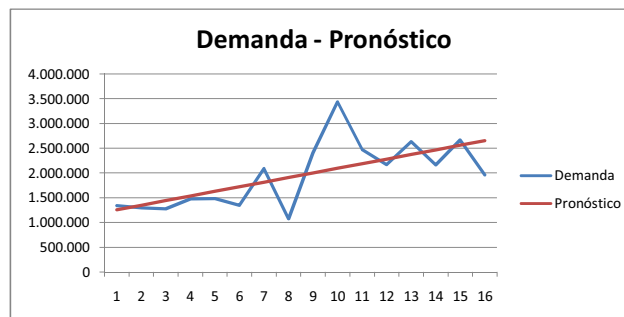
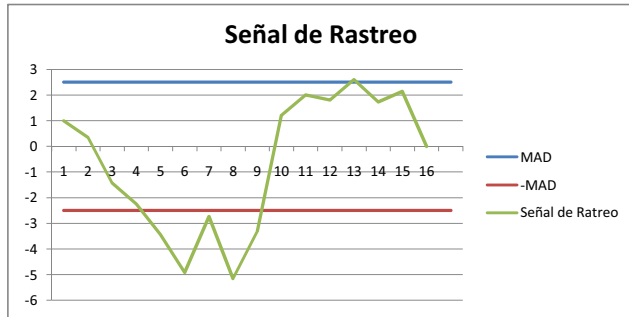
MODELO REGRESION

Datos Iniciales <i>Reg. Lineal</i>		Pronóstico	Análisis del Error							
Periodo	Demanda		Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)
1	1.341.728	1260175,787	81552,213	81552,213	81552,213	81552,213	81552,213	1,000	6650763483,575	0,061
2	1.295.853	1353127,999	-57274,999	24277,215	57274,999	138827,212	69413,606	0,350	3280425456,544	0,044
3	1.275.461	1446080,210	-170619,210	-146341,996	170619,210	309446,422	103148,807	-1,419	29110914921,388	0,134
4	1.477.843	1539032,422	-61189,422	-207531,418	61189,422	370635,844	92658,961	-2,240	3744145371,893	0,041
5	1.483.184	1631984,634	-148800,634	-356332,051	148800,634	519436,478	103887,296	-3,430	22141628626,284	0,100
6	1.346.770	1724936,846	-378166,846	-734498,897	378166,846	897603,324	149600,554	-4,910	143010163102,156	0,281
7	2.093.724	1817889,057	275834,943	-458663,954	275834,943	1173438,266	167634,038	-2,736	76084915585,106	0,132
8	1.076.554	1910841,269	-834287,269	-1292951,224	834287,269	2007725,535	250965,692	-5,152	696035247411,782	0,775
9	2.409.043	2003793,481	405249,519	-887701,704	405249,519	2412975,054	268108,339	-3,311	164227172745,084	0,168
10	3.438.759	2096745,693	1342013,307	454311,603	1342013,307	3754988,362	375498,836	1,210	1800999717112,380	0,390
11	2.474.731	2189697,904	285033,096	739344,699	285033,096	4040021,457	367274,678	2,013	81243865580,612	0,115
12	2.168.717	2282650,116	-113933,116	625411,582	113933,116	4153954,574	346162,881	1,807	12980754961,681	0,053
13	2.636.725	2375602,328	261122,672	886534,254	261122,672	4415077,246	339621,327	2,610	68185049863,140	0,099
14	2.165.442	2468554,540	-303112,540	583421,715	303112,540	4718189,785	337013,556	1,731	91877211726,950	0,140
15	2.667.253	2561506,751	105746,249	689167,963	105746,249	4823936,034	321595,736	2,143	11182269078,044	0,040
16	1.965.291	2654458,963	-689167,963	0,000	689167,963	5513103,997	344569,000	0,000	474952481549,884	0,351
17		2747411,175								
18		2840363,387								
19		2933315,599								
20		3026267,810								
21		3119220,022								
22		3212172,234								



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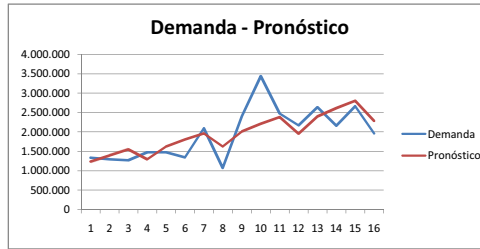
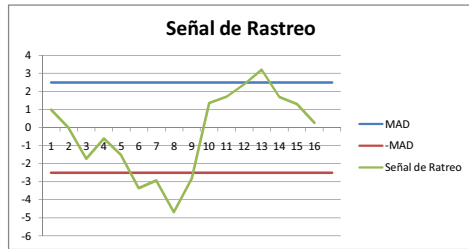
Medidas de Desempeño Finales									
Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
1167223,575	92952,212	0,666	344569,000	0,183	7,762	0,000	230356670411,031	495695,251	3



MODELO DESCOMPOSICION

Datos Iniciales Descomp.		Pronóstico						Análisis del Error							
Periodo	Demanda	Promedio	Razón	Índice Estacional	Suavización	Ft sin ajuste	Ft ajustado	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	1.341.728	1957317,375	0,685	1,005	1334668,683	1232470,747	1238989,519	102738,481	102738,481	102738,481	102738,481	102738,481	1,000	10555195381,324	0,077
2	1.295.853	1957317,375	0,662	1,053	1230241,165	1329116,964	1400002,092	-104149,092	-1410,611	104149,092	206887,572	103443,786	-0,014	10847033262,534	0,080
3	1.275.461	1957317,375	0,652	1,087	1173273,367	1425763,181	1549941,714	-274480,714	-275891,325	274480,714	481368,286	160456,095	-1,719	75339662198,397	0,215
4	1.477.843	1957317,375	0,755	1,054	1729923,820	1522409,398	1300567,138	177275,862	-98615,463	177275,862	658644,147	164661,037	-0,599	31426731112,059	0,120
5	1.483.184	1957317,375	0,758	1,005	1475380,431	1619055,615	1627619,109	-144435,109	-243050,572	144435,109	803079,256	160615,851	-1,513	20861500736,875	0,097
6	1.346.770	1957317,375	0,688	1,053	1278580,128	1715701,832	1807204,497	-460434,497	-703485,069	460434,497	1263513,753	210585,626	-3,341	211999925783,557	0,342
7	2.093.724	1957317,375	1,070	1,087	1925978,612	1812348,049	1970196,649	123527,351	-579957,718	123527,351	1387041,104	198148,729	-2,927	15259006397,282	0,059
8	1.076.554	1957317,375	0,550	0,854	1260185,560	1908994,266	1630819,682	-554265,682	-1134223,400	554265,682	1941306,786	242663,348	-4,674	307210446290,096	0,515
9	2.409.043	1957317,375	1,231	1,005	2396368,152	2005640,484	2016248,699	392794,301	-741429,099	392794,301	2334101,087	259344,565	-2,859	154287363132,258	0,163
10	3.438.759	1957317,375	1,757	1,053	3264647,209	2102286,701	2214406,902	1224352,098	482922,999	1224352,098	3558453,185	355845,319	1,357	1499038059977,310	0,356
11	2.474.731	1957317,375	1,264	1,087	2276460,018	2198932,918	2390451,585	84279,415	567202,415	84279,415	3642732,601	331157,509	1,713	7103019847,092	0,034
12	2.168.717	1957317,375	1,108	0,854	2538642,600	2295579,135	1961072,226	207644,774	774847,189	207644,774	3850377,375	320864,781	2,415	43116352293,213	0,096
13	2.636.725	1957317,375	1,347	1,005	2622852,234	2392225,352	2404878,288	231846,712	1006693,901	231846,712	4082224,087	314017,237	3,206	53752897718,148	0,088
14	2.165.442	1957317,375	1,106	1,053	2055800,997	2488871,569	2621609,307	-456167,307	550526,593	456167,307	4538391,394	324170,814	1,698	208088612142,710	0,211
15	2.667.253	1957317,375	1,363	1,087	2453557,503	2585517,786	2810706,520	-143453,520	407073,073	143453,520	4681844,914	312122,994	1,304	20578912446,774	0,054
16	1.965.291	1957317,375	1,004	0,854	2300517,520	2682164,003	2291324,769	-326033,769	81039,304	326033,769	5007878,683	312992,418	0,259	106298018764,206	0,166
17				1,005		2778810,221	2793507,878								
18				1,053		2875456,438	3028811,712								
19				1,087		2972102,655	3230961,456								
20				0,854		3068748,872	2621577,313								
21				1,112		3165395,089	3519564,219								
22				1,184		3262041,306	3861467,879								

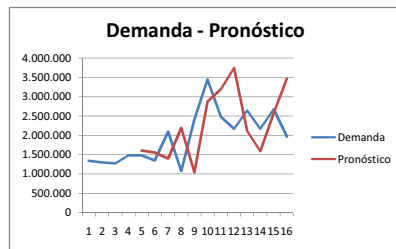
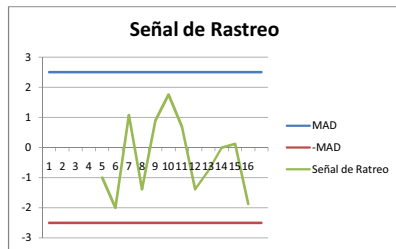
Valores Iniciales		Medidas de Desempeño Finales									
Estacionalidad	Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero	
4	1135824,529	96646,217	0,732	312992,418	0,167	7,880	5064,956	173485171092,740	430175,370	2,000	



MODELO WINTERS

Datos Iniciales Winters		Pronóstico				Análisis del Error							
Periodo	Demanda	St	It	Tt	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	1.341.728		1,029										
2	1.295.853		0,993										
3	1.275.461		0,978										
4	1.477.843	1477843,000	1,007	136115,000									
5	1.483.184	1523169,218	0,979	69839,189	1603447,381	-120263,381	-120263,381	120263,381	120263,381	120263,381	-1,000	14463280925,049	0,081
6	1.346.770	1431205,594	0,951	-48276,865	1557729,328	-210959,328	-331222,710	210959,328	331222,710	165611,355	-2,000	44503838278,883	0,157
7	2.093.724	1904411,129	1,075	332405,288	1393233,229	700490,771	369268,061	700490,771	1031713,481	343904,494	1,074	490687320207,589	0,335
8	1.076.554	1384039,458	0,830	-290121,893	2189576,669	-1113022,669	-743754,608	1113022,669	2144736,150	536184,037	-1,387	1238819461240,210	1,034
9	2.409.043	2174185,307	1,067	498473,559	1039861,466	1369181,534	625426,926	1369181,534	3513917,684	702783,537	0,890	1874658073234,120	0,568
10	3.438.759	3066185,968	1,110	785748,344	2874441,705	564317,295	1189744,221	564317,295	4078234,978	679705,830	1,750	318454009029,356	0,164
11	2.474.731	3198898,762	0,788	309032,392	3197516,610	-722785,610	466958,611	722785,610	4801020,588	685860,084	0,681	522419037420,702	0,292
12	1.168.717	2401260,398	0,946	-498837,259	3743269,867	-1574552,867	-1107594,256	1574552,867	6375573,455	796946,682	-1,390	2479216731892,720	0,726
13	2.636.725	2257903,612	1,153	-239336,514	2110828,466	525896,534	-581697,722	525896,534	6901469,989	766829,999	-0,759	276567164629,321	0,199
14	2.165.442	2564858,074	0,830	159455,899	1591249,171	574192,829	-7504,893	574192,829	7475662,818	747566,282	-0,010	329697404456,804	0,265
15	2.667.253	2796201,185	0,952	211933,563	2576600,395	90652,605	83147,712	90652,605	7566315,423	687846,857	0,121	8217894738,002	0,034
16	1.965.291	2030813,659	1,016	-501510,831	3467285,387	-1501994,387	-1418846,675	1501994,387	9068309,809	755692,484	-1,878	2255987137112,950	0,764

Valores Iniciales			Medidas de Desempeño Finales						
Alpha	Beta	Gamma	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,75	0,73	0,74	755692,484	0,385	3,750	-118237,223	821140946097,142	946461,897	6

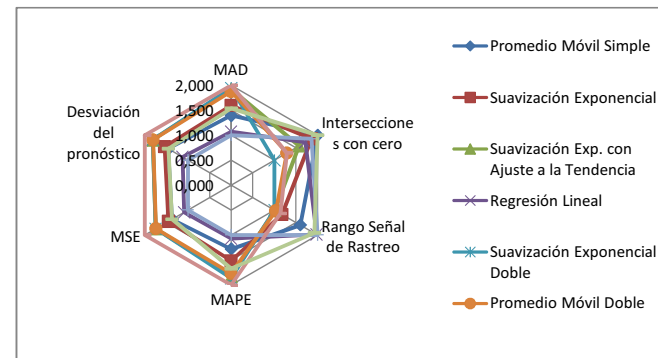
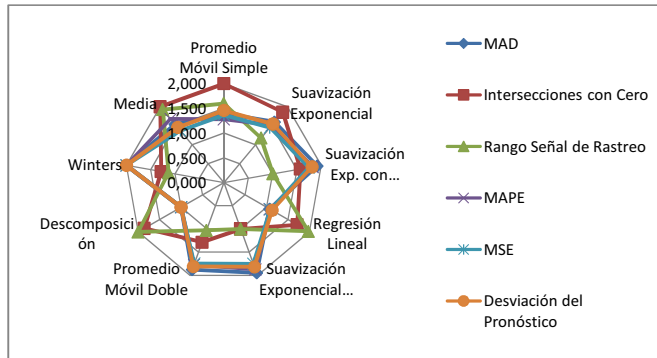


COMPARACIONES

Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	Intersecciones con cero (%)
Promedio Móvil Simple	487485,679	1	5,959	0,228	410768158747,518	665105,788	0,063
Suavización Exponencial	577126,481	2	3,946	0,280	465918732509,359	710454,287	0,125
Suavización Exp. con Ajuste a la Tendencia	720648,607	4	3,161	0,347	654582905433,796	848552,412	0,250
Regresión Lineal	344569,000	3	7,762	0,183	230356670411,031	495695,251	0,188
Suavización Exponencial Doble	731919,977	8	3,109	0,356	658339628764,027	850983,896	0,500
Promedio Móvil Doble	700142,323	6	3,254	0,335	653721620766,606	847993,976	0,375
Descomposición	312992,418	2	7,880	0,167	173485171092,740	430175,370	0,125
Winters	755692,484	6	3,750	0,385	821140946097,142	946461,897	0,375
Media	550478,578	1	7,519	0,315	413959085939,984	664497,072	0,063



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Datos Normalizados							
Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	
Promedio Móvil Simple	1,394	2,000	1,597	1,281	1,366	1,455	
Suavización Exponencial	1,597	1,857	1,175	1,517	1,452	1,543	
Suavización Exp. con Ajuste a la Tendencia	1,921	1,571	1,011	1,828	1,743	1,810	
Regresión Lineal	1,071	1,714	1,975	1,072	1,088	1,127	
Suavización Exponencial Doble	1,946	1,000	1,000	1,868	1,749	1,815	
Promedio Móvil Doble	1,875	1,286	1,030	1,768	1,741	1,809	
Descomposición	1,000	1,857	2,000	1,000	1,000	1,000	
Winters	2,000	1,286	1,134	2,000	2,000	2,000	
Media	1,536	2,000	1,924	1,677	1,371	1,454	


Periodo	Demanda
1	1406015
2	1608676
3	1885957
4	1768109
5	1288705
6	1743267
7	1493489
8	1375392
9	1456904
10	1500551
11	1333128
12	1425061
13	1157103
14	1615520
15	1502511
16	2462763
17	1642514
18	1169091
19	1723470
20	1209517
21	1528913
22	1743328
23	2953093
24	2365387
25	1558629
26	2724008
27	1868284
28	1770445
29	2000936
30	1782311
31	1868284
32	2200936
33	2248000
34	2186204
35	2258432
36	2145700
37	2223556
38	2008741
39	2124568
40	1892000
41	2186700

FOR TSM

NÚMERO DE PERIODOS DE DEMANDA

41

Elegir Modelos



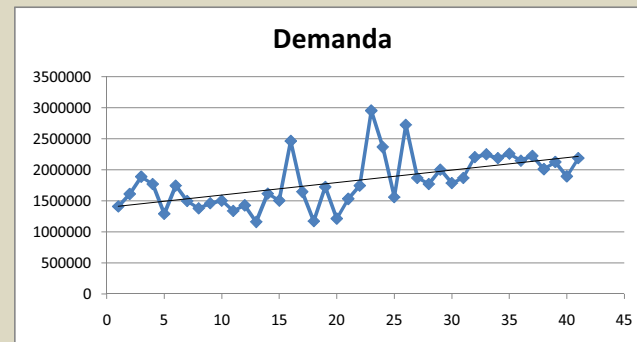
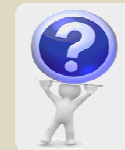
Datos	41,000
Desviación Estándar	#####
Promedio	#####
Coefficiente de Correlación	0,571
Coefficiente de Variación	0,232

Creado por:
Rosana Builes Palacio
María Cristina Bravo Gómez

[Comparaciones](#)

Modelos Pronosticados

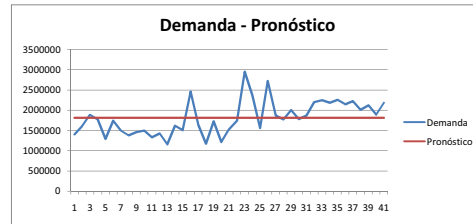
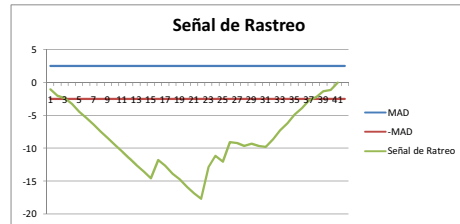
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MODELO MEDIA

Datos Iniciales <i>Media</i>		Pronóstico	Análisis del Error							
Periodo	Demanda		ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	let (Error Absoluto)	let acumulado	MAD	SR (Señal de Rastreo)	et ² (Error Cuadrático)
1	1406015	1814785,317	-408770,317	-408770,317	408770,317	408770,317	408770,317	-1,000	167093172120,101	0,291
2	1608676	1814785,317	-206109,317	-614879,634	206109,317	614879,634	307439,817	-2,000	42481050584,369	0,128
3	1885957	1814785,317	71171,683	-543707,951	71171,683	686051,317	228683,772	-2,378	5065408450,637	0,038
4	1768109	1814785,317	-46676,317	-590384,268	46676,317	732727,634	183181,909	-3,223	2178678575,515	0,026
5	1288705	1814785,317	-526080,317	-1116464,585	526080,317	1258807,951	251761,590	-4,435	276760500011,808	0,408
6	1743267	1814785,317	-71518,317	-1187982,902	71518,317	1330326,268	221721,045	-5,358	5114869676,979	0,041
7	1493489	1814785,317	-321296,317	-1509279,220	321296,317	1651622,585	235946,084	-6,397	103231323364,784	0,215
8	1375392	1814785,317	-439393,317	-1948672,537	439393,317	2091015,902	261376,988	-7,455	193066487088,564	0,319
9	1456904	1814785,317	-357881,317	-2306553,854	357881,317	2448897,220	272099,691	-8,477	128079037110,027	0,246
10	1500551	1814785,317	-314234,317	-2620788,171	314234,317	2763131,537	276313,154	-9,485	98743206026,442	0,209
11	1333128	1814785,317	-481657,317	-3102445,488	481657,317	3244788,854	294980,805	-10,517	231993771090,125	0,361
12	1425061	1814785,317	-389724,317	-3492169,805	389724,317	3634513,171	302876,098	-11,530	151885043318,149	0,273
13	1157103	1814785,317	-657682,317	-4149852,122	657682,317	4292195,488	330168,884	-12,569	432546030190,735	0,568
14	1615520	1814785,317	-199265,317	-4349117,439	199265,317	4491460,805	320818,629	-13,556	3970666588,271	0,123
15	1502511	1814785,317	-312274,317	-4661391,756	312274,317	4803735,122	320249,008	-14,556	97515249103,515	0,208
16	2462763	1814785,317	647977,683	-4013414,073	647977,683	5451712,805	340732,050	-11,779	419875077571,222	0,263
17	1642514	1814785,317	-172271,317	-4185685,390	172271,317	5623984,122	330822,595	-12,652	29677406686,125	0,105
18	1169091	1814785,317	-645694,317	-4831379,707	645694,317	6269678,439	348315,469	-13,871	416921151100,588	0,552
19	1723470	1814785,317	-91315,317	-4922695,024	91315,317	6360993,756	334789,145	-14,704	8338487132,174	0,053
20	1209517	1814785,317	-605268,317	-5527963,341	605268,317	6966262,073	348313,104	-15,871	366349735652,588	0,500
21	1528913	1814785,317	-285872,317	-5813835,659	285872,317	7252134,390	345339,733	-16,835	81722981668,784	0,187
22	1743328	1814785,317	-71457,317	-5885292,976	71457,317	7323591,707	332890,532	-17,679	5106148163,296	0,041
23	2953093	1814785,317	1138307,683	-4746985,293	1138307,683	8461899,390	367908,669	-12,903	1295744381010,250	0,385
24	2365387	1814785,317	550601,683	-4196383,610	550601,683	9012501,073	375520,878	-11,175	303162213241,857	0,233
25	1558629	1814785,317	-256156,317	-4452539,927	256156,317	9268657,390	370746,296	-12,010	65616058776,491	0,164
26	2724008	1814785,317	909222,683	-3543317,244	909222,683	10177880,073	391456,926	-9,052	826685887148,661	0,334
27	1868284	1814785,317	53498,683	-3489818,561	53498,683	10231378,756	378939,954	-9,209	2862109074,905	0,029
28	1770445	1814785,317	-44340,317	-3534158,878	44340,317	10275719,073	366989,967	-9,630	1960603718,149	0,025
29	2000936	1814785,317	186150,683	-3348008,195	186150,683	10461869,756	360754,130	-9,281	34652076754,125	0,093
30	1782311	1814785,317	-32474,317	-3380482,512	32474,317	10494344,073	349811,469	-9,664	1054581269,369	0,018
31	1868284	1814785,317	53498,683	-3326983,829	53498,683	10547842,756	340252,992	-9,778	2862109074,905	0,029
32	2200936	1814785,317	386150,683	-2940833,146	386150,683	10933993,439	341687,295	-8,607	149112349924,857	0,175
33	2248000	1814785,317	433214,683	-2507618,463	433214,683	11367208,122	344660,852	-7,280	187674961503,393	0,193
34	2186204	1814785,317	371418,683	-2136199,780	371418,683	11738626,805	345253,730	-6,187	137951838027,100	0,170
35	2258432	1814785,317	443646,683	-1692553,098	443646,683	12182273,488	348064,957	-4,863	196822379271,979	0,196
36	2145700	1814785,317	330914,683	-1361638,415	330914,683	12513188,171	347588,560	-3,917	109504527376,564	0,154
37	2223556	1814785,317	408770,683	-952867,732	408770,683	12921958,854	349242,131	-2,728	167093471220,466	0,184
38	2008741	1814785,317	193955,683	-758912,049	193955,683	13115914,537	345155,646	-2,199	37618806939,613	0,097
39	2124568	1814785,317	309782,683	-449129,366	309782,683	13425697,220	344248,647	-1,305	95965310641,344	0,146
40	1892000	1814785,317	77214,683	-371914,683	77214,683	13502911,902	337572,798	-1,102	5962107259,491	0,041
41	2186700	1814785,317	371914,683	0,000	371914,683	13874826,585	338410,405	0,000	138320531376,564	0,170

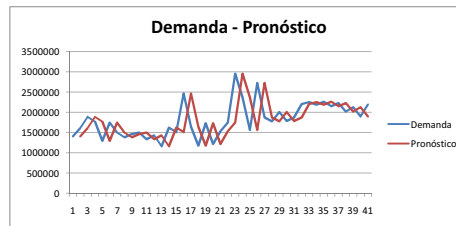
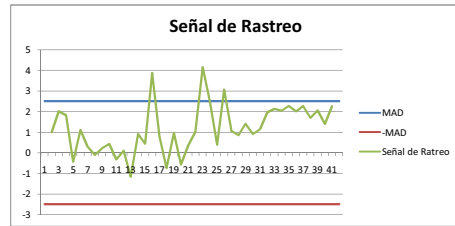
Medidas de Desempeño Finales						
MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
338410,405	0,195	17,679	0,000	172294713289,875	420240,504	0



MODELO PMS

Datos Iniciales PMS		Pronóstico								
Periodo	Demanda	et (Error del Pronóstico)	RSFE (Error Acumulado)	let (Error Absoluto)	let acumulado	MAD	SR (Señal de Rastreo)	et ² (Error Cuadrático)	Fracción Abs. del Error	
1	1406015	1406015,000	202661,000	202661,000	202661,000	202661,000	202661,000	1,000	41071480921,000	0,126
2	1608676	1608676,000	277281,000	479942,000	277281,000	479942,000	239971,000	2,000	76884752961,000	0,147
3	1885957	1885957,000	-117848,000	362094,000	117848,000	597790,000	199263,333	1,817	13888151104,000	0,067
4	1768109	1768109,000	-479404,000	-117310,000	479404,000	1077194,000	269298,500	-0,436	229828195216,000	0,372
5	1288705	1288705,000	454562,000	337252,000	454562,000	1531756,000	306351,200	1,101	206626611844,000	0,261
6	1743267	1743267,000	-249778,000	87474,000	249778,000	1781534,000	296922,333	0,295	62389049284,000	0,167
7	1493489	1493489,000	-118097,000	-30623,000	118097,000	1899631,000	271375,857	-0,113	13946901409,000	0,086
8	1375392	1375392,000	81512,000	50889,000	81512,000	1981143,000	247642,875	0,205	6644206144,000	0,056
9	1456904	1456904,000	43647,000	94536,000	43647,000	2024790,000	224976,667	0,420	1905060609,000	0,029
10	1500551	1500551,000	-167423,000	-72887,000	167423,000	2192213,000	219221,300	-0,332	28030460929,000	0,126
11	1333128	1333128,000	91933,000	19046,000	91933,000	2284146,000	207649,636	0,092	8451676489,000	0,065
12	1425061	1425061,000	-267958,000	-248912,000	267958,000	2552104,000	212675,333	-1,170	71801489764,000	0,232
13	1157103	1157103,000	458417,000	209505,000	458417,000	3010521,000	231578,538	0,905	210146145889,000	0,284
14	1615520	1615520,000	-113009,000	96496,000	113009,000	3123530,000	223109,286	0,433	12771034081,000	0,075
15	1502511	1502511,000	960252,000	1056748,000	960252,000	4083782,000	272252,133	3,882	922083903504,000	0,390
16	2462763	2462763,000	-820249,000	236499,000	820249,000	4904031,000	306501,938	0,772	672808422001,000	0,499
17	1642514	1642514,000	-473423,000	-236924,000	473423,000	5377454,000	316320,824	-0,749	224129336929,000	0,405
18	1169091	1169091,000	554379,000	317455,000	554379,000	5931833,000	329546,278	0,963	307336075641,000	0,322
19	1723470	1723470,000	-513953,000	-196498,000	513953,000	6445786,000	339251,895	-0,579	264147686209,000	0,425
20	1209517	1209517,000	319396,000	122898,000	319396,000	6765182,000	338259,100	0,363	102013804816,000	0,209
21	1528913	1528913,000	214415,000	337313,000	214415,000	6979597,000	332361,762	1,015	45973792225,000	0,123
22	1743328	1743328,000	1209765,000	1547078,000	1209765,000	8189362,000	372243,727	4,156	1463531355225,000	0,410
23	2953093	2953093,000	-587706,000	959372,000	587706,000	8777068,000	381611,652	2,514	345398342436,000	0,248
24	2365387	2365387,000	-806758,000	152614,000	806758,000	9583826,000	399326,083	0,382	650858470564,000	0,518
25	1558629	1558629,000	1165379,000	1317993,000	1165379,000	10749205,000	429968,200	3,065	1358108213641,000	0,428
26	2724008	2724008,000	-855724,000	462269,000	855724,000	11604929,000	446343,423	1,036	732263564176,000	0,458
27	1868284	1868284,000	97839,000	364430,000	97839,000	11702768,000	433435,852	0,841	9572469921,000	0,055
28	1770445	1770445,000	-230491,000	594921,000	230491,000	11933259,000	426187,821	1,396	53126101081,000	0,115
29	2000936	2000936,000	-218625,000	376296,000	218625,000	12151884,000	419030,483	0,898	47796890625,000	0,123
30	1782311	1782311,000	85973,000	462269,000	85973,000	12237857,000	407928,567	1,133	7391356729,000	0,046
31	1868284	1868284,000	332652,000	794921,000	332652,000	12570509,000	405500,290	1,960	110657353104,000	0,151
32	2200936	2200936,000	47064,000	841985,000	47064,000	12617573,000	394299,156	2,135	2215020096,000	0,021
33	2248000	2248000,000	-61796,000	780189,000	61796,000	12679369,000	384223,303	2,031	3818745616,000	0,028
34	2186204	2186204,000	72228,000	852417,000	72228,000	12751597,000	375046,971	2,273	5216883984,000	0,032
35	2258432	2258432,000	-112732,000	739685,000	112732,000	12864329,000	367552,257	2,012	12708503824,000	0,053
36	2145700	2145700,000	77856,000	817541,000	77856,000	12842185,000	359505,139	2,274	6061556736,000	0,035
37	2223556	2223556,000	-214815,000	602726,000	214815,000	13157000,000	355594,595	1,695	46145484225,000	0,107
38	2008741	2008741,000	115827,000	718553,000	115827,000	13272827,000	349284,921	2,057	13415893929,000	0,055
39	2124568	2124568,000	-232568,000	485985,000	232568,000	13505395,000	346292,179	1,403	54087874624,000	0,123
40	1892000	1892000,000	294700,000	780685,000	294700,000	13800995,000	345002,375	2,263	86848090000,000	0,135
41	2186700	2186700,000								

Valores Iniciales		Medidas de Desempeño Finales					
N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
1	345002,375	0,190	5,326	19517,125	213302510212,625	467730,484	12



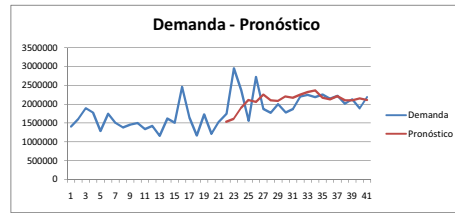
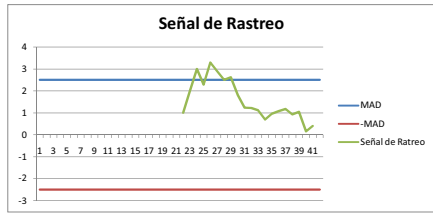
MODELO PMD

Datos Iniciales PMD		Pronóstico	Análisis del Error												
Periodo	Demanda		S ^t	S ^t *	a	b	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	let (Error Absoluto)	let acumulado	MAD	SR (Señal de Rastreo)	et*2 (Error Cuadrático)	Fracción Abs. del Error
1	1406015														
2	1608676														
3	1883957														
4	1768109														
5	1288705														
6	1743267														
7	1493489														
8	1375392														
9	1456904														
10	1500551														
11	1333128														
12	1425061														
13	1157103														
14	1615520														
15	1502511														
16	2462763														
17	1642514														
18	1169091														
19	1723470														
20	1209517														
21	1528913														
22	1743328														
23	2953093														
24	2365387														
25	1558629														
26	2724008														
27	1868284														
28	1770445														
29	2000936														
30	1782311														
31	1868284														
32	2200936														
33	2248000														
34	2186204														
35	2258432														
36	2145700														
37	2223556														
38	2008741														
39	2124568														
40	1892000														
41	2186700														
42															
43															
44															
45															
46															
47															



- [PM Simple](#)
- [SE](#)
- [SET](#)
- [Reg Lineal](#)
- [SE Doble](#)
- [Descomposicion](#)
- [Winters](#)
- [Media](#)
- [Comparaciones](#)

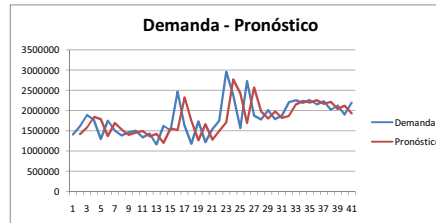
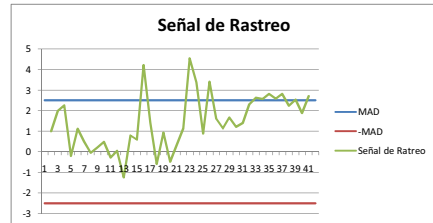
Valores Iniciales	Medidas de Desempeño Finales							
	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
	11	281229,874	0,131	3,139	5767,445	173329145753,211	427143,691	0



MODELO SE

Datos Iniciales SE		Pronóstico	Análisis del Error								
Periodo	Demanda		Rt (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et*2 (Error Cuadrático)	Fracción Abs. del Error
1	1406015										
2	1608676	PM Simple	1406015,000	202661,000	202661,000	202661,000	202661,000	202661,000	1,000	41071480921,000	0,126
3	1885957	SET	1578276,850	307680,150	510341,150	307680,150	510341,150	255170,575	2,000	94667074704,023	0,163
4	1768109	Reg Lineal	1839804,978	-71695,978	438645,173	71695,978	582037,128	194012,376	2,261	5140313189,681	0,041
5	1288705	SE Doble	1778863,397	-490158,397	-51513,224	490158,397	1072195,524	268048,881	-0,192	240255253781,991	0,380
6	1743267	PM Doble	1362228,759	381038,241	329525,016	381038,241	1453233,765	290646,753	1,134	145190140728,099	0,219
7	1493489	Descomposicion	1686111,264	-192622,264	136902,752	192622,264	1645856,029	274309,338	0,499	37103336559,231	0,129
8	1375392	Winters	1522382,340	-146990,340	-10087,587	146990,340	1792846,368	256120,910	-0,039	21606159932,375	0,107
9	1456904	Media	1397440,551	59463,449	49375,862	59463,449	1852309,817	231538,727	0,213	3535901774,314	0,041
10	1500551	Comparaciones	1447984,483	52566,517	101942,379	52566,517	1904876,335	211652,926	0,482	2763238747,281	0,035
11	1333128		1492666,022	-159538,022	-57595,643	159538,022	2064414,357	206441,436	-0,279	25452380590,062	0,120
12	1425061		1357058,703	68002,297	10406,654	68002,297	2132416,654	193856,059	0,054	4624312348,394	0,048
13	1157103		1414860,656	-257757,656	-247351,002	257757,656	2390174,309	199181,192	-1,242	66439008970,874	0,223
14	1615520		1195766,648	419753,352	172402,350	419753,352	2809927,661	216148,282	0,798	176192876241,904	0,260
15	1502511		1552556,997	-50045,997	122356,352	50045,997	2859973,658	204283,833	0,599	2504601840,631	0,033
16	2462763		1510017,900	952745,100	1075101,453	952745,100	3812718,758	254181,251	4,230	907723226360,357	0,387
17	1642514		2319851,235	-677337,235	397764,218	677337,235	4490055,593	280628,500	1,417	458785729833,590	0,412
18	1169901		1744114,585	-575023,585	-177259,367	575023,585	5065079,579	297945,858	-0,595	330652123583,086	0,492
19	1723470		1255344,538	468125,462	290866,095	468125,462	553205,041	307400,280	0,946	219141448372,971	0,272
20	1209517		1653251,181	-443734,181	-152868,086	443734,181	5976939,222	314575,749	-0,486	196900023093,027	0,367
21	1528913		1276077,127	252835,873	99967,787	252835,873	6229775,094	311488,755	0,321	63925978625,010	0,165
22	1743328		1490987,619	252340,381	352308,168	252340,381	6482115,475	308672,165	1,141	63675667850,407	0,145
23	2953093		1705476,943	1247616,057	1599924,225	1247616,057	7729731,532	351351,433	4,554	1556545826034,170	0,422
24	2365387		2765950,591	-400563,591	1199360,634	400563,591	8130295,124	353491,092	3,393	160451190778,469	0,169
25	1558629		2425471,539	-866842,539	332518,095	866842,539	8997137,663	374880,736	0,887	751415986924,730	0,556
26	2724008		1688655,381	1035352,619	1367870,714	1035352,619	10032490,282	401299,611	3,409	1071955046069,490	0,380
27	1868284		2568705,107	-700421,107	667449,607	700421,107	10732911,389	412804,284	1,617	490589727300,709	0,375
28	1770445		1973347,166	-202902,166	464547,441	202902,166	10935813,555	405030,132	1,147	41169288995,152	0,115
29	2000936		1800880,325	200055,675	664603,116	200055,675	1135869,230	397709,615	1,671	40022273135,626	0,100
30	1782311		1970927,649	-188616,649	475986,467	188616,649	11324485,879	390499,513	1,219	35576240180,601	0,106
31	1868284		1810603,497	57680,503	533666,970	57680,503	11832166,382	379405,546	1,407	3327040390,516	0,031
32	2200936		1859631,925	341304,075	874971,046	341304,075	11723470,457	378176,466	2,314	116488471886,989	0,155
33	2248000		2149740,389	98259,611	973230,657	98259,611	11821730,068	369429,065	2,634	9654951214,893	0,044
34	2186204		2233261,058	-47057,058	926173,599	47057,058	11868787,127	359660,216	2,575	2214366736,172	0,022
35	2258432		2193262,559	65169,441	991343,040	65169,441	11933956,568	350998,723	2,824	4247056073,422	0,029
36	2145700		2248656,584	-102956,584	888386,456	102956,584	12036913,152	343911,804	2,583	10600058150,202	0,048
37	2223556		2161143,488	62412,512	950798,968	62412,512	12099325,664	336092,380	2,829	3895211707,603	0,028
38	2008741		2214194,123	-205453,123	745345,845	205453,123	12304778,787	323561,589	2,241	42210985806,240	0,102
39	2124568		2039558,968	85009,032	830354,877	85009,032	12389787,819	326047,048	2,547	7226535441,607	0,040
40	1892000		2111816,645	-219816,645	610538,232	219816,645	12609604,464	323223,191	1,888	48319357538,001	0,116
41	2186700		1924972,497	261727,503	872265,735	261727,503	12871331,967	321783,299	2,711	68501285936,235	0,120
			2147440,875								
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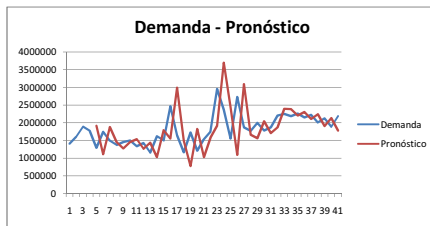
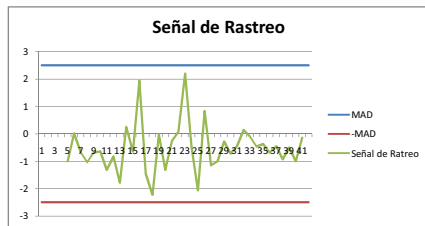
Valores Iniciales		Medidas de Desempeño Finales						
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,850	1,000	321783,299	0,178	5,795	21806,643	189294032208,728	440621,976	12



MODELO SED

Datos Iniciales SED		Pronóstico					Análisis del Error							
Periodo	Demanda	St'	St''	a	b	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	1406015													
2	1608676													
3	1885957													
4	1768109													
5	1288705													
6	1743267													
7	1493489													
8	1375392													
9	1465904													
10	1500551													
11	1333128													
12	1425061													
13	1157103													
14	1615520													
15	1502511													
16	2462763													
17	1642514													
18	1169091													
19	1723470													
20	209517													
21	1528913													
22	1743328													
23	2953093													
24	2365387													
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37	2223556													
38	2008741													
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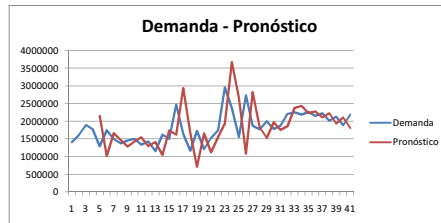
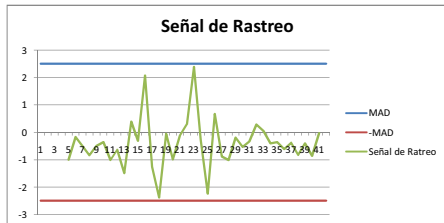
Valores Iniciales		Medidas de Desempeño Finales						
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,770	2,000	470854,162	0,258	4,427	-1740,436	391203879836,341	634090,415	12,000



MODELO SET

Datos Iniciales SET		Pronóstico			Análisis del Error							
Periodo	Demanda	St	Tt	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et*2 (Error Cuadrático)	Fracción Abs. del Error
1	1406015											
2	1608676											
3	1885957											
4	1768109											
5	1288705											
6	1743267											
7	1493489											
8	1375392											
9	1456904											
10	1500551											
11	1333128											
12	1425061											
13	1157103											
14	1615520											
15	1502511											
16	2462763											
17	1642514											
18	1169091											
19	1723470											
20	1209517											
21	1528913											
22	1743328											
23	2953093											
24	2365387											
25	1558629											
26	2724008											
27	1868284											
28	1770445											
29	2000936											
30	1782311											
31	1868284											
32	2200936											
33	2248000											
34	2186204											
35	2258432											
36	2145700											
37	2223556											
38	2008741											
39	2124568											
40	1892000											
41	2186700											

Valores Iniciales		Medidas de Desempeño Finales									
Alpha	Beta	N (Periodos de Promedio)	MAD	MAPE	Pendiente	Intercepto	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstica	Intersecciones con cero
0,81	0,82	4	459020,266	0,253	136356,300	1326298,500	4,771	-355,534	383372425585,857	627711,446	10

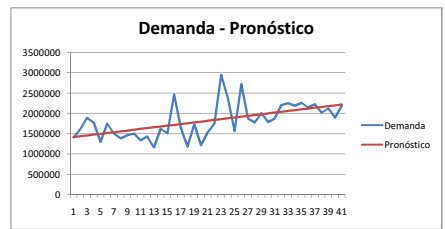
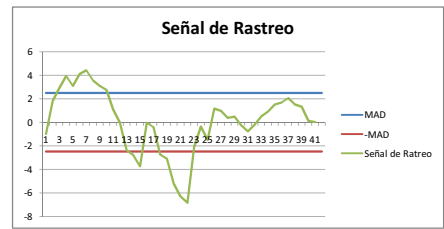


MODELO REGRESION

Datos Iniciales Reg. Lineal		Pronóstico									
Periodo	Demanda	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error	
1	1406015	1414182,282	-8167,282	-8167,282	8167,282	8167,282	8167,282	-1,000	66704499,024	0,006	
2	1608676	1434212,434	174463,566	166296,284	174463,566	182630,848	91315,424	1,821	30437535871,163	0,108	
3	1885957	1454242,586	431714,414	598010,698	431714,414	614345,263	204781,754	2,920	186377335502,057	0,229	
4	1768109	1474272,737	293836,263	891846,961	293836,263	908181,525	227045,381	3,928	86339749185,565	0,166	
5	1288705	1494302,889	-205597,889	686249,071	205597,889	1113779,414	222755,883	3,081	42270492042,922	0,160	
6	1743267	1514333,041	228933,959	915183,030	228933,959	1342713,373	223785,562	4,090	52410757610,535	0,131	
7	1493489	1534363,193	-40874,193	874308,838	40874,193	1383587,566	197655,367	4,423	1670699627,481	0,027	
8	1375392	1554393,344	-179001,344	695307,493	179001,344	1562588,910	195323,614	3,560	32041481305,989	0,130	
9	1456904	1574423,496	-117519,496	577787,997	117519,496	1680108,407	186678,712	3,095	13810831979,404	0,081	
10	1500551	1594453,648	-93902,648	483885,349	93902,648	1774011,055	177401,105	2,728	8817707284,398	0,063	
11	1333128	1614483,800	-281355,800	202529,550	281355,800	2055366,854	186851,532	1,084	79161085997,573	0,211	
12	1425061	1634513,951	-209452,951	-6923,402	209452,951	2264819,806	188734,984	-0,037	43870538847,543	0,147	
13	1157103	1654544,103	-497441,103	-504364,505	497441,103	2762260,909	212481,608	-2,374	247447651089,050	0,430	
14	1615520	1674574,255	-59054,255	-563418,760	59054,255	2821315,164	201522,512	-2,796	3487405019,202	0,037	
15	1502511	1694604,407	-192093,407	-75512,166	192093,407	3013408,570	200893,905	-3,761	3689876866,957	0,128	
16	2462763	1714634,558	748128,442	-7383,725	748128,442	3761537,012	235096,063	-0,031	559696165187,150	0,304	
17	1642514	1734664,710	-92150,710	-99534,435	92150,710	3853687,722	226687,513	-0,439	8491753372,769	0,056	
18	1169091	1754694,862	-585603,862	-685138,297	585603,862	4439291,584	246627,310	-2,778	342931883009,757	0,501	
19	1723470	1774725,014	-15255,014	-736393,310	15255,014	4490546,597	236344,558	-3,116	2627076417,993	0,030	
20	1209517	1794755,165	-585238,165	-1321631,476	585238,165	5075784,763	253789,238	-5,208	342503710160,007	0,484	
21	1528913	1814785,317	-285872,317	-1607503,793	285872,317	5361657,080	255317,004	-6,296	81722981668,783	0,187	
22	1743328	1834815,469	-91487,469	-1698991,261	91487,469	5453144,549	247870,207	-6,854	8369956950,236	0,052	
23	2953093	1854845,621	1098247,379	-600743,882	1098247,379	6551391,928	284843,127	-2,109	1206147306452,340	0,372	
24	2365387	1874875,772	490511,228	-110232,654	490511,228	7041903,156	293412,631	-0,376	240601264500,103	0,207	
25	1558629	1894905,924	-336276,924	-446509,578	336276,924	7378180,080	295127,203	-1,513	113082169643,022	0,216	
26	2724008	1914936,076	809071,924	362562,346	809071,924	8187252,004	314894,308	1,151	65497378554,626	0,297	
27	1868284	1934966,228	-66682,228	295880,118	66682,228	8253934,232	305701,268	0,968	4446519467,847	0,036	
28	1770445	1954996,379	-184551,379	111328,739	184551,379	8438485,611	301374,486	0,369	34059211589,829	0,104	
29	2000936	1975026,531	25909,469	137238,208	25909,469	8464395,080	291875,692	0,470	671300583,320	0,013	
30	1782311	1995056,683	-212745,683	-75507,475	212745,683	8677140,763	289238,025	-0,261	45260725529,876	0,119	
31	1868284	2015086,834	-146802,834	-222310,309	146802,834	8823943,597	284643,342	-0,781	21551072215,700	0,079	
32	2200936	2035116,986	165819,014	-56491,295	165819,014	8989762,611	280930,082	-0,201	27495945325,356	0,075	
33	2248000	2055147,138	192852,862	136361,567	192852,862	9182615,473	278261,075	0,490	37192226389,655	0,086	
34	2186204	2075177,290	111026,710	247388,277	111026,710	9299642,183	273342,417	0,905	13236903995,321	0,051	
35	2258432	2095207,441	163224,559	410612,835	163224,559	9456866,742	270196,193	1,520	26642256509,463	0,072	
36	2145700	2115237,593	30462,407	441075,242	30462,407	9487329,148	263536,921	1,674	927958227,709	0,014	
37	2223556	2135267,745	88288,255	529363,497	88288,255	9575617,403	258800,470	2,045	7794815980,174	0,040	
38	2008741	2155297,897	-146556,897	382806,601	146556,897	9722174,300	255846,692	1,496	21478923967,373	0,073	
39	2124568	2175328,048	-50760,048	332046,552	50760,048	9772934,349	250588,060	1,325	2576582516,825	0,024	
40	1892000	2195358,200	-303358,200	28688,352	303358,200	10076292,549	251907,314	0,114	92026197612,940	0,160	
41	2186700	2215388,352	-28688,352	0,000	28688,352	10104980,901	246462,949	0,000	823021535,678	0,013	
42		2235418,504									
43		2255448,655									
44		2275478,807									
45		2295508,959									
46		2315539,111									
47		2335569,262									

-  PM Simple
-  SE
-  SET
-  SE Doble
-  PM Doble
-  Descomposicion
-  Winters
-  Media
-  Comparaciones

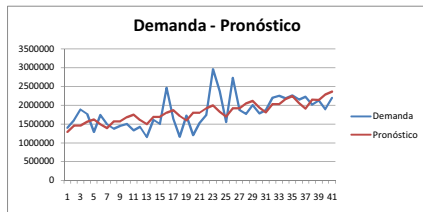
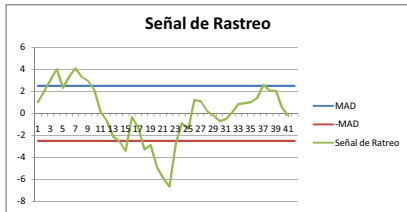
Medidas de Desempeño Finales									
Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
1394152,130	20030,152	0,571	246462,949	0,139	11,278	0,000	116125736255,920	345005,623	5



MODELO DESCOMPOSICION

Datos Iniciales Descomp.		Pronóstico							Análisis del Error						
Periodo	Demanda	Promedio	Razón	Indice Estacional	Suavización	Ft sin ajuste	Ft ajustado	et (Error del Pronóstico)	RSE (Error Acumulado)	let (Error Absoluto)	let acumulado	MAD	SR (Señal de Rastreo)	et ² (Error Cuadrático)	Fracción Abs. del Error
1	1408015	1814785,317	0,775	0,900	1562594,442	1430379,605	1287048,723	118966,277	118966,277	118966,277	118966,277	118966,277	1,000	14152975007,569	0,085
2	1608676	1814785,317	0,886	1,003	1603715,599	1448599,891	1454083,602	154592,398	273558,675	154592,398	273558,675	136779,337	2,000	2389809522,433	0,096
3	1885957	1814785,317	1,039	0,993	1899166,811	1468820,177	1458603,677	427253,323	700911,998	427353,323	700911,998	236327,333	3,000	182630862637,817	0,227
4	1768109	1814785,317	0,974	1,049	1685843,536	1488040,462	1560653,570	207455,430	908367,427	207455,430	908367,427	227091,857	4,000	43037755230,765	0,117
5	1288705	1814785,317	0,710	1,076	1198159,388	1507260,748	1621165,332	-332460,332	575907,095	332460,332	1240827,759	248165,552	2,321	110529872213,271	0,258
6	1743267	1814785,317	0,961	0,976	1785557,228	1526481,033	1490326,924	252940,076	828847,171	252940,076	1493767,835	248961,306	3,329	63978681894,097	0,145
7	1493489	1814785,317	0,823	0,900	1659809,895	1545701,319	1390814,649	102674,351	931521,522	102674,351	1596442,186	228063,169	4,084	10542022328,439	0,069
8	1375392	1814785,317	0,758	1,003	1371150,937	1564921,604	1569762,013	-194370,013	737151,509	194370,013	1790812,199	223851,525	3,293	37779702105,914	0,141
9	1456904	1814785,317	0,803	0,993	1467108,594	1584141,890	1573123,261	-116219,261	620932,248	116219,261	1907031,460	211892,384	2,930	13506916601,673	0,080
10	1500551	1814785,317	0,827	1,049	1430734,306	1603362,176	1681602,730	-181051,730	439880,517	181051,730	2088083,190	208808,319	2,107	32779729113,022	0,121
11	1333128	1814785,317	0,735	1,076	1239461,187	1622582,461	1745201,975	-112073,975	27806,542	412073,975	2500157,166	227287,015	1,022	169804961057,970	0,309
12	1425061	1814785,317	0,785	0,976	1459631,811	1641802,747	1602917,288	177856,288	-150049,746	177856,288	2678013,454	223167,788	-0,672	31632859150,743	0,125
13	1157103	1814785,317	0,638	0,900	1285962,608	1661023,032	1494580,575	-337477,575	-487527,321	337477,575	3015491,029	231960,848	-2,102	113891113633,197	0,292
14	1615520	1814785,317	0,890	1,003	1610538,495	1680243,318	1685440,425	-69200,425	-557447,746	69200,425	3085411,453	220386,532	-2,529	4888865803,285	0,043
15	1502511	1814785,317	0,828	0,993	1513035,400	1699463,604	1687642,845	-185131,845	-742579,590	185131,845	3270543,298	218036,220	-3,406	34273799933,282	0,123
16	2462763	1814785,317	1,357	1,049	2348177,111	1718683,889	1802551,890	660211,110	-82368,481	660211,110	3930754,408	245672,150	-0,335	435878709131,037	0,268
17	1642514	1814785,317	0,905	1,076	1527109,439	1737904,175	1869238,619	-226724,619	-309093,100	226724,619	4157479,026	244557,590	-1,264	51404052707,222	0,138
18	1169091	1814785,317	0,644	0,976	1197452,189	1757124,460	1715507,652	-546416,652	-855509,751	546416,652	4703895,678	261327,538	-3,274	298571157066,057	0,467
19	1723407	1814785,317	0,950	0,900	1915402,497	1776344,746	1598346,501	125123,499	-730386,252	125123,499	4829019,177	254158,904	-2,874	15655890028,322	0,073
20	1209517	1814785,317	0,666	1,003	1205787,418	1795565,031	1801118,836	-591601,836	-1321988,088	591601,836	5420621,013	271031,051	-4,878	349992732589,261	0,489
21	1528913	1814785,317	0,842	0,993	1539621,967	1814785,317	1802162,429	-273249,429	-1595237,517	273249,429	5693870,442	271136,688	-5,884	74665250214,612	0,179
22	1743328	1814785,317	0,961	1,049	1662215,531	1834005,603	1923501,050	-180179,050	-1775410,567	180179,050	5874043,492	267001,977	-6,649	32462328117,480	0,103
23	2953093	1814785,317	1,627	1,076	2745605,939	1853225,888	1993275,262	959817,738	-815592,829	959817,738	6833861,230	297124,401	-2,745	92125089991,696	0,325
24	2355387	1814785,317	1,303	0,976	2422769,349	1872446,174	1828098,015	537288,985	-278033,844	537288,985	7371150,215	307131,259	-0,906	288679453252,325	0,227
25	1558629	1814785,317	0,859	0,900	1732204,146	1891666,459	1702112,427	-143483,427	-421787,271	143483,427	7514633,642	300585,346	-1,403	20587493761,041	0,092
26	2742008	1814785,317	1,501	1,003	2715608,438	1910886,745	1916797,248	807210,752	385423,481	807210,752	8321844,394	320070,938	1,204	651589189795,705	0,296
27	1868284	1814785,317	1,029	0,993	1881370,024	1930107,031	1916682,012	-48398,012	337025,469	48398,012	8370242,406	310008,978	1,087	2342367605,476	0,026
28	1770045	1814785,317	0,976	1,049	1688070,848	1949327,316	2044450,210	-274005,210	63020,258	274005,210	8644247,617	308723,129	0,204	75078855363,672	0,158
29	2009936	1814785,317	1,103	1,076	1860348,376	1968547,602	2117311,906	-116375,906	-53355,647	116375,906	8760623,522	302090,466	-0,177	13543351388,872	0,058
30	1782311	1814785,317	0,982	0,976	1825548,403	1987767,887	1940688,379	-158377,379	-211733,026	158377,379	8919000,901	297300,030	-0,712	25083394100,392	0,089
31	1868284	1814785,317	1,029	0,900	2076343,562	2006988,173	1805878,353	62405,647	-149327,379	62405,647	8981406,549	289722,792	-0,515	3894464818,836	0,033
32	2200936	1814785,317	1,213	1,003	2194149,347	2026208,458	2032475,559	168460,341	19132,362	168460,341	9149866,890	289933,340	0,067	28378886496,450	0,077
33	2248000	1814785,317	1,239	0,993	2163745,669	2045428,744	2031201,596	216796,404	235531,366	216796,404	9366665,293	283838,342	0,831	47001547887,039	0,096
34	2186204	1814785,317	1,205	1,049	2084485,674	2064649,030	2165399,370	20804,630	256735,996	20804,630	9387469,923	276102,057	0,930	432823610,248	0,010
35	2254832	1814785,317	1,244	1,076	2099752,467	2038869,315	2241348,549	17083,451	273819,447	17083,451	9404553,374	268701,525	1,019	291844299,084	0,008
36	2145700	1814785,317	1,182	0,976	2197752,922	2103089,601	2053278,742	92421,258	366240,704	92421,258	9496974,631	263804,851	1,388	8541688862,902	0,043
37	2228556	1814785,317	1,225	0,900	2471180,070	2122309,886	1909644,279	313911,721	680152,426	313911,721	9810886,353	265159,091	2,565	98540568860,141	0,141
38	2008741	1814785,317	1,107	1,003	2002546,986	2141530,172	2148154,070	-139413,070	540739,355	139413,070	9950299,423	261849,985	2,065	19436004198,294	0,069
39	2124568	1814785,317	1,171	0,993	2139449,114	2160750,458	2145721,180	-21153,180	159586,175	21153,180	9971452,603	256678,272	2,032	447457028,111	0,010
40	1892000	1814785,317	1,043	1,049	1803970,213	2179970,743	2286348,530	-394348,530	125237,645	394348,530	10365801,134	259145,028	0,483	155510763471,429	0,208
41	2186700	1814785,317	1,205	1,076	2033060,424	2199191,029	2365385,192	-178685,192	-53447,548	178685,192	10544486,326	257182,593	-0,208	31928397985,373	0,082
42				0,976		2218411,314		216865,106							
43				0,921		2237631,600		2060042,321							
44				1,023		2256851,885		2307715,219							
45				0,985		2276072,171		242725,148							
46				1,061		2295292,457		2435804,391							
47				1,136		2314512,742		2630397,377							

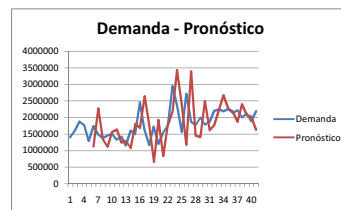
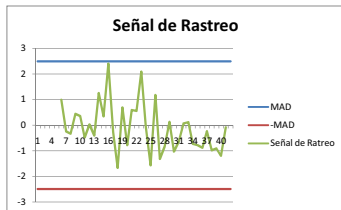
Valores Iniciales	Medidas de Desempeño Finales									
Estacionalidad	Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstica	Intersecciones con cero
6	1411159,320	19220,286	0,571	257182,593	0,146	10,734	-1303,599	1106951553825,331	336842,608	5,000



MODELO WINTERS

Datos Iniciales Winters		Pronóstico				Análisis del Error							
Periodo	Demanda	St	It	Tt	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et*2 (Error Cuadrático)	Fracción Abs. del Error
1	1406015		0,843										
2	1608676		0,965										
3	1885957		1,131										
4	1768109		1,061										
5	1288705	1288705,000	0,967	-117310,000									
6	1743267	1698678,066	1,013	309789,283	1130282,614	612984,386	612984,386	612984,386	612984,386	612984,386	1,000	375749857849,457	0,352
7	1493489	1437244,342	1,058	-152901,352	2272017,442	-778528,442	-165544,056	778528,442	1391512,829	695756,414	-0,238	606106535372,608	0,521
8	1375392	1294755,072	1,062	-144467,566	1362087,958	13304,042	-152240,014	13304,042	1404816,871	468272,290	-0,325	176997544,701	0,010
9	1456904	1445913,233	0,999	94989,273	1112445,762	344458,238	192218,224	344458,238	1749275,109	437318,777	0,440	118651477694,399	0,236
10	1500551	1490982,925	1,008	54554,412	1561498,990	-60947,990	131270,235	60947,990	1810223,099	362044,620	0,363	3714657455,019	0,041
11	1333128	1308112,931	1,027	-137759,356	1635907,536	-302779,536	-171509,301	302779,536	2113002,634	352167,106	-0,487	91675447267,207	0,227
12	1425061	1312799,754	1,081	-22377,952	1242813,487	182247,503	10738,202	182247,503	2295250,137	327892,877	0,033	33214152195,359	0,128
13	1157103	1180635,705	0,984	-111304,690	1289355,897	-132152,897	-121414,696	132152,897	2427403,034	303425,379	-0,400	17464388244,686	0,114
14	1615520	1512188,786	1,056	247410,105	1077753,737	537766,263	416351,567	537766,263	2965169,297	329463,255	1,264	289192553273,729	0,333
15	1502511	1512973,382	1,000	47643,442	1807787,693	-305276,693	111074,874	305276,693	3270445,990	327044,599	0,340	93193859373,159	0,203
16	2462763	2157008,470	1,129	530720,675	1686335,197	776427,803	887502,677	776427,803	4046873,793	367897,618	2,412	602840133534,678	0,315
17	1642514	1842278,013	0,911	-154094,742	2644896,956	-1002382,956	-114880,279	1002382,956	5049256,750	420771,396	-0,273	1004771591088,740	0,610
18	1169091	1206195,342	0,987	-544504,964	1782107,954	-613016,954	-727897,234	613016,954	5662273,704	435559,516	-1,671	375789786173,754	0,524
19	1723470	1542555,359	1,093	168995,671	661881,058	1061588,942	333691,709	1061588,942	6723862,646	480275,903	0,695	1126971082033,420	0,616
20	1209517	1180236,482	1,047	-261369,113	1932168,106	-722651,106	-388959,397	722651,106	7446513,751	496434,250	-0,784	522224620448,274	0,597
21	1528913	1549193,224	0,971	249194,830	837080,095	691832,905	302873,508	691832,905	8138346,657	508646,666	0,595	478632768881,930	0,452
22	1743328	1771179,132	0,985	227155,603	1775696,196	-32368,196	270505,312	32368,196	8170714,853	480630,285	0,563	1047700142,296	0,019
23	2953093	2582818,034	1,132	700587,075	2183607,613	769485,387	1039990,699	769485,387	8940200,240	496677,791	2,094	592107760957,992	0,261
24	2365387	2433913,477	0,988	12498,853	3436634,741	-1071247,741	-31257,042	1071247,741	10011447,982	526918,315	-0,059	1147571723188,450	0,453
25	1558629	1748234,936	0,908	-553024,837	2375384,169	-816755,169	-848012,212	816755,169	10828203,151	541410,158	-1,566	66708900622,015	0,524
26	2742008	2498711,000	1,068	502810,893	1177195,639	1546812,361	698800,149	1546812,361	12375015,512	589286,453	1,186	2392624879310,370	0,568
27	1868284	1879236,910	1,023	-406239,943	3398988,671	-1531614,671	-832814,522	1531614,671	13906630,183	632119,554	-1,317	2345843500749,933	0,820
28	1770445	1738392,429	1,012	-191269,619	1454669,829	315775,171	-517039,351	315775,171	14222405,354	618365,450	-0,836	99713958493,933	0,178
29	2000936	2091611,232	0,946	249766,002	1405132,504	595803,496	78764,145	595803,496	14818208,850	617425,369	0,128	354981806204,210	0,298
30	1782311	1783078,632	1,014	-202455,865	2500744,045	-718433,045	-639668,900	718433,045	15536641,895	621465,676	-1,029	516146039673,259	0,403
31	1868284	1784121,190	1,042	-37622,143	1617400,403	250883,597	-388785,303	250883,597	15787525,492	607212,519	-0,640	62942579900,817	0,134
32	2200936	2102103,767	1,040	250417,691	1767375,345	433560,655	44775,353	433560,655	16221086,147	600780,968	0,075	18797484915,283	0,197
33	2148000	2371277,482	0,948	265610,068	2236611,820	-21388,180	66163,533	21388,180	16242474,327	580068,369	0,114	457454256,299	0,010
34	2186204	2237849,408	0,985	-57611,090	2673681,715	-487477,715	-421314,182	487477,715	16729952,043	576894,898	-0,730	237634522798,753	0,223
35	2258432	2169319,111	1,041	-66455,385	2272141,817	-13709,817	-435023,999	13709,817	16743661,859	558122,062	-0,779	187959077,903	0,006
36	2145700	2207492,511	1,037	-92676,069	2186247,977	-40547,977	-475571,976	40547,977	16784209,837	541426,124	-0,878	1644138463,793	0,019
37	2223556	2283649,451	0,968	155048,669	1874357,268	349198,732	-126373,245	349198,732	17133408,568	535419,018	-0,236	12193975411,514	0,157
38	2008741	2107741,399	0,960	-113026,276	2401382,728	-392641,728	-519014,922	392641,728	17526050,296	531092,433	-0,977	154167526484,364	0,195
39	2124568	2032546,364	1,044	-82382,971	2077105,547	47462,453	-471552,520	47462,453	17573512,749	516868,022	-0,912	2252684405,339	0,022
40	1892000	1845824,547	1,028	-166897,436	2022363,546	-130363,546	-601916,066	130363,546	17703876,295	505825,037	-1,190	16994654070,139	0,069
41	2186700	2159938,968	1,003	222722,168	1625581,492	561118,508	-40797,558	561118,508	18264994,802	507360,967	-0,080	314853979492,751	0,257

Valores Iniciales			Medidas de Desempeño Finales						
Alpha	Beta	Gamma	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstica	Intersecciones con cero
0,83	0,81	0,79	507360,967	0,280	-4,084	-1133,266	415515277170,828	653748,531	17

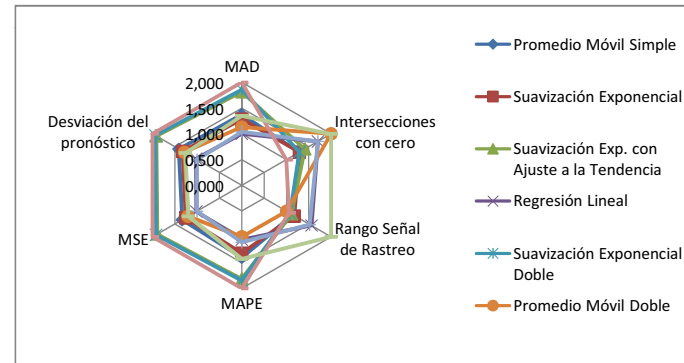
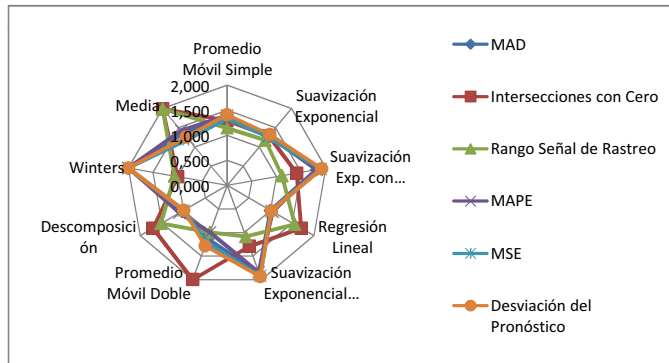


COMPARACIONES

Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	Intersecciones con cero (%)
Promedio Móvil Simple	345002,375	12	5,326	0,190	213302510212,625	467730,484	0,293
Suavización Exponencial	321783,299	12	5,795	0,178	189294032208,728	440621,976	0,293
Suavización Exp. con Ajuste a la Tendencia	459020,266	10	4,771	0,253	383372425585,857	627711,446	0,244
Regresión Lineal	246462,949	5	11,278	0,139	116125736255,920	345005,623	0,122
Suavización Exponencial Doble	470854,162	12	4,427	0,258	391203879836,341	634090,415	0,293
Promedio Móvil Doble	281229,874	0	3,139	0,131	173329145753,211	427143,691	0,000
Descomposición	257182,593	5	10,734	0,146	110695553825,331	336842,608	0,122
Winters	507360,967	17	4,084	0,280	415515277170,828	653748,531	0,415
Media	338410,405	0	17,679	0,195	172294713289,875	420240,504	0,000



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Datos Normalizados						
Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico
Promedio Móvil Simple	1,378	1,294	1,150	1,396	1,337	1,413
Suavización Exponencial	1,289	1,294	1,183	1,315	1,258	1,327
Suavización Exp. con Ajuste a la Tendencia	1,815	1,412	1,112	1,815	1,895	1,918
Regresión Lineal	1,000	1,706	1,560	1,057	1,018	1,026
Suavización Exponencial Doble	1,860	1,294	1,089	1,849	1,920	1,938
Promedio Móvil Doble	1,133	2,000	1,000	1,000	1,205	1,285
Descomposición	1,041	1,706	1,522	1,101	1,000	1,000
Winters	2,000	1,000	1,065	2,000	2,000	2,000
Media	1,352	2,000	2,000	1,428	1,202	1,263

14. PF 60 GR


Periodo	Demanda
1	2721600
2	1856800
3	1216800
4	1603600
5	1990000
6	2128800
7	961200
8	1944400
9	728000
10	1923600
11	2256400
12	902000
13	333600
14	1344800
15	3143600
16	776000
17	238400
18	1456000
19	1239200
20	1844214
21	839412
22	2347052
23	1391732
24	1143930
25	1161658
26	1057443
27	981008
28	935839
29	2546241
30	1345926

FOR TSM

NÚMERO DE PERIODOS DE DEMANDA

30

Elegir Modelos



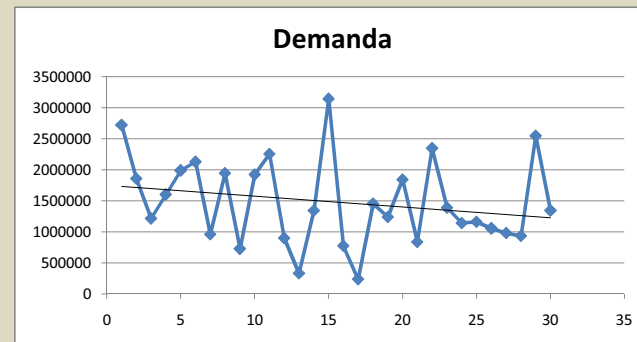
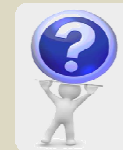
Datos	30,000
Desviación Estándar	#####
Promedio	#####
Coefficiente de Correlación	(0,218)
Coefficiente de Variación	0,474

Creado por:
Rosana Builes Palacio
María Cristina Bravo Gómez

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Modelos Pronosticados

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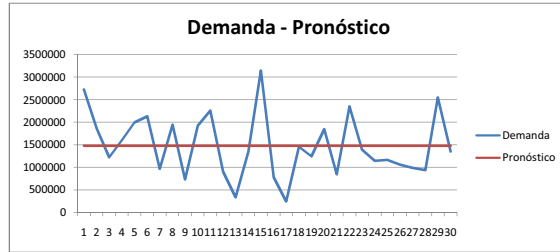
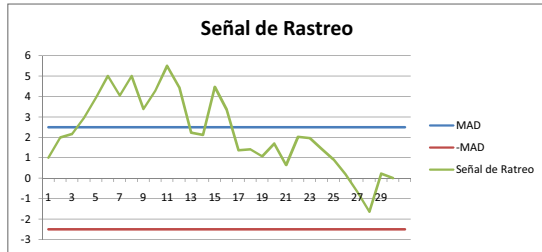
MODELO MEDIA

Datos Iniciales <i>Media</i>		Análisis del Error									
Periodo	Demanda	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error	
1	2721600	1478641,833	1242958,167	1242958,167	1242958,167	1242958,167	1242958,167	1,000	1544945004083,360	0,457	
2	1856800	1478641,833	378158,167	1621116,333	378158,167	1621116,333	810558,167	2,000	143003599016,694	0,204	
3	1216800	1478641,833	-261841,833	1359274,500	261841,833	1882958,167	627652,722	2,166	68561145683,361	0,215	
4	1603600	1478641,833	124958,167	1484232,667	124958,167	2007916,333	501979,083	2,957	15614543416,695	0,078	
5	1990000	1478641,833	511358,167	1995590,833	511358,167	2519274,500	503854,900	3,961	261487174616,695	0,257	
6	2128800	1478641,833	650158,167	2645749,000	650158,167	3169432,667	528238,778	5,009	422705641683,361	0,305	
7	961200	1478641,833	-517441,833	2128307,167	517441,833	3686874,500	526696,357	4,041	267746050883,361	0,538	
8	1944400	1478641,833	465758,167	2594065,333	465758,167	4152632,667	519079,083	4,997	216930669816,695	0,240	
9	728000	1478641,833	-750641,833	1843423,500	750641,833	4903274,500	544808,278	3,384	563463161950,028	1,031	
10	1923600	1478641,833	444958,167	2288381,667	444958,167	5348232,667	534823,267	4,279	197987770083,361	0,231	
11	2256400	1478641,833	777758,167	3066139,833	777758,167	6125990,833	556908,258	5,506	604907765816,695	0,345	
12	902000	1478641,833	-576641,833	2489498,000	576641,833	6702632,667	558552,722	4,457	332515803950,028	0,639	
13	333600	1478641,833	-1145041,833	1344456,167	1145041,833	7847674,500	603667,269	2,227	1311120800083,360	3,432	
14	1344800	1478641,833	-133841,833	1210614,333	133841,833	7981516,333	570108,310	2,123	17913636350,028	0,100	
15	3143600	1478641,833	1664958,167	2875572,500	1664958,167	9646474,500	643098,300	4,471	2772085696750,030	0,530	
16	776000	1478641,833	-702641,833	2172930,667	702641,833	10349116,333	646819,771	3,359	493705545950,028	0,905	
17	238400	1478641,833	-1240241,833	932688,833	1240241,833	11589358,167	681726,951	1,368	1538199805150,030	5,202	
18	1456000	1478641,833	-22641,833	910047,000	22641,833	11612000,000	645111,111	1,411	512652616,694	0,016	
19	1239200	1478641,833	-239441,833	670605,167	239441,833	11851441,833	623760,096	1,075	57332391550,028	0,193	
20	1844214	1478641,833	365572,167	1036177,333	365572,167	12217014,000	610850,700	1,696	133643009041,361	0,198	
21	839412	1478641,833	-639229,833	396947,500	639229,833	12856243,833	612202,087	0,648	408614779823,361	0,762	
22	2347052	1478641,833	868410,167	1265357,667	868410,167	13724654,000	623847,909	2,028	754136217570,028	0,370	
23	1391732	1478641,833	-86909,833	1178447,833	86909,833	13811563,833	600502,775	1,962	7553319130,028	0,062	
24	1143930	1478641,833	-334711,833	843736,000	334711,833	14146275,667	589428,153	1,431	112032011373,361	0,293	
25	1161658	1478641,833	-316983,833	526752,167	316983,833	14463259,500	578530,380	0,911	100478750594,694	0,273	
26	1057443	1478641,833	-421198,833	105553,333	421198,833	14884458,333	572479,167	0,184	177408457201,361	0,398	
27	981008	1478641,833	-497633,833	-392080,500	497633,833	15382092,167	569707,117	-0,688	247639432078,028	0,507	
28	935839	1478641,833	-542802,833	-934883,333	542802,833	15924895,000	568746,250	-1,644	294634915874,694	0,580	
29	2546241	1478641,833	1067599,167	132715,833	1067599,167	16992494,167	585948,075	0,226	1139767980667,360	0,419	
30	1345926	1478641,833	-132715,833	0,000	132715,833	17125210,000	570840,333	0,000	17613492417,361	0,099	



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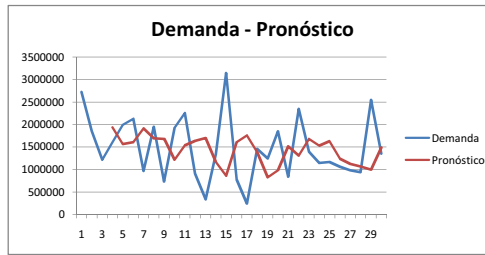
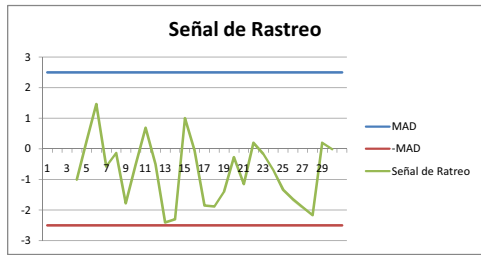
Medidas de Desempeño Finales						
MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
570840,333	0,629	7,149	0,000	474142040840,739	700351,174	2



MODELO PMS

Datos Iniciales PMS		Análisis del Error								
Periodo	Demanda	Pronóstico Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	2721600									
2	1856800									
3	1216800									
4	1603600									
5	1990000									
6	2128800									
7	961200									
8	1944400									
9	728000									
10	1923600									
11	2256400									
12	902000									
13	333600									
14	1344800									
15	3143600									
16	776000									
17	238400									
18	1456000									
19	1239200									
20	1844214									
21	839412									
22	2347052									
23	1391732									
24	1143930									
25	1161658									
26	1057443									
27	981008									
28	935839									
29	2546241									
30	1345926									

Valores Iniciales N (Periodos de Promedio)	Medidas de Desempeño Finales						
	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
3	670961,864	0,784	3,872	-240,753	722285587519,716	866063,394	10



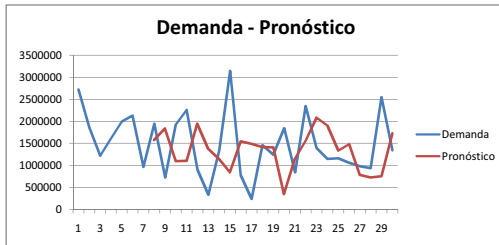
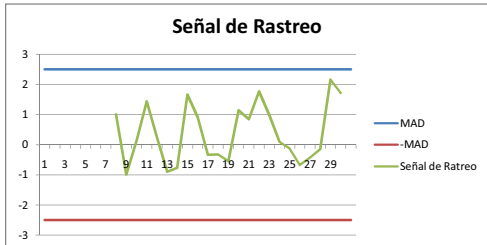
MODELO PMD

Datos Iniciales PMD		Pronóstico					Análisis del Error							
Periodo	Demanda	St'	St''	a	b	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et ² (Error Cuadrático)	Fracción Abs. del Error
1	2721600													
2	1856800													
3	1216800													
4	1603600													
5	1990000													
6	2128800													
7	961200													
8	1944400													
9	728000													
10	1923600													
11	2256400													
12	902000													
13	333600													
14	1344800													
15	3143600													
16	776000													
17	238400													
18	1456000													
19	1239200													
20	1844214													
21	839412													
22	7347057													
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25	1161658													
26	1057443													
27	981008													
28	935839													
29	2546241													
30	1345926													
31														
32														
33														
34														
35														
36														



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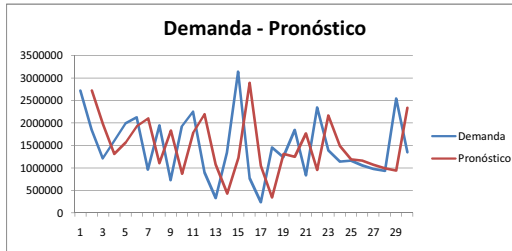
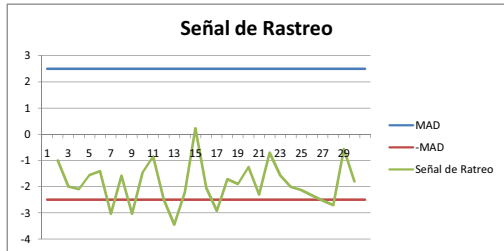
Valores Iniciales	Medidas de Desempeño Finales						
N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
4	761698,491	0,819	3,157	56693,946	904124466751,943	972224,785	8



MODELO SE

Datos Iniciales SE		Pronóstico	Análisis del Error								
Periodo	Demanda		Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et ² (Error Cuadrático)	Fracción Abs. del Error
1	2721600										
2	1856800	PM Simple	2721600,000	-864800,000	-864800,000	864800,000	864800,000	864800,000	-1,000	747879040000,000	0,466
3	1216800	SET	1969224,000	-752424,000	-1617224,000	752424,000	1617224,000	808612,000	-2,000	566141875776,000	0,618
4	1603600	Reg Lineal	1314615,120	288984,880	-1328239,120	288984,880	1906208,880	635402,960	-2,090	83512260868,614	0,180
5	1990000	SE Doble	1566031,966	423968,034	-904271,086	423968,034	2330176,914	582544,229	-1,552	179748894193,000	0,213
6	2128800	PM Doble	1934884,156	193915,844	-710355,241	193915,844	2524092,759	504818,552	-1,407	37603354737,289	0,091
7	961200	Descomposicion	2103590,940	-1142390,940	-1852746,181	1142390,940	3666483,699	611080,617	-3,032	1305057060293,630	1,189
8	1944400	Winters	1109710,822	834689,178	-1018057,004	834689,178	4501172,877	643024,697	-1,583	696706023488,991	0,429
9	728000	Media	1835890,407	-1107890,407	-2125947,410	1107890,407	5609063,284	701132,910	-3,032	1227421153678,210	1,522
10	1923600	Comparaciones	872025,753	1051574,247	-1074373,163	1051574,247	6660637,531	740070,837	-1,452	1105808397173,060	0,547
11	2256400		1786895,348	469504,652	-604868,511	469504,652	7130142,183	713014,218	-0,848	220434618365,669	0,208
12	902000		2195364,395	-1293364,395	-1898232,906	1293364,395	8423506,578	765773,325	-2,479	1672791458832,980	1,434
13	333600		1070137,371	-736537,371	-2634770,278	736537,371	9160043,950	763336,996	-3,452	542487299438,052	2,208
14	1344800		429349,858	915450,142	-1719320,136	915450,142	10075494,091	775038,007	-2,218	838048961976,478	0,681
15	3143600		1225791,482	1917808,518	198488,382	1917808,518	11993302,610	856664,472	0,232	3677989513338,480	0,610
16	776000		2894284,893	-2118284,893	-1919796,510	2118284,893	14111587,502	940772,500	-2,041	4487130886238,240	2,730
17	238400		1051377,036	-812977,036	-2732773,546	812977,036	14924564,538	932785,284	-2,930	660931661126,171	3,410
18	1456000		344087,015	1111912,985	-1620860,561	1111912,985	16036477,524	943322,207	-1,718	1236350486912,060	0,764
19	1239200		1311451,312	-72251,312	-1693111,873	72251,312	16108728,836	894929,380	-1,892	5220252072,579	0,058
20	1844214		1248592,671	595621,329	-1097490,543	595621,329	16704350,165	879176,324	-1,248	354764768097,957	0,323
21	839412		1766783,227	-927371,227	-2024861,771	927371,227	17631721,392	881586,070	-2,297	860017392985,134	1,105
22	2347052		959970,260	1387081,740	-637780,030	1387081,740	19018803,133	905657,292	-0,704	1923995754739,000	0,591
23	1391732		2166731,374	-774999,374	-1412779,404	774999,374	19793802,506	899718,296	-1,570	600624029296,143	0,557
24	1143930		1492481,919	-348551,919	-1761331,323	348551,919	20142354,425	875754,540	-2,011	121488439950,048	0,305
25	1161658		1189241,749	-27583,749	-1788915,072	27583,749	20169938,174	840414,091	-2,129	760863231,855	0,024
26	1057443		1165243,887	-107800,887	-1896715,959	107800,887	20277739,062	811109,562	-2,338	11621031329,425	0,102
27	981008		1071457,115	-90449,115	-1987165,075	90449,115	20368188,177	783391,853	-2,537	8181042470,335	0,092
28	935839		992766,385	-56927,385	-2044092,460	56927,385	20425115,562	756485,762	-2,702	3240727162,650	0,061
29	2546241		943239,560	1603001,440	-441091,020	1603001,440	22028117,002	786718,464	-0,561	2569613616482,830	0,630
30	1345926		2337850,813	-991924,813	-1433015,833	991924,813	23020041,815	793794,545	-1,805	983914834261,125	0,737
			1474876,226								
			1474876,226								
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			1474876,226								
			1474876,226								
			1474876,226								

Valores Iniciales		Medidas de Desempeño Finales							
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstica	Intersecciones con cero	
0,870	1,000	793794,545	0,755	3,683	-49414,339	921706403397,104	977048,867	2	



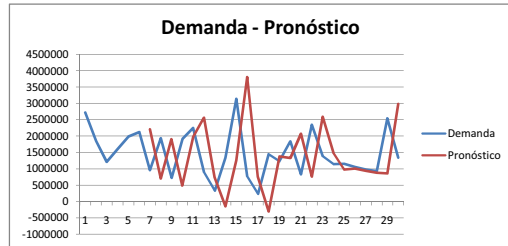
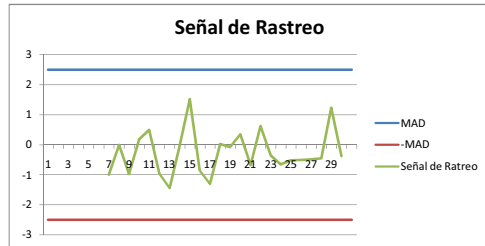
MODELO SED

Datos Iniciales SED		Pronóstico				Análisis del Error								
Periodo	Demanda	St'	St''	a	b	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et ² (Error Cuadrático)	Fracción Abs. del Error
1	2721600													
2	1856800													
3	1216800													
4	1603600													
5	1990000													
6	2128800													
7	961200													
8	1944400													
9	728000													
10	1923600													
11	2256400													
12	902000													
13	333600													
14	1344800													
15	3143600													
16	776000													
17	238400													
18	1456000													
19	1239200													
20	1844214													
21	839412													
22	734705													
23	1391732													
24	1143930													
25	1161658													
26	1057443													
27	981008													
28	935839													
29	2546241													
30	1345926													
31														
32														
33														
34														
35														
36														



- [PM Simple](#)
- [SE](#)
- [SET](#)
- [Reg Lineal](#)
- [PM Doble](#)
- [Descomposicion](#)
- [Winters](#)
- [Media](#)
- [Comparaciones](#)

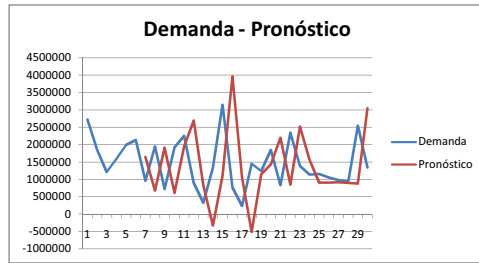
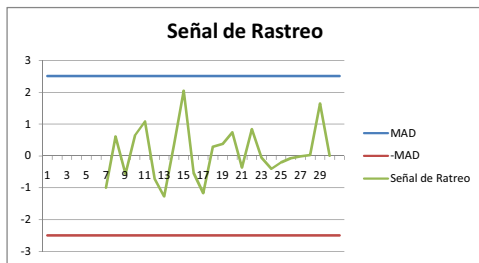
Valores Iniciales		Medidas de Desempeño Finales						
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,650	4,000	1033363,199	0,933	2,969	-16447,988	1639369099696,770	1307916,671	12,000



MODELO SET

Datos Iniciales SET		Pronóstico			Análisis del Error							
Periodo	Demanda	St	Tt	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	2721600											
2	1856800											
3	1216800											
4	1603600											
5	1990000											
6	2128800											
7	961200											
8	1944400											
9	728000											
10	1923600											
11	2256400											
12	902000											
13	333600											
14	1344800											
15	3143600											
16	776000											
17	238400											
18	1456000											
19	1239200											
20	1844214											
21	839412											
22	2347052											
23	1391732											
24	1143930											
25	1161658											
26	1057443											
27	981008											
28	935839											
29	2546241											
30	1345926											

Valores Iniciales				Medidas de Desempeño Finales							
Alpha	Beta	N (Periodos de Promedio)	MAD	MAPE	Pendiente	Intercepto	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstica	Intersecciones con cero
0,76	0,74	6	1061632,142	1,007	-62217,143	2137360,000	3,307	148,084	1740253952502,940	1347559,708	11



MODELO REGRESION

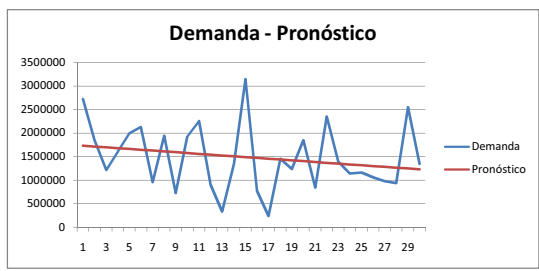
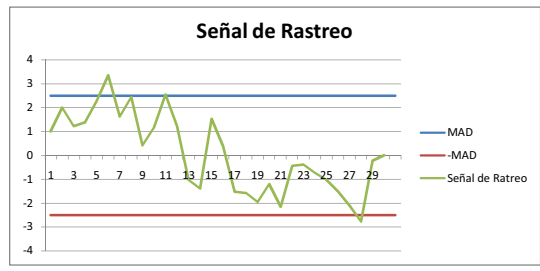
Datos Iniciales [Reg. Lineal](#)



- [PM Simple](#)
- [SE](#)
- [SET](#)
- [SE Doble](#)
- [PM Doble](#)
- [Descomposicion](#)
- [Winters](#)
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Periodo	Demanda	Análisis del Error								
		Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	2721600	1730476,514	991123,486	991123,486	991123,486	991123,486	991123,486	1,000	982325764543,422	0,364
2	1856800	1713108,605	143691,395	1134814,881	143691,395	1134814,881	567407,441	2,000	20647217006,103	0,077
3	1216800	1695740,696	-478940,696	655874,185	478940,696	1613755,577	537918,526	1,219	229384190245,186	0,394
4	1603600	1678372,787	-74772,787	581101,398	74772,787	1688528,364	422132,091	1,377	5590969668,040	0,047
5	1990000	1661004,878	328995,122	910096,520	328995,122	2017523,486	403504,697	2,255	108237790340,294	0,165
6	2128800	1643636,969	485163,031	1395259,551	485163,031	2502686,517	417114,420	3,345	235383166718,545	0,228
7	961200	1626269,060	-665069,060	730190,491	665069,060	3167755,577	452536,511	1,614	442316854460,781	0,692
8	1944400	1608901,151	335498,849	1065689,340	335498,849	3503254,426	437906,803	2,434	112559477741,777	0,173
9	728000	1591533,242	-863533,242	202156,099	863533,242	4366787,668	485198,630	0,417	745689659863,570	1,186
10	1923600	1574165,333	349434,667	551590,766	349434,667	4716222,335	471622,234	1,170	122104586579,399	0,182
11	2256400	1556797,424	699602,576	1251193,342	699602,576	5415824,911	492347,719	2,541	489443764516,003	0,310
12	902000	1539429,515	-637429,515	613763,827	637429,515	6053254,426	504437,869	1,217	406316386425,328	0,707
13	333600	1522061,606	-1188461,606	-574697,779	1188461,606	7241716,032	557055,079	-1,032	141244089859,430	3,563
14	1344800	1504693,697	-159893,697	-734591,476	159893,697	7401609,729	528686,409	-1,389	25565994291,832	0,119
15	3143600	1487325,788	1656274,212	921682,736	1656274,212	9057883,941	603858,929	1,526	2743244265871,730	0,527
16	776000	1469957,879	-693957,879	227724,858	693957,879	9751841,820	609490,114	0,374	481577537587,912	0,894
17	238400	1452589,970	-1214189,970	-986465,112	1214189,970	10966031,790	645060,694	-1,529	1474257282807,400	5,093
18	1456000	1435222,061	20777,939	-965687,173	20777,939	10986809,729	610378,318	-1,582	431722757,054	0,014
19	1239200	1417854,152	-178654,152	-1144341,325	178654,152	11165463,881	587655,994	-1,947	31917305954,768	0,144
20	1844214	1400486,243	443727,757	-700613,568	443727,757	11609191,638	580459,582	-1,207	196894322520,140	0,241
21	839412	1383118,334	-543706,334	-1244319,901	543706,334	12152897,972	578709,427	-2,150	295616577390,610	0,648
22	2347052	1365750,425	981301,575	-263018,326	981301,575	13134199,547	597009,070	-0,441	9629527811552,292	0,418
23	1391732	1348382,516	43349,484	-219668,842	43349,484	13177549,031	572936,914	-0,383	1879177784,026	0,031
24	1143930	1331014,607	-187084,607	-406753,449	187084,607	13364633,638	556859,735	-0,730	35000650082,143	0,164
25	1161658	1313646,698	-151988,698	-558742,146	151988,698	13516622,336	540664,893	-1,033	23100564240,162	0,131
26	1057443	1296278,789	-238835,789	-797577,935	238835,789	13755458,124	529056,082	-1,508	57042533977,429	0,226
27	981008	1278910,880	-297902,880	-1095480,815	297902,880	14053361,004	520494,852	-2,105	88746125744,399	0,304
28	935839	1261542,971	-325703,971	-1421184,786	325703,971	14379064,975	513538,035	-2,767	106083076535,084	0,348
29	2546241	1244175,062	1302065,938	-119118,847	1302065,938	15681130,913	540728,652	-0,220	1695375707685,790	0,511
30	1345926	1226807,153	119118,847	0,000	119118,847	15800249,760	526674,992	0,000	14189299784,899	0,089
31		1209439,244								
32		1192071,335								
33		1174703,426								
34		1157335,517								
35		1139967,608								
36		1122599,699								

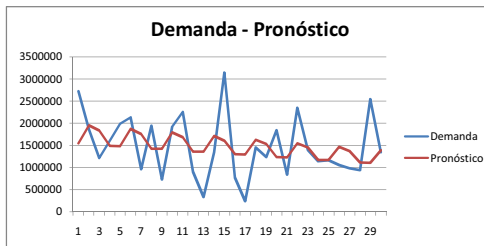
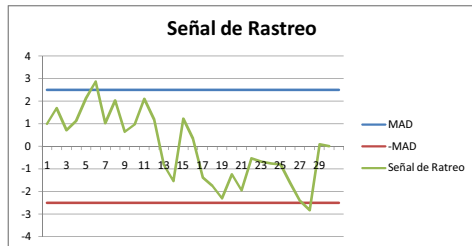
Medidas de Desempeño Finales									
Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
1747844,423	-17367,909	-0,218	526674,992	0,600	6,112	0,000	451543858109,185	683457,633	4



MODELO DESCOMPOSICION

Datos Iniciales Descomp.		Pronóstico					Análisis del Error								
Periodo	Demanda	Promedio	Razón	Índice Estacional	Suavización	Ft sin ajuste	Ft ajustado	et (Error del Pronóstico)	RSFE (Error Acumulado)	letI (Error Absoluto)	letI acumulado	MAD	SR (Señal de Rastreo)	et² (Error Cuadrático)	Fracción Abs. del Error
1	2721600	1478641,833	1,841	0,893	3049005,045	1736752,093	1550258,011	1171341,989	1171341,989	1171341,989	1171341,989	1171341,989	1,000	1372042055455,220	0,430
2	1856800	1478641,833	1,256	1,138	1631771,937	1718951,385	1956001,853	-99201,853	1072140,136	99201,853	1270543,842	635271,921	1,688	9841007620,597	0,053
3	1216800	1478641,833	0,823	1,081	1125518,071	1701150,678	1839117,646	-622317,646	449822,490	622317,646	1892861,488	630953,829	0,713	387279252718,960	0,511
4	1603600	1478641,833	1,085	0,884	1813997,939	1683349,970	1488105,336	115494,664	565317,154	115494,664	2008356,153	502089,038	1,126	13339017507,083	0,072
5	1990000	1478641,833	1,346	0,893	2229394,488	1665549,263	1486701,008	503298,992	1068616,147	503298,992	2511655,145	502331,029	2,127	253309875464,055	0,253
6	2128800	1478641,833	1,440	1,138	1870807,895	1647748,555	1874979,859	253820,141	1322436,287	253820,141	2765475,285	460912,548	2,869	64424663746,514	0,119
7	961200	1478641,833	0,650	1,081	889092,677	1629947,848	1762140,114	-800940,114	521496,173	800940,114	3566415,399	509487,914	1,024	641505065690,176	0,833
8	1944400	1478641,833	1,315	0,884	2199512,094	1612147,140	1425161,020	519238,980	1040735,153	519238,980	4085654,379	510706,797	2,038	269609118241,830	0,267
9	728000	1478641,833	0,492	0,893	815577,481	1594346,432	1423144,005	-695144,005	345591,148	695144,005	4780798,384	531199,820	0,651	483225187522,191	0,955
10	1923600	1478641,833	1,301	1,138	1690476,356	1576545,725	1793957,866	129642,134	475233,282	129642,134	4910440,518	491044,052	0,968	16807082908,074	0,067
11	2256400	1478641,833	1,526	1,081	2087129,335	1558745,017	1685162,581	571237,419	1046470,701	571237,419	5481677,937	498334,358	2,100	326312188650,867	0,253
12	902000	1478641,833	0,610	0,884	1020345,561	1540944,310	1362216,705	-460216,705	586253,997	460216,705	5941894,641	495157,887	1,184	211799415211,923	0,510
13	333600	1478641,833	0,226	0,893	373731,659	1523143,602	1359587,002	-1025987,002	-439733,005	1025987,002	6967881,643	535990,896	-0,820	1052649328021,300	3,076
14	1344800	1478641,833	0,909	1,138	1181821,898	1505342,895	1712935,873	-368135,873	-807868,878	368135,873	7336017,516	524001,251	-1,542	135524020654,803	0,274
15	3143600	1478641,833	2,126	1,081	2907773,346	1487542,187	1608185,049	1535414,951	727546,074	1535414,951	8871432,467	591428,831	1,230	2357499072665,020	0,488
16	776000	1478641,833	0,525	0,884	877813,919	1469741,480	1299272,389	-523272,389	204273,684	523272,389	9394704,856	587169,053	0,348	273813993231,909	0,674
17	238400	1478641,833	0,161	0,893	267079,219	1451940,772	1296029,999	-1057629,999	-853356,314	1057629,999	10452334,855	614843,227	-1,388	1118581214517,330	4,436
18	1456000	1478641,833	0,985	1,138	1279545,422	1434140,064	1631913,879	-175913,879	-1029270,194	175913,879	10628248,734	590458,263	-1,743	30945692856,811	0,121
19	1239200	1478641,833	0,838	1,081	1146237,667	1416339,357	1531207,516	-292007,516	-1321277,710	292007,516	10920256,250	574750,329	-2,299	85268389528,254	0,236
20	1844214	1478641,833	1,247	0,884	2086181,339	1398538,649	1236328,074	697885,926	-713391,783	607885,926	11528142,177	576407,109	-1,238	369525299453,236	0,330
21	839412	1478641,833	0,568	0,893	940392,204	1380737,942	1232472,996	-393060,996	-1106452,779	393060,996	11921203,172	567676,342	-1,949	154496946474,161	0,468
22	7347052	1478641,833	1,587	1,138	2062609,645	1362937,234	1550891,886	796160,114	-310292,665	796160,114	12717363,287	578061,968	-0,537	633870927703,521	0,339
23	1391732	1478641,833	0,941	1,081	1287327,018	1345136,527	1454229,984	-62497,984	-372790,649	62497,984	12779861,270	555646,142	-0,671	3905997970,827	0,045
24	1143930	1478641,833	0,774	0,884	1294017,625	1327335,819	1173383,758	-29453,758	-402244,407	29453,758	12809315,029	533721,460	-0,754	867523870,107	0,026
25	1161658	1478641,833	0,786	0,893	1301403,991	1309535,111	1168915,993	-7257,993	-409502,400	7257,993	12816573,022	512662,921	-0,799	52678460,443	0,090
26	1057443	1478641,833	0,715	1,138	929290,076	1291734,404	1469869,892	-412426,892	-821929,292	412426,892	13228999,914	508807,689	-1,615	170095941394,751	0,306
27	981008	1478641,833	0,663	1,081	907414,720	1273933,696	1377252,451	-396244,451	-1218173,743	396244,451	13625244,365	504638,680	-2,414	157009665145,956	0,404
28	935839	1478641,833	0,633	0,884	1058624,356	1256132,989	1110439,443	-174600,443	-1392774,186	174600,443	13799844,808	492851,600	-2,826	30485314584,480	0,187
29	2546241	1478641,833	1,722	0,893	2852550,579	1238332,281	1105358,990	1440882,010	48107,824	1440882,010	15240726,818	525542,304	0,092	2076140967138,620	0,566
30	1345926	1478641,833	0,910	1,138	1182811,437	1220531,574	1388847,899	-42921,899	5185,926	42921,899	15283648,716	509454,957	0,010	184228990,354	0,032
31				1,081		1202730,866	1300274,919								
32				0,884		1184930,159	1047495,127								
33				0,757		1167129,451	883741,154								
34				1,121		1149328,743	1288477,308								
35				1,124		1131528,036	1271987,944								
36				0,851		1113727,328	947334,776								

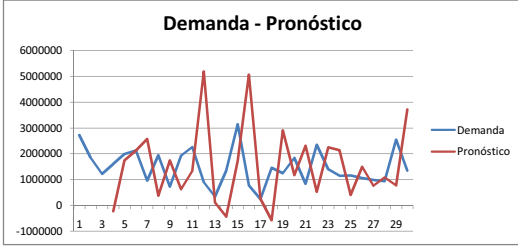
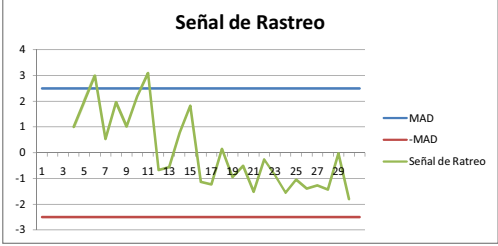
Valores Iniciales		Medidas de Desempeño Finales									
Estacionalidad	Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero	
4	1754552,801	-17800,708	-0,221	509454,957	0,547	5,695	172,864	423402306459,979	661817,487	4,000	



MODELO WINTERS

Datos Iniciales Winters		Pronóstico				Análisis del Error							
Periodo	Demanda	St	It	Tt	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	lett (Error Absoluto)	lett acumulado	MAD	SR (Señal de Rastreo)	et*2 (Error Cuadrático)	Fracción Abs. del Error
1	2721600												
2	1856800												
3	1216800												
4	1603600												
5	1990000												
6	2128800												
7	961200												
8	1944400												
9	728000												
10	1923600												
11	2256400												
12	902000												
13	333600												
14	1344800												
15	3143600												
16	776000												
17	238400												
18	1456000												
19	1239200												
20	1844214												
21	839412												
22	7347057												
23	1391732												
24	1143930												
25	1161658												
26	1057443												
27	981008												
28	935839												
29	2546241												
30	1345926												

Valores Iniciales			Medidas de Desempeño Finales						
Alpha	Beta	Gamma	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstica	Intersecciones con cero
0,83	0,85	0,85	1326083,203	1,114	4,905	-88882,473	2901690674357,590	1735884,259	5

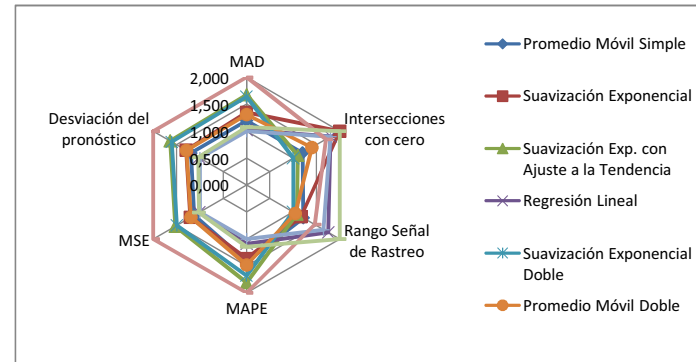
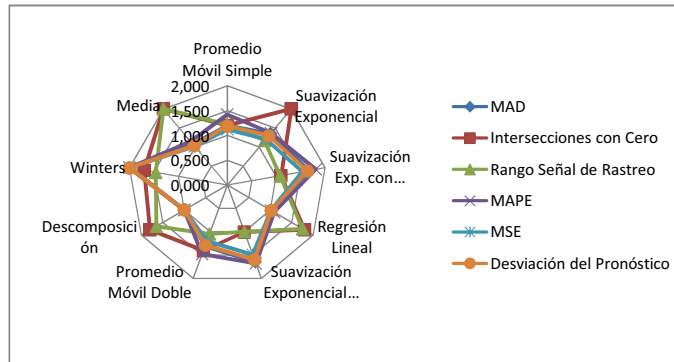


COMPARACIONES

Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	Intersecciones con cero (%)
Promedio Móvil Simple	670961,864	10	3,872	0,784	722285587519,716	866063,394	0,333
Suavización Exponencial	793794,545	2	3,683	0,755	921706403397,104	977048,867	0,067
Suavización Exp. con Ajuste a la Tendencia	1061632,142	11	3,307	1,007	1740253952502,940	1347559,708	0,367
Regresión Lineal	526674,992	4	6,112	0,600	451543858109,185	683457,633	0,133
Suavización Exponencial Doble	1033363,199	12	2,969	0,933	1639369099696,770	1307916,671	0,400
Promedio Móvil Doble	761698,491	8	3,157	0,819	904124466751,943	972224,785	0,267
Descomposición	509454,957	4	5,695	0,547	423402306459,979	661817,487	0,133
Winters	1326083,203	5	4,905	1,114	2901690674357,590	1735884,259	0,167
Media	570840,333	2	7,149	0,629	474142040840,739	700351,174	0,067



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Datos Normalizados						
Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico
Promedio Móvil Simple	1,198	1,200	1,216	1,417	1,121	1,190
Suavización Exponencial	1,348	2,000	1,171	1,366	1,201	1,293
Suavización Exp. con Ajuste a la Tendencia	1,676	1,100	1,081	1,811	1,531	1,638
Regresión Lineal	1,021	1,800	1,752	1,092	1,011	1,020
Suavización Exponencial Doble	1,642	1,000	1,000	1,680	1,491	1,602
Promedio Móvil Doble	1,309	1,400	1,045	1,480	1,194	1,289
Descomposición	1,000	1,800	1,652	1,000	1,000	1,000
Winters	2,000	1,700	1,463	2,000	2,000	2,000
Media	1,075	2,000	2,000	1,145	1,020	1,036

15. RESINA


Periodo	Demanda
1	1191212,385
2	1395149,525
3	1432443,901
4	1423464,52
5	1542106,622
6	1621716,689
7	1600896,341
8	1446964,959
9	1436158,035
10	1324968,177
11	1745742,68
12	1500561,409

FOR TSM

NÚMERO DE PERIODOS DE DEMANDA

12

Elegir Modelos



Datos	12,000
Desviación Estándar	#####
Promedio	#####
Coefficiente de Correlación	0,483
Coefficiente de Variación	0,099

Creado por:
 Rosana Builes Palacio
 María Cristina Bravo Gómez



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Modelos Pronosticados

[PM Simple](#)

[SE](#)

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[Reg Lineal](#)

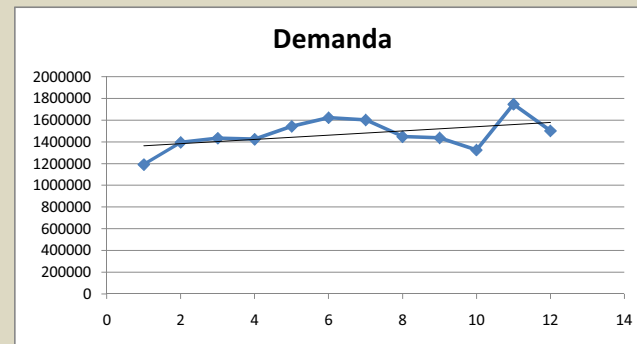
[SE Doble](#)

[PM Doble](#)

[Descomposicion](#)

[Winters](#)

[Media](#)



MODELO MEDIA

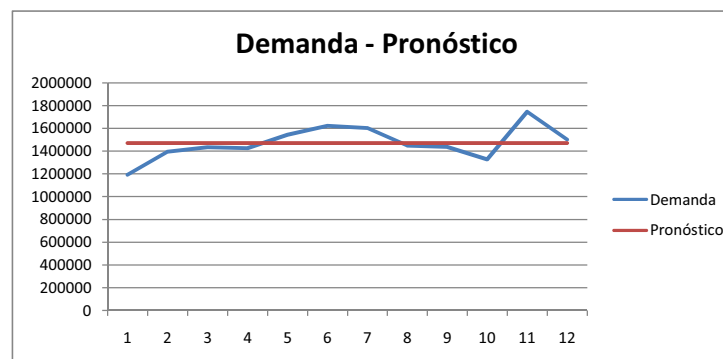
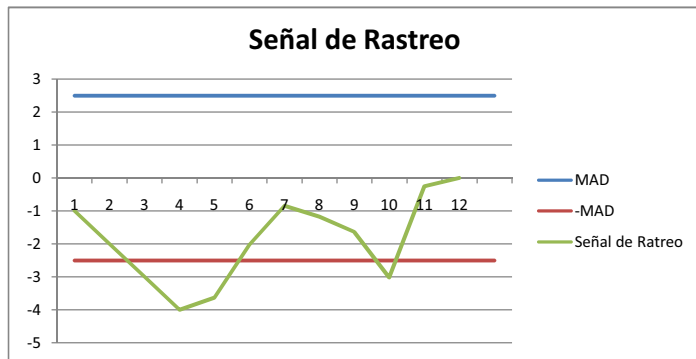
Datos Iniciales Media	
Periodo	Demanda
1	1191212,38
2	1395149,53
3	1432443,9
4	1423464,52
5	1542106,62
6	1621716,69
7	1600896,34
8	1446964,96
9	1436158,04
10	1324968,18
11	1745742,68
12	1500561,41



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Pronóstico		Análisis del Error							
Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error	
1471782,103	-280569,719	-280569,719	280569,719	280569,719	280569,719	-1,000	78719367149,597	0,236	
1471782,103	-76632,578	-357202,297	76632,578	357202,297	178601,149	-2,000	5872552068,401	0,055	
1471782,103	-39338,202	-396540,500	39338,202	396540,500	132180,167	-3,000	1547494166,096	0,027	
1471782,103	-48317,584	-444858,084	48317,584	444858,084	111214,521	-4,000	2334588911,518	0,034	
1471782,103	70324,518	-374533,565	70324,518	515182,602	103036,520	-3,635	4945537849,513	0,046	
1471782,103	149934,586	-224598,980	149934,586	665117,187	110852,865	-2,026	22480379966,541	0,092	
1471782,103	129114,237	-95484,743	129114,237	794231,424	113461,632	-0,842	16670486228,371	0,081	
1471782,103	-24817,144	-120301,887	24817,144	819048,569	102381,071	-1,175	615890654,930	0,017	
1471782,103	-35624,068	-155925,955	35624,068	854672,637	94963,626	-1,642	1269074247,587	0,025	
1471782,103	-146813,926	-302739,882	146813,926	1001486,564	100148,656	-3,023	21554328977,644	0,111	
1471782,103	273960,577	-28779,305	273960,577	1275447,140	115949,740	-0,248	75054397544,702	0,157	
1471782,103	28779,305	0,000	28779,305	1304226,445	108685,537	0,000	828248403,478	0,019	
1471782,103									
1471782,103									
1471782,103									
1471782,103									
1471782,103									
1471782,103									
1471782,103									

Medidas de Desempeño Finales						
MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
108685,537	0,075	4,000	0,000	19324362180,698	145193,396	0



MODELO PMS

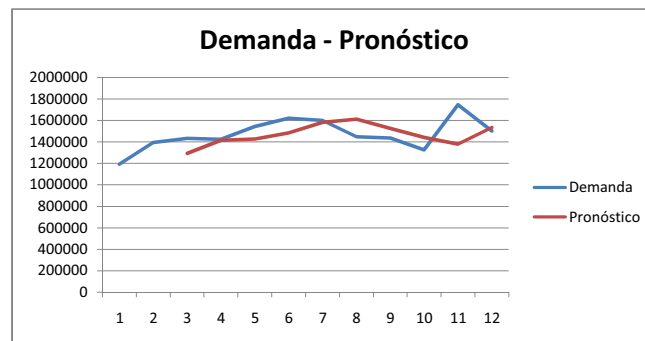
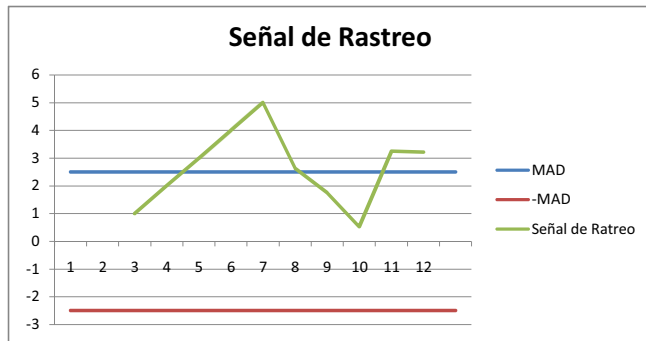
Datos Iniciales PMS	
Periodo	Demanda
1	1191212,38
2	1395149,53
3	1432443,9
4	1423464,52
5	1542106,62
6	1621716,69
7	1600896,34
8	1446964,96
9	1436158,04
10	1324968,18
11	1745742,68
12	1500561,41



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Pronóstico	Análisis del Error								
	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error	
Ft (Pronóstico)									
	1293180,955	139262,946	139262,946	139262,946	139262,946	1,000	19394168198,230	0,097	
	1413796,713	9667,806	148930,753	9667,806	148930,753	74465,376	2,000	93466482,521	0,007
	1427954,210	114152,411	263083,164	114152,411	263083,164	87694,388	3,000	13030772994,189	0,074
	1482785,571	138931,119	402014,283	138931,119	402014,283	100503,571	4,000	19301855687,661	0,086
	1581911,655	18984,685	420998,968	18984,685	420998,968	84199,794	5,000	360418274,042	0,012
	1611306,515	-164341,556	256657,412	164341,556	585340,524	97556,754	2,631	27008146946,330	0,114
	1523930,650	-87772,615	168884,797	87772,615	673113,138	96159,020	1,756	7704031900,052	0,061
	1441561,497	-116593,320	52291,477	116593,320	789706,458	98713,307	0,530	13594002268,622	0,088
	1380563,106	365179,574	417471,051	365179,574	1154886,032	128320,670	3,253	133356121266,821	0,209
	1535355,429	-34794,020	382677,031	34794,020	1189680,052	118968,005	3,217	1210623827,760	0,023
	1623152,044								
	1623152,044								
	1623152,044								
	1623152,044								
	1623152,044								
	1623152,044								

Valores Iniciales	Medidas de Desempeño Finales						
N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	118968,005	0,077	4,470	38267,703	23505360784,623	161607,758	0



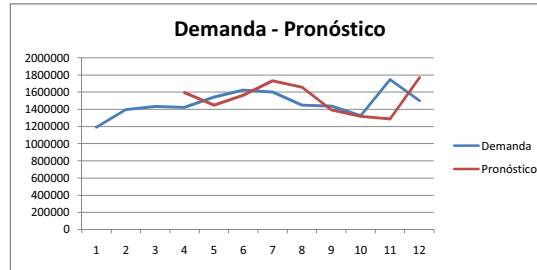
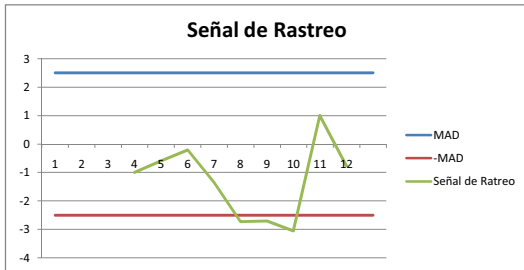
MODELO PMD

Datos Iniciales PMD		Pronóstico					Análisis del Error							
Periodo	Demanda	St'	St''	a	b	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	1191212,38													
2	1395149,53													
3	1432443,9													
4	1423464,52													
5	1542106,62													
6	1621716,69													
7	1600896,34													
8	1446964,96													
9	1436158,04													
10	1324968,18													
11	1745742,68													
12	1500561,41													
13		1293180,955												
14		1413796,713	1353488,834	1474104,592	120615,758	1594720,350	-171255,831	-171255,831	171255,831	171255,831	171255,831	-1,000	29328559608,687	0,120
15		1427954,210	1420875,462	1435032,959	14157,497	1449190,456	92916,165	-78339,666	92916,165	264171,996	132085,998	-0,593	8633413787,994	0,060
16		1482785,571	1455369,890	1510201,251	54831,360	1565032,611	56684,078	-21655,587	56684,078	320856,074	106952,025	-0,202	3213084712,881	0,035
17		1581911,655	1532348,613	1631474,698	99126,085	1730600,782	-129704,442	-151360,029	129704,442	450560,516	112640,129	-1,344	16823242242,105	0,081
18		1611306,515	1596609,085	1626003,945	29394,860	1655398,804	-208433,845	-359793,874	208433,845	658994,361	131798,872	-2,730	43444667741,484	0,144
19		1523930,650	1567618,582	1480242,717	-87375,865	1392866,852	43291,183	-316502,692	43291,183	702285,544	117047,591	-2,704	1874126503,894	0,030
20		1441561,497	1482746,073	1400376,921	-82369,153	1318007,768	6960,409	-309542,282	6960,409	709245,953	101320,850	-3,055	48447295,187	0,005
21		1380563,106	14111062,302	1350063,911	-60998,391	1289065,520	456677,161	147134,878	456677,161	1165923,114	145740,389	1,010	208554028922,343	0,262
22		1535355,429	1457959,267	1612751,590	154792,323	1767543,912	-266982,504	-119847,626	266982,504	1432905,617	159211,735	-0,753	71279657308,619	0,178
23		1623152,044	1579253,736	1667050,352	87796,616	1754846,968								
24						1842643,584								
25						1930440,199								
26						2018236,815								
27						2106033,431								
28						2193830,047								



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Valores Iniciales	Medidas de Desempeño Finales						
N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
2	159211,735	0,102	4,065	-13316,403	42577692013,688	218860,466	2



MODELO SE

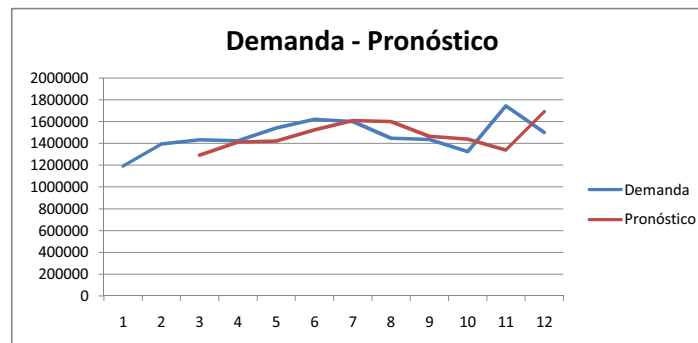
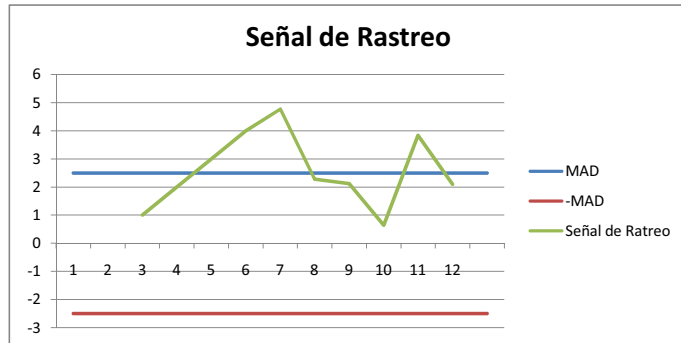
Datos Iniciales SE	
Periodo	Demanda
1	1191212,385
2	1395149,525
3	1432443,901
4	1423464,52
5	1542106,622
6	1621716,689
7	1600896,341
8	1446964,959
9	1436158,035
10	1324968,177
11	1745742,68
12	1500561,409



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Periodo	Demanda	Análisis del Error								
		Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	1191212,385									
2	1395149,525									
3	1432443,901	1293180,955	139262,946	139262,946	139262,946	139262,946	139262,946	1,000	19394168198,230	0,097
4	1423464,52	1414339,718	9124,802	148387,748	9124,802	148387,748	74193,874	2,000	83262002,643	0,006
5	1542106,622	1422278,295	119828,326	268216,074	119828,326	268216,074	89405,358	3,000	14358827759,085	0,078
6	1621716,689	1526528,939	95187,750	363403,824	95187,750	363403,824	90850,956	4,000	9060707732,084	0,059
7	1600896,341	1609342,282	-8445,941	354957,883	8445,941	371849,765	74369,953	4,773	71333919,583	0,005
8	1446964,959	1601994,313	-155029,354	199928,529	155029,354	526879,119	87813,186	2,277	24034100549,442	0,107
9	1436158,035	1467118,775	-30960,740	168967,789	30960,740	557839,859	79691,408	2,120	958567421,230	0,022
10	1324968,177	1440182,931	-115214,754	53753,035	115214,754	673054,613	84131,827	0,639	13274439585,310	0,087
11	1745742,68	1339946,095	405796,585	459549,620	405796,585	1078851,198	119872,355	3,834	164670868360,355	0,232
12	1500561,409	1692989,124	-192427,715	267121,904	192427,715	1271278,913	127127,891	2,101	37028425675,606	0,128
		1525577,012								
		1525577,012								
		1525577,012								
		1525577,012								
		1525577,012								
		1525577,012								

Valores Iniciales		Medidas de Desempeño Finales						
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,870	2,000	127127,891	0,082	4,134	26712,190	28293470120,357	177305,355	0



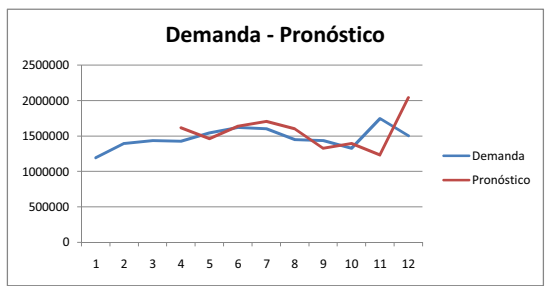
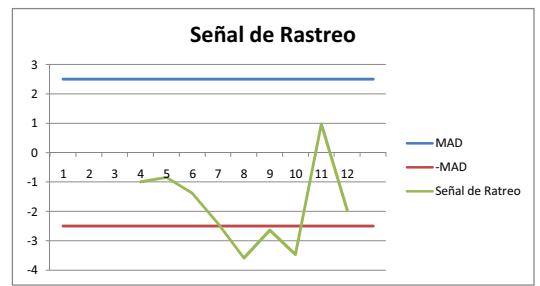
MODELO SED

Datos Iniciales SED		Pronóstico					Análisis del Error							
Período	Demanda	St'	St''	a	b	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	1191212,385													
2	1395149,525													
3	1432443,901													
4	1423464,52													
5	1542106,622													
6	1621716,689													
7	1600896,341													
8	1446964,959													
9	1436158,035													
10	1324968,177													
11	1745742,68													
12	1500561,409													
13														
14														
15														
16														
17														
18														



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Valores Iniciales		Medidas de Desempeño Finales						
Alpha	N (Periodos de Promedio)	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,880	1,000	198427,069	0,128	4,560	-43385,078	72551748876,103	285693,398	2,000



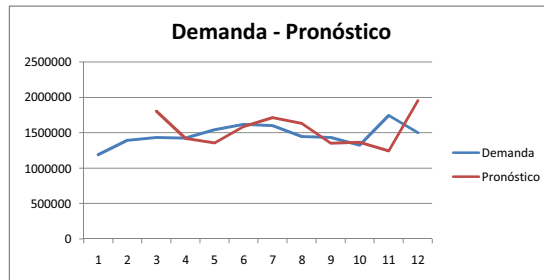
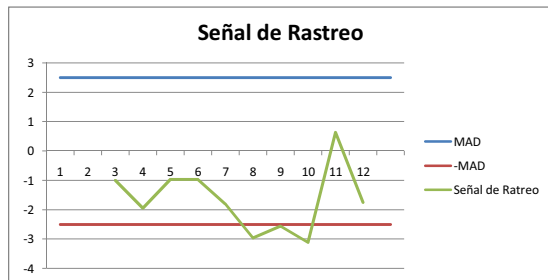
MODELO SET

Datos Iniciales SET		Análisis del Error										
Periodo	Demanda	St	Tt	Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	1191212,385											
2	1395149,525											
3	1432443,901											
4	1423464,52											
5	1542106,622											
6	1621716,689											
7	1600896,341											
8	1446964,959											
9	1436158,035											
10	1324968,177											
11	1745742,68											
12	1500561,409											
		1599086,666	203937,141	1803023,806	-370579,905	-370579,905	370579,905	370579,905	370579,905	-1,000	137329465989,809	0,259
		1488030,887	-70106,699	1417924,188	5540,332	-365039,573	5540,332	376120,237	188060,118	-1,941	30695278,643	0,004
		1422633,470	-66009,624	1356623,846	185482,776	-179556,797	185482,776	561603,013	187201,004	-0,959	34403860020,157	0,120
		1514284,205	71154,889	1585439,094	36277,595	-143279,202	36277,595	597880,608	149470,152	-0,959	1316063903,155	0,022
		1616275,050	97982,170	1714257,220	-113360,880	-256640,082	113360,880	711241,487	142248,297	-1,804	12850689014,424	0,071
		1617900,472	14151,800	1632052,272	-185087,313	-441727,395	185087,313	896328,800	149388,133	-2,957	34257313551,147	0,128
		1474728,056	-122720,268	1352007,788	84150,247	-357577,148	84150,247	980479,048	140068,435	-2,553	7081264123,508	0,059
		1423535,498	-60491,160	1363044,337	-38076,160	-395653,308	38076,160	1018555,208	127319,401	-3,108	1449793996,802	0,029
		1330679,601	-88648,481	1242031,120	503711,560	108058,252	503711,560	1522266,768	169140,752	0,639	253725335703,760	0,289
		1670185,946	283846,218	1954032,164	-453470,755	-345412,503	453470,755	1975737,523	197573,752	-1,748	205635725674,320	0,302
		1568582,022	-51495,406	1517086,616								
				1517086,616								
				1517086,616								
				1517086,616								
				1517086,616								
				1517086,616								



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Valores Iniciales			Medidas de Desempeño Finales									
Alpha	Beta	N (Periodos de Promedio)	MAD	MAPE	Pendiente	Intercepto	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero	
0,85	0,87	2	197573,752	0,128	203937,141	987275,244	3,746	-34541,250	68808020725,573	276502,001	2	



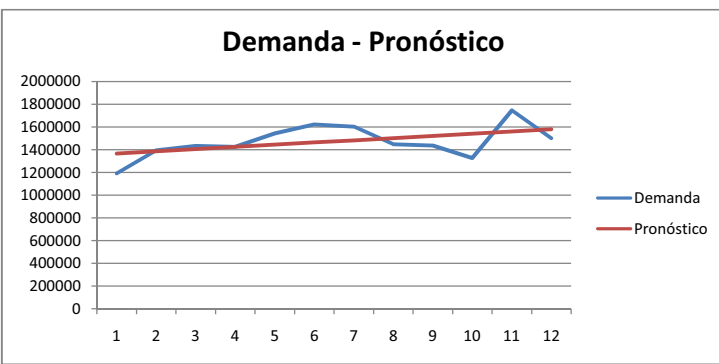
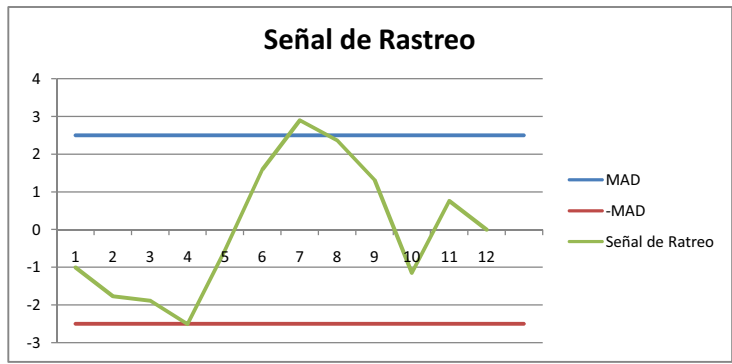
MODELO REGRESION

Datos Iniciales Reg. Lineal		Pronóstico	Análisis del Error							
Periodo	Demanda		Ft (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)
1	1191212,385	1364799,991	-173587,607	-173587,607	173587,607	173587,607	173587,607	-1,000	30132657203,840	0,146
2	1395149,525	1384251,284	10898,241	-162689,366	10898,241	184485,847	92242,924	-1,764	118771649,654	0,008
3	1432443,901	1403702,577	28741,324	-133948,042	28741,324	213227,171	71075,724	-1,885	826063679,245	0,020
4	1423464,52	1423153,871	310,649	-133637,394	310,649	213537,820	53384,455	-2,503	96502,756	0,000
5	1542106,622	1442605,164	99501,458	-34135,936	99501,458	313039,278	62607,856	-0,545	9900540105,508	0,065
6	1621716,689	1462056,457	159660,232	125524,296	159660,232	472699,510	78783,252	1,593	25491389741,469	0,098
7	1600896,341	1481507,750	119388,591	244912,887	119388,591	592088,100	84584,014	2,895	14253635557,022	0,075
8	1446964,959	1500959,043	-53994,084	190918,803	53994,084	646082,184	80760,273	2,364	2915361113,040	0,037
9	1436158,035	1520410,336	-84252,301	106666,502	84252,301	730334,486	81148,276	1,314	7098450253,548	0,059
10	1324968,177	1539861,629	-214893,452	-108226,951	214893,452	945227,938	94522,794	-1,145	46179195840,210	0,162
11	1745742,68	1559312,922	186429,758	78202,807	186429,758	1131657,696	102877,972	0,760	34756054512,146	0,107
12	1500561,409	1578764,216	-78202,807	0,000	78202,807	1209860,503	100821,709	0,000	6115679028,695	0,052
13		1598215,509								
14		1617666,802								
15		1637118,095								
16		1656569,388								
17		1676020,681								
18		1695471,974								



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Medidas de Desempeño Finales									
Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
1345348,698	19451,293	0,483	100821,709	0,069	5,399	0,000	14815657932,261	127131,963	4



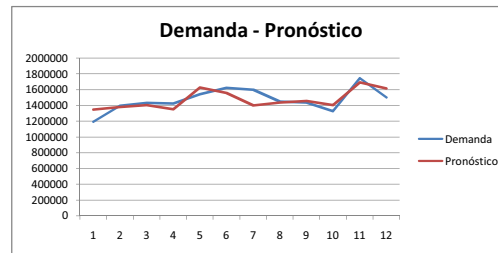
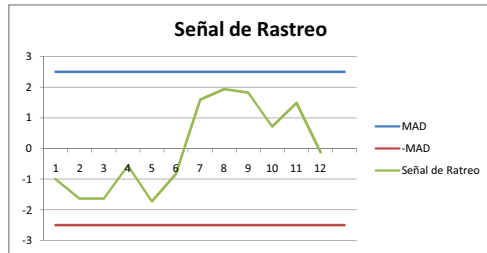
MODELO DESCOMPOSICION

Datos Iniciales		Pronóstico							Análisis del Error						
Periodo	Demanda	Promedio	Razón	Índice Estacional	Suavización	Pt sin ajuste	Pt ajustado	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et*2 (Error Cuadrático)	Fracción Abs. del Error
1	1191212,385	1471782,103	0,809	0,949	1255828,652	1419629,914	1346585,565	-155373,180	-155373,180	155373,180	155373,180	155373,180	-1,000	24140825113,461	0,130
2	1395149,525	1471782,103	0,948	0,966	1444949,606	1429112,130	1379857,886	15291,639	-140081,542	15291,639	170664,819	85332,409	-1,642	233834210,080	0,011
3	1432443,901	1471782,103	0,973	0,975	1469876,508	1438594,347	1401958,387	30485,514	-109596,028	30485,514	201150,333	67050,111	-1,635	929366556,241	0,021
4	1423464,52	1471782,103	0,967	0,934	1524526,766	1448076,563	1352082,269	71382,250	-38213,777	71382,250	272532,583	68133,146	-0,561	5095425655,997	0,050
5	1542106,622	1471782,103	1,048	1,117	1380625,886	1457558,779	1628037,738	-85931,117	-124144,894	85931,117	358463,700	71692,740	-1,732	7384156824,732	0,056
6	1621716,689	1471782,103	1,102	1,061	1528892,382	1467040,995	1556110,092	65606,597	-58538,297	65606,597	424070,297	70678,383	-0,828	4304225611,740	0,040
7	1600896,341	1471782,103	1,088	0,949	1687735,554	1476523,211	1400551,526	200344,815	141806,518	200344,815	624415,112	89202,159	1,590	40138044721,131	0,125
8	1446964,959	1471782,103	0,983	0,966	1498614,600	1486005,428	1434790,361	12174,598	153981,116	12174,598	636589,710	79573,714	1,935	148220848,088	0,008
9	1436158,035	1471782,103	0,976	0,975	1473687,699	1495487,644	1457402,811	-21244,776	132736,340	21244,776	657834,486	73092,721	1,816	451340527,785	0,015
10	1324968,177	1471782,103	0,900	0,934	1419037,441	1504969,860	1405204,059	-80235,882	52500,458	80235,882	738070,368	73807,037	0,711	6437796744,498	0,061
11	1745742,68	1471782,103	1,186	1,117	1562938,321	1514452,076	1691585,388	54157,292	106657,750	54157,292	792227,660	72020,696	1,481	2933012247,483	0,031
12	1500561,409	1471782,103	1,020	1,061	1414671,824	1523934,293	1616457,577	-115896,168	-9238,418	115896,168	908123,828	75676,986	-0,122	13431921758,433	0,077
13				0,949		1533416,509	1454517,487								
14				0,966		1542898,725	1489722,835								
15				0,975		1552380,941	1512847,236								
16				0,934		1561863,158	1458325,849								
17				1,117		1571345,374	1755133,038								
18				1,061		1580827,590	1676805,061								



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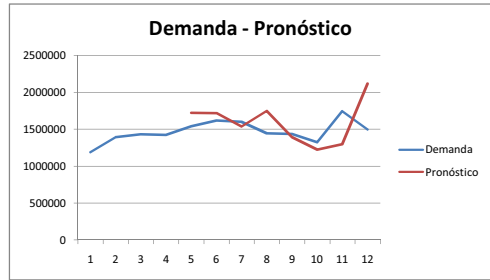
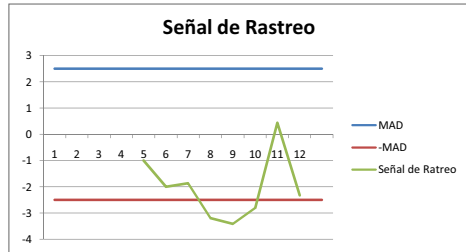
Valores Iniciales	Medidas de Desempeño Finales										
Estacionalidad	Intercepto	Pendiente	Correlación	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero	
6	1410147,698	9482,216	0,323	75676,986	0,052	3,667	-769,868	8802347568,306	97992,658	2,000	



MODELO WINTERS

Datos Iniciales Winters		Pronóstico				Análisis del Error							
Periodo	Demanda	St	It	Tt	Pt (Pronóstico)	et (Error del Pronóstico)	RSFE (Error Acumulado)	letl (Error Absoluto)	letl acumulado	MAD	SR (Señal de Rastreo)	et^2 (Error Cuadrático)	Fracción Abs. del Error
1	1191212,38		0,889										
2	1395149,53		1,041										
3	1432443,9		1,069										
4	1423464,52		0,983	232252,135									
5	1542106,62	1423464,520	1,027	99805,560	1724372,174	-182265,552	-182265,552	182265,552	182265,552	182265,552	-1,000	33220731614,078	0,118
6	1621716,69	1505209,183	1,062	32898,776	1716251,311	-94534,622	-276800,175	94534,622	276800,175	138400,087	-2,000	8936794804,561	0,058
7	1600896,34	1528984,306	0,988	82895,049	1535931,291	64965,050	-211835,125	64965,050	341765,224	113921,741	-1,859	4220457687,823	0,041
8	1446964,96	1618697,029	1,002	-138654,334	1747630,437	-300665,478	-512500,603	300665,478	642430,703	160607,676	-3,191	90399729832,555	0,208
9	1436158,04	1346612,174	1,066	-107471,452	1392401,955	43756,080	-468744,524	43756,080	686186,782	137237,356	-3,416	1914594494,134	0,030
10	1324968,18	1326605,039	0,997	-30502,853	1224469,616	100498,561	-368245,963	100498,561	786685,343	131114,224	-2,809	10099960782,767	0,076
11	1745742,68	1679231,483	1,034	306650,928	1299184,156	446558,524	78312,561	446558,524	1233243,867	176177,695	0,445	199414515184,489	0,256
12	1500561,41	1488818,167	1,017	-130765,606	2116582,824	-616021,416	-537708,854	616021,416	1849265,283	231158,160	-2,326	379482384354,681	0,411
					1354216,397								
					1354216,397								
					1354216,397								
					1354216,397								
					1354216,397								

Valores Iniciales			Medidas de Desempeño Finales						
Alpha	Beta	Gamma	MAD	MAPE	Rango Señal de Rastreo	ME	MSE	Desviación Pronóstico	Intersecciones con cero
0,86	0,88	0,85	231158,160	0,150	3,860	-67213,607	90961146094,386	322421,456	2

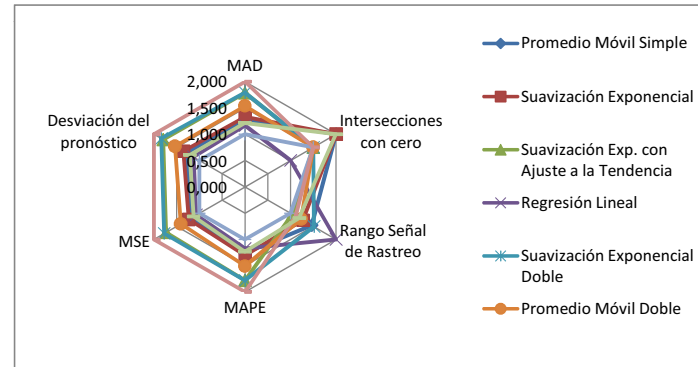
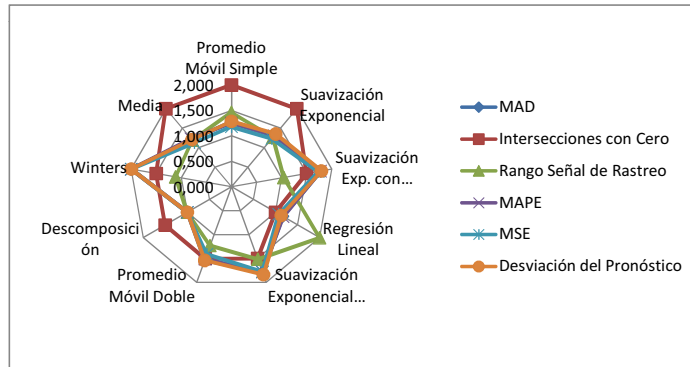


COMPARACIONES

Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	Intersecciones con cero (%)
Promedio Móvil Simple	118968,005	0	4,470	0,077	23505360784,623	161607,758	0,000
Suavización Exponencial	127127,891	0	4,134	0,082	28293470120,357	177305,355	0,000
Suavización Exp. con Ajuste a la Tendencia	197573,752	2	3,746	0,128	68808020725,573	276502,001	0,167
Regresión Lineal	100821,709	4	5,399	0,069	14815657932,261	127131,963	0,333
Suavización Exponencial Doble	198427,069	2	4,560	0,128	72551748876,103	285693,398	0,167
Promedio Móvil Doble	159211,735	2	4,065	0,102	42577692013,688	218860,466	0,167
Descomposición	75676,986	2	3,667	0,052	8802347568,306	97992,658	0,167
Winters	231158,160	2	3,860	0,150	90961146094,386	322421,456	0,167
Media	108685,537	0	4,000	0,075	19324362180,698	145193,396	0,000



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Datos Normalizados							
Modelo	MAD	Intersecciones con cero	Rango Señal de Rastreo	MAPE	MSE	Desviación del pronóstico	
Promedio Móvil Simple	1,278	2,000	1,464	1,255	1,179	1,283	
Suavización Exponencial	1,331	2,000	1,270	1,308	1,237	1,353	
Suavización Exp. con Ajuste a la Tendencia	1,784	1,500	1,046	1,780	1,730	1,795	
Regresión Lineal	1,162	1,000	2,000	1,173	1,073	1,130	
Suavización Exponencial Doble	1,789	1,500	1,516	1,782	1,776	1,836	
Promedio Móvil Doble	1,537	1,500	1,230	1,508	1,411	1,539	
Descomposición	1,000	1,500	1,000	1,000	1,000	1,000	
Winters	2,000	1,500	1,112	2,000	2,000	2,000	
Media	1,212	2,000	1,192	1,234	1,128	1,210	



**ANEXO E
CLASIFICACIÓN ABC Y COSTOS**

1. CLASIFICACIÓN ABC

DATOS EN UNIDADES

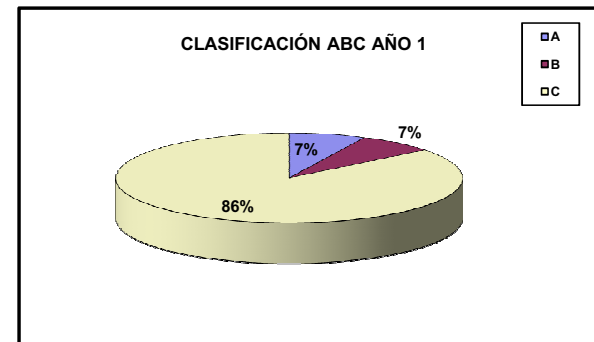
MES	PF 18 GR	PF 22 GR	PF 23 GR	PF 25 GR	PF 27 GR	PF 28 GR	PF 30 GR	PF 30 GR Kerr	PF 30.5 GR	PF 44 GR	PF 47.5 GR	PF 52 GR	PF 54 GR	PF 60 GR
	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real
Dic-08				7.390.822				3.481.920					1.406.015	
Ene-09				5.519.184				4.043.520					1.608.676	
Feb-09				6.896.264				5.896.800					1.885.957	
Mar-09				7.272.701				4.717.440					1.768.109	
Abr-09				7.060.189				5.784.480					1.288.705	
May-09				7.027.292				5.391.360					1.743.267	
Jun-09				6.762.264				3.201.120					1.493.489	
Jul-09				4.614.431				5.054.400					1.375.392	
Ago-09				6.213.272				5.117.040					1.456.904	
Sep-09				5.558.381				5.171.040					1.500.551	
Oct-09				8.822.202				4.250.480					1.333.128	
Nov-09				6.500.052				4.687.578			787.249		1.425.061	2.721.600
Dic-09				7.597.757				6.516.180			817.525		1.157.103	1.856.800
Ene-10				7.531.918				7.750.080			1.075.262		1.615.520	1.216.800
Feb-10				6.031.929				5.930.280			1.167.421		1.502.511	1.603.600
Mar-10				6.701.639				5.321.160			852.504		2.462.763	1.990.000
Abr-10	1.126.000			4.956.747				5.447.520			1.211.109		1.642.514	2.128.800
May-10	1.184.000			5.111.053				6.518.880			882.300		1.169.091	961.200
Jun-10	1.168.000			7.314.488				2.575.440			709.726		1.723.470	1.944.400
Jul-10	1.182.000			6.918.677				3.830.400			788.082		1.209.517	728.000
Ago-10	1.156.000			8.015.535				4.760.640			1.103.879		1.528.913	1.923.600
Sep-10	1.170.000			6.502.313				7.599.240			1.117.252		1.743.328	2.256.400
Oct-10	1.320.000			10.093.348				7.517.160			452.829		2.953.093	902.000
Nov-10	1.224.000			7.476.061				7.626.600			499.150		2.365.387	333.600
Dic-10	1.114.000			4.241.008	2.979.504			4.480.200			941.359		1.558.629	1.344.800
Ene-11	1.196.000	3.407.616		6.508.798	2.704.992			4.910.039			1.582.981	1.341.728	2.724.008	3.143.600
Feb-11	1.670.000	5.787.736		7.930.792	2.973.696	1.835.000		6.580.080			946.099	1.295.853	1.868.284	776.000
Mar-11	1.576.000	5.763.307		6.969.461	4.261.536	1.636.500	2.561.792	5.013.720	4.777.600		1.105.617	1.275.461	1.770.445	238.400
Abr-11	1.362.000	6.166.325		4.288.988	2.000.000	1.851.500	2.702.240	4.596.480	2.524.880		958.495	1.477.843	2.000.936	1.456.000
May-11	1.098.000	6.330.399	1.636.944	5.542.472	3.252.480	1.225.000	1.334.256	4.856.400	2.864.720	4.000.000	779.687	1.483.184	1.782.311	1.239.200
Jun-11	1.262.500	7.186.824	1.119.074	5.136.129	2.336.352	1.525.000	2.983.968	5.472.000	5.481.280	4.950.000	719.172	1.346.770	1.868.284	1.844.214
Jul-11	1.289.500	8.485.169	1.295.624	6.020.422	3.496.312	1.485.000	2.510.964	6.949.440	3.567.360	4.580.000	716.702	2.093.724	2.200.936	839.412
Ago-11	1.027.892	9.657.733	1.113.387	4.955.038	1.605.920	1.336.000	2.519.168	7.770.240	6.028.992	2.625.770	756.723	1.076.554	2.248.000	2.347.052
Sep-11	1.677.984	12.761.833	1.705.847	5.720.956	1.698.848	1.760.000	2.208.864	5.745.600	4.172.256	5.145.331	728.923	2.409.043	2.186.204	1.391.732
Oct-11	944.781	10.357.513	2.985.227	7.613.105	2.698.432	1.388.000	2.755.152	5.745.600	4.798.278	4.457.800	825.600	3.438.759	2.258.432	1.143.930
Nov-11	1.082.124	11.565.419	3.454.354	6.390.152	1.302.752	1.032.000	2.279.088	8.262.720	4.674.096	4.651.888	967.455	2.474.731	2.145.700	1.161.658
Dic-11	1.072.800	10.365.303	2.189.242	6.319.211	1.955.008	1.364.000	2.217.072	5.796.900	4.448.464	4.289.344	825.000	2.168.717	2.223.556	1.057.443
Ene-12	1.201.452	8.443.084	2.267.432	6.004.881	1.912.576	1.165.000	2.349.312	6.511.680	4.860.768	4.123.890	890.000	2.636.725	2.008.741	981.008
Feb-12	1.304.564	9.956.547	2.306.423	5.848.461	1.141.280	1.289.777	2.310.096	5.472.000	3.062.880	3.896.000	725.678	2.165.442	2.124.568	935.839
Mar-12	5.535.904	13.952.876	2.309.898	6.814.000	1.878.876	963.500	1.883.907	6.549.300	4.632.528	4.697.725	912.000	2.667.253	1.892.000	2.546.241
Abr-12	4.293.717	11.526.006	3.087.810	5.202.624	1.960.368	867.000	2.802.192	6.019.200	4.298.746	3.581.098	780.145	1.965.291	2.186.700	1.345.926

Año	PF 18 GR	PF 22 GR	PF 23 GR	PF 25 GR	PF 27 GR	PF 28 GR	PF 30 GR	PF 30 GR Kerr	PF 30.5 GR	PF 44 GR	PF 47.5 GR	PF 52 GR	PF 54 GR	PF 60 GR
	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real
Año 1	0	0	0	79.637.054	0	0	0	56.797.178	0	0	787.249	0	18.285.254	2.721.600
Año 2	0	0	0	79.843.989	0	0	0	59.831.438	0	0	1.604.774	0	18.036.342	4.578.400
Año 3	0	0	0	81.856.723	0	0	0	63.537.998	0	0	2.680.036	0	18.043.186	5.795.200
Año 4	0	0	0	80.992.388	0	0	0	63.571.478	0	0	3.847.457	0	17.659.740	7.398.800
Año 5	0	0	0	80.421.326	0	0	0	64.175.198	0	0	4.699.961	0	18.354.394	9.388.800
Año 6	1.126.000	0	0	78.317.884	0	0	0	63.838.238	0	0	5.911.070	0	18.708.203	11.517.600
Año 7	2.310.000	0	0	76.401.645	0	0	0	64.965.758	0	0	6.793.370	0	18.134.027	12.478.800
Año 8	3.478.000	0	0	76.953.869	0	0	0	64.340.078	0	0	7.503.096	0	18.364.008	14.423.200
Año 9	4.660.000	0	0	79.258.115	0	0	0	63.116.078	0	0	8.291.178	0	18.198.133	15.151.200
Año 10	5.816.000	0	0	81.060.378	0	0	0	62.759.678	0	0	9.395.057	0	18.270.142	17.074.800
Año 11	6.986.000	0	0	82.004.310	0	0	0	65.187.878	0	0	10.512.309	0	18.512.919	19.331.200
Año 12	8.306.000	0	0	83.275.456	0	0	0	68.454.558	0	0	10.965.138	0	20.132.884	20.233.200
Año 13	9.530.000	0	0	84.251.465	0	0	0	71.393.580	0	0	10.677.039	0	21.073.210	17.845.200
Año 14	10.644.000	0	0	80.894.716	2.979.504	0	0	69.357.600	0	0	10.800.873	0	21.474.736	17.333.200
Año 15	11.840.000	3.407.616	0	79.871.596	5.684.496	0	0	66.517.559	0	0	11.308.592	1.341.728	22.583.224	19.260.000
Año 16	13.510.000	9.195.352	0	81.770.459	8.658.192	1.835.000	0	67.167.359	0	0	11.087.270	2.637.581	22.948.997	18.432.400
Año 17	15.086.000	14.958.659	0	82.038.281	12.919.728	3.471.500	2.561.792	66.859.919	4.777.600	0	11.340.383	3.913.042	22.256.679	16.680.800
Año 18	15.322.000	21.124.984	0	81.370.522	14.919.728	5.323.000	5.264.032	66.008.879	7.302.480	0	11.087.769	5.390.885	22.615.101	16.008.000
Año 19	15.236.000	27.455.383	1.636.944	81.801.941	18.172.208	6.548.000	6.598.288	64.346.399	10.167.200	4.000.000	10.985.156	6.874.069	23.228.321	16.286.000
Año 20	15.330.500	34.642.207	2.756.018	79.623.582	20.508.560	8.073.000	9.582.256	67.242.959	15.648.480	8.950.000	10.994.602	8.220.839	23.373.135	16.185.814
Año 21	15.438.000	43.127.376	4.051.642	78.725.327	24.004.872	9.558.000	12.093.220	70.361.999	19.215.840	13.530.000	10.923.222	10.314.563	24.364.554	16.297.226
Año 22	15.309.892	52.785.109	5.165.029	75.664.830	25.610.792	10.894.000	14.612.388	73.371.599	25.244.832	16.155.770	10.576.066	11.391.117	25.083.641	16.720.678
Año 23	15.817.876	65.546.942	6.870.876	74.883.473	27.309.640	12.654.000	16.821.252	71.517.959	29.417.088	21.301.101	10.187.737	13.800.160	25.526.517	15.856.010
Año 24	15.442.657	75.904.455	9.856.103	72.403.230	30.008.072	14.042.000	19.576.404	69.746.399	34.215.366	25.758.901	10.560.508	17.238.919	24.831.856	16.097.940
Año 25	15.300.781	87.469.874	13.310.457	71.317.321	31.310.824	15.074.000	21.855.492	70.382.519	38.889.462	30.410.789	11.028.813	19.713.650	24.612.169	16.925.998
Año 26	15.259.581	97.835.177	15.499.699	73.395.524	30.286.328	16.438.000	24.072.564	71.699.219	43.337.926	34.700.133	10.912.454	21.882.367	25.277.096	16.638.641
Año 27	15.265.033	102.870.645	17.767.131	72.891.607	29.493.912	17.603.000	26.421.876	73.300.860	48.198.694	38.824.023	10.219.473	23.177.364	24.561.829	14.476.049
Año 28	14.899.597	107.039.456	20.073.554	70.809.276	27.661.496	17.057.777	28.731.972	72.192.780	51.261.574	42.720.023	9.999.052	24.046.953	24.818.113	14.635.888
Año 29	18.859.501	115.229.025	22.383.452	70.653.815	25.278.836	16.384.777	28.054.087	73.728.360	51.116.502	47.417.748	9.805.435	25.438.745	24.939.668	16.943.729
Año 30	21.791.218	120.588.706	25.471.262	71.567.451	25.239.204	15.400.277	28.154.039	75.151.080	52.890.368	50.998.846	9.627.085	25.926.193	25.125.432	16.833.655

A	0,70
B	0,96

Referencia	Año 1	%	% Acum.	Clasific.
PF 25 GR	79.637.054	50,33%	50,33%	A
PF 30 GR Kerr	56.797.178	35,90%	86,23%	B
PF 54 GR	18.285.254	11,56%	97,78%	C
PF 60 GR	2.721.600	1,72%	99,50%	C
PF 47.5 GR	787.249	0,50%	100,00%	C
PF 18 GR	0	0,00%	100,00%	C
PF 22 GR	0	0,00%	100,00%	C
PF 23 GR	0	0,00%	100,00%	C
PF 27 GR	0	0,00%	100,00%	C
PF 28 GR	0	0,00%	100,00%	C
PF 30 GR	0	0,00%	100,00%	C
PF 30.5 GR	0	0,00%	100,00%	C
PF 44 GR	0	0,00%	100,00%	C
PF 52 GR	0	0,00%	100,00%	C
Totales	158.228.335			

Clasificación	Referencias	Participación
A	1	7,14%
B	1	7,14%
C	12	85,71%
Total	14	

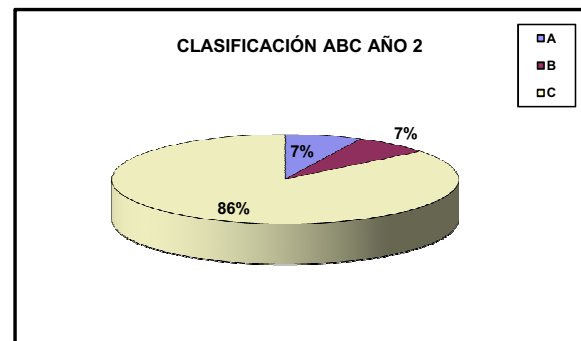


Referencia	Año 2	%	% Acum.	Clasific.
PF 25 GR	79.843.989	48,72%	48,72%	A
PF 30 GR Kerr	59.831.438	36,51%	85,22%	B
PF 54 GR	18.036.342	11,00%	96,23%	C
PF 60 GR	4.578.400	2,79%	99,02%	C
PF 47.5 GR	1.604.774	0,98%	100,00%	C
PF 18 GR	0	0,00%	100,00%	C
PF 22 GR	0	0,00%	100,00%	C
PF 23 GR	0	0,00%	100,00%	C
PF 27 GR	0	0,00%	100,00%	C
PF 28 GR	0	0,00%	100,00%	C
PF 30 GR	0	0,00%	100,00%	C
PF 30.5 GR	0	0,00%	100,00%	C
PF 44 GR	0	0,00%	100,00%	C
PF 52 GR	0	0,00%	100,00%	C
Totales	163.894.943			

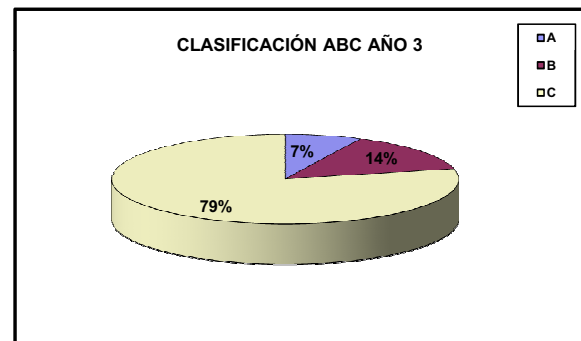
Referencia	Año 3	%	% Acum.	Clasific.
PF 25 GR	81.856.723	47,62%	47,62%	A
PF 30 GR Kerr	63.537.998	36,96%	84,57%	B
PF 54 GR	18.043.186	10,50%	95,07%	B
PF 60 GR	5.795.200	3,37%	98,44%	C
PF 47.5 GR	2.680.036	1,56%	100,00%	C
PF 18 GR	0	0,00%	100,00%	C
PF 22 GR	0	0,00%	100,00%	C
PF 23 GR	0	0,00%	100,00%	C
PF 27 GR	0	0,00%	100,00%	C
PF 28 GR	0	0,00%	100,00%	C
PF 30 GR	0	0,00%	100,00%	C
PF 30.5 GR	0	0,00%	100,00%	C
PF 44 GR	0	0,00%	100,00%	C
PF 52 GR	0	0,00%	100,00%	C
Totales	171.913.143			

Referencia	Año 4	%	% Acum.	Clasific.
PF 25 GR	80.992.388	46,69%	46,69%	A
PF 30 GR Kerr	63.571.478	36,65%	83,34%	B
PF 54 GR	17.659.740	10,18%	93,52%	B
PF 60 GR	7.398.800	4,27%	97,78%	C
PF 47.5 GR	3.847.457	2,22%	100,00%	C
PF 18 GR	0	0,00%	100,00%	C
PF 22 GR	0	0,00%	100,00%	C
PF 23 GR	0	0,00%	100,00%	C
PF 27 GR	0	0,00%	100,00%	C
PF 28 GR	0	0,00%	100,00%	C
PF 30 GR	0	0,00%	100,00%	C
PF 30.5 GR	0	0,00%	100,00%	C
PF 44 GR	0	0,00%	100,00%	C
PF 52 GR	0	0,00%	100,00%	C
Totales	173.469.863			

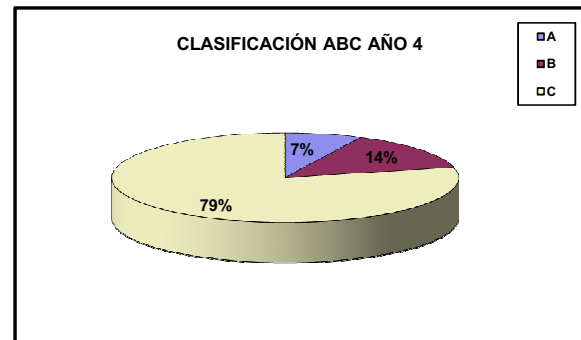
Clasificación	Referencias	Participación
A	1	7,14%
B	1	7,14%
C	12	85,71%
Total	14	



Clasificación	Referencias	Participación
A	1	7,14%
B	2	14,29%
C	11	78,57%
Total	14	



Clasificación	Referencias	Participación
A	1	7,14%
B	2	14,29%
C	11	78,57%
Total	14	

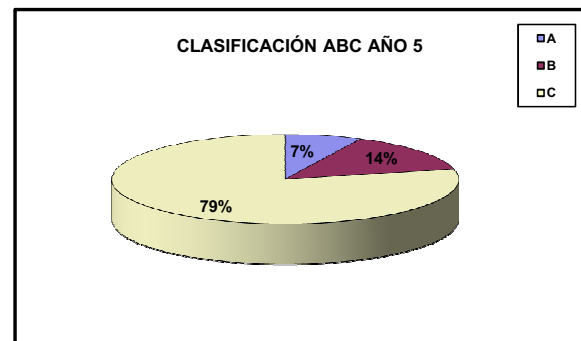


Referencia	Año 5	%	% Acum.	Clasific.
PF 25 GR	80.421.326	45,43%	45,43%	A
PF 30 GR Kerr	64.175.198	36,25%	81,67%	B
PF 54 GR	18.354.394	10,37%	92,04%	B
PF 60 GR	9.388.800	5,30%	97,35%	C
PF 47.5 GR	4.699.961	2,65%	100,00%	C
PF 18 GR	0	0,00%	100,00%	C
PF 22 GR	0	0,00%	100,00%	C
PF 23 GR	0	0,00%	100,00%	C
PF 27 GR	0	0,00%	100,00%	C
PF 28 GR	0	0,00%	100,00%	C
PF 30 GR	0	0,00%	100,00%	C
PF 30.5 GR	0	0,00%	100,00%	C
PF 44 GR	0	0,00%	100,00%	C
PF 52 GR	0	0,00%	100,00%	C
Totales	177.039.679			

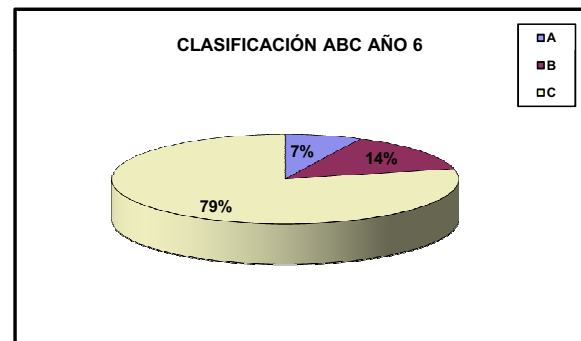
Referencia	Año 6	%	% Acum.	Clasific.
PF 25 GR	78.317.884	43,65%	43,65%	A
PF 30 GR Kerr	63.838.238	35,58%	79,23%	B
PF 54 GR	18.708.203	10,43%	89,66%	B
PF 60 GR	11.517.600	6,42%	96,08%	C
PF 47.5 GR	5.911.070	3,29%	99,37%	C
PF 18 GR	1.126.000	0,63%	100,00%	C
PF 22 GR	0	0,00%	100,00%	C
PF 23 GR	0	0,00%	100,00%	C
PF 27 GR	0	0,00%	100,00%	C
PF 28 GR	0	0,00%	100,00%	C
PF 30 GR	0	0,00%	100,00%	C
PF 30.5 GR	0	0,00%	100,00%	C
PF 44 GR	0	0,00%	100,00%	C
PF 52 GR	0	0,00%	100,00%	C
Totales	179.418.995			

Referencia	Año 7	%	% Acum.	Clasific.
PF 25 GR	76.401.645	42,19%	42,19%	A
PF 30 GR Kerr	64.965.758	35,88%	78,07%	B
PF 54 GR	18.134.027	10,01%	88,08%	B
PF 60 GR	12.478.800	6,89%	94,97%	B
PF 47.5 GR	6.793.370	3,75%	98,72%	C
PF 18 GR	2.310.000	1,28%	100,00%	C
PF 22 GR	0	0,00%	100,00%	C
PF 23 GR	0	0,00%	100,00%	C
PF 27 GR	0	0,00%	100,00%	C
PF 28 GR	0	0,00%	100,00%	C
PF 30 GR	0	0,00%	100,00%	C
PF 30.5 GR	0	0,00%	100,00%	C
PF 44 GR	0	0,00%	100,00%	C
PF 52 GR	0	0,00%	100,00%	C
Totales	181.083.600			

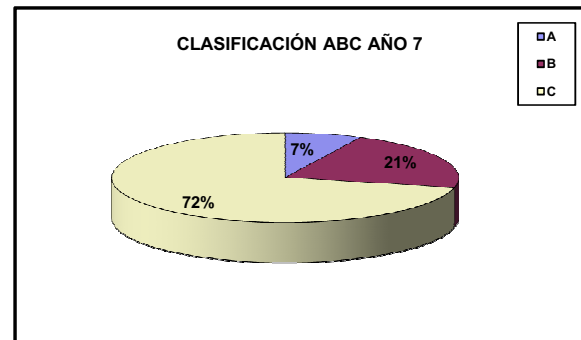
Clasificación	Referencias	Participación
A	1	7,14%
B	2	14,29%
C	11	78,57%
Total	14	



Clasificación	Referencias	Participación
A	1	7,14%
B	2	14,29%
C	11	78,57%
Total	14	



Clasificación	Referencias	Participación
A	1	7,14%
B	3	21,43%
C	10	78,43%
Total	14	

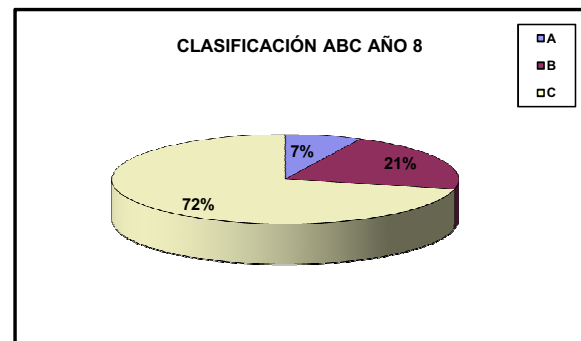


Referencia	Año 8	%	% Acum.	Clasific.
PF 25 GR	76.953.869	41,58%	41,58%	A
PF 30 GR Kerr	64.340.078	34,77%	76,35%	B
PF 54 GR	18.364.008	9,92%	86,27%	B
PF 60 GR	14.423.200	7,79%	94,07%	B
PF 47.5 GR	7.503.096	4,05%	98,12%	C
PF 18 GR	3.478.000	1,88%	100,00%	C
PF 22 GR	0	0,00%	100,00%	C
PF 23 GR	0	0,00%	100,00%	C
PF 27 GR	0	0,00%	100,00%	C
PF 28 GR	0	0,00%	100,00%	C
PF 30 GR	0	0,00%	100,00%	C
PF 30.5 GR	0	0,00%	100,00%	C
PF 44 GR	0	0,00%	100,00%	C
PF 52 GR	0	0,00%	100,00%	C
Totales	185.062.251			

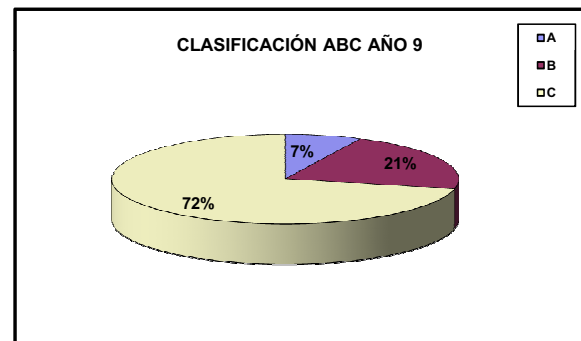
Referencia	Año 9	%	% Acum.	Clasific.
PF 25 GR	79.258.115	42,01%	42,01%	A
PF 30 GR Kerr	63.116.078	33,45%	75,46%	B
PF 54 GR	18.198.133	9,65%	85,11%	B
PF 60 GR	15.151.200	8,03%	93,14%	B
PF 47.5 GR	8.291.178	4,39%	97,53%	C
PF 18 GR	4.660.000	2,47%	100,00%	C
PF 22 GR	0	0,00%	100,00%	C
PF 23 GR	0	0,00%	100,00%	C
PF 27 GR	0	0,00%	100,00%	C
PF 28 GR	0	0,00%	100,00%	C
PF 30 GR	0	0,00%	100,00%	C
PF 30.5 GR	0	0,00%	100,00%	C
PF 44 GR	0	0,00%	100,00%	C
PF 52 GR	0	0,00%	100,00%	C
Totales	188.674.704			

Referencia	Año 10	%	% Acum.	Clasific.
PF 25 GR	81.060.378	41,70%	41,70%	A
PF 30 GR Kerr	62.759.678	32,29%	73,99%	B
PF 54 GR	18.270.142	9,40%	83,39%	B
PF 60 GR	17.074.800	8,78%	92,17%	B
PF 47.5 GR	9.395.057	4,83%	97,01%	C
PF 18 GR	5.816.000	2,99%	100,00%	C
PF 22 GR	0	0,00%	100,00%	C
PF 23 GR	0	0,00%	100,00%	C
PF 27 GR	0	0,00%	100,00%	C
PF 28 GR	0	0,00%	100,00%	C
PF 30 GR	0	0,00%	100,00%	C
PF 30.5 GR	0	0,00%	100,00%	C
PF 44 GR	0	0,00%	100,00%	C
PF 52 GR	0	0,00%	100,00%	C
Totales	194.376.055			

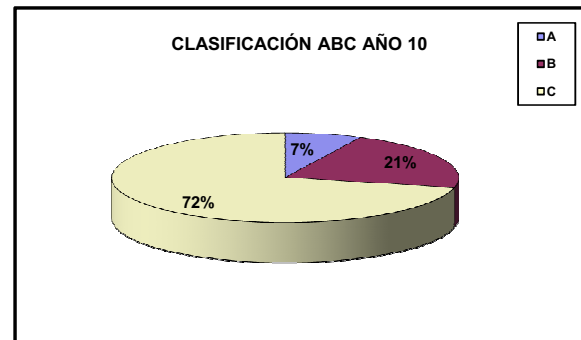
Clasificación	Referencias	Participación
A	1	7,14%
B	3	21,43%
C	10	71,43%
Total	14	



Clasificación	Referencias	Participación
A	1	7,14%
B	3	21,43%
C	10	71,43%
Total	14	



Clasificación	Referencias	Participación
A	1	7,14%
B	3	21,43%
C	10	71,43%
Total	14	

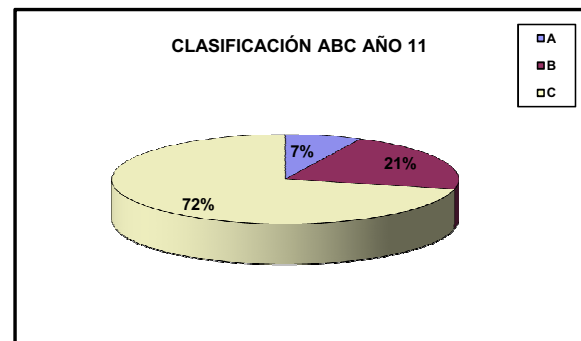


Referencia	Año 11	%	% Acum.	Clasific.
PF 25 GR	82.004.310	40,49%	40,49%	A
PF 30 GR Kerr	65.187.878	32,19%	72,68%	B
PF 60 GR	19.331.200	9,54%	82,22%	B
PF 54 GR	18.512.919	9,14%	91,36%	B
PF 47.5 GR	10.512.309	5,19%	96,55%	C
PF 18 GR	6.986.000	3,45%	100,00%	C
PF 22 GR	0	0,00%	100,00%	C
PF 23 GR	0	0,00%	100,00%	C
PF 27 GR	0	0,00%	100,00%	C
PF 28 GR	0	0,00%	100,00%	C
PF 30 GR	0	0,00%	100,00%	C
PF 30.5 GR	0	0,00%	100,00%	C
PF 44 GR	0	0,00%	100,00%	C
PF 52 GR	0	0,00%	100,00%	C
Totales	202.534.616			

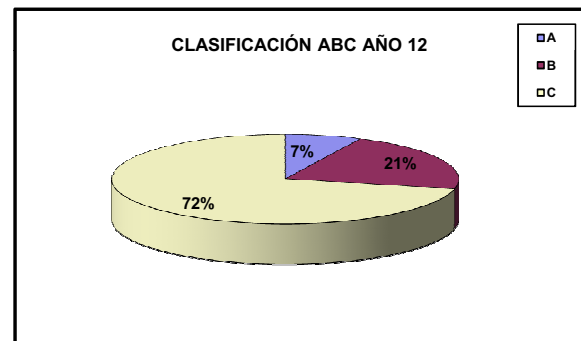
Referencia	Año 12	%	% Acum.	Clasific.
PF 25 GR	83.275.456	39,40%	39,40%	A
PF 30 GR Kerr	68.454.558	32,39%	71,79%	B
PF 60 GR	20.233.200	9,57%	81,36%	B
PF 54 GR	20.132.884	9,53%	90,88%	B
PF 47.5 GR	10.965.138	5,19%	96,07%	C
PF 18 GR	8.306.000	3,93%	100,00%	C
PF 22 GR	0	0,00%	100,00%	C
PF 23 GR	0	0,00%	100,00%	C
PF 27 GR	0	0,00%	100,00%	C
PF 28 GR	0	0,00%	100,00%	C
PF 30 GR	0	0,00%	100,00%	C
PF 30.5 GR	0	0,00%	100,00%	C
PF 44 GR	0	0,00%	100,00%	C
PF 52 GR	0	0,00%	100,00%	C
Totales	211.367.236			

Referencia	Año 13	%	% Acum.	Clasific.
PF 25 GR	84.251.465	39,23%	39,23%	A
PF 30 GR Kerr	71.393.580	33,24%	72,47%	B
PF 54 GR	21.073.210	9,81%	82,28%	B
PF 60 GR	17.845.200	8,31%	90,59%	B
PF 47.5 GR	10.677.039	4,97%	95,56%	B
PF 18 GR	9.530.000	4,44%	100,00%	C
PF 22 GR	0	0,00%	100,00%	C
PF 23 GR	0	0,00%	100,00%	C
PF 27 GR	0	0,00%	100,00%	C
PF 28 GR	0	0,00%	100,00%	C
PF 30 GR	0	0,00%	100,00%	C
PF 30.5 GR	0	0,00%	100,00%	C
PF 44 GR	0	0,00%	100,00%	C
PF 52 GR	0	0,00%	100,00%	C
Totales	214.770.494			

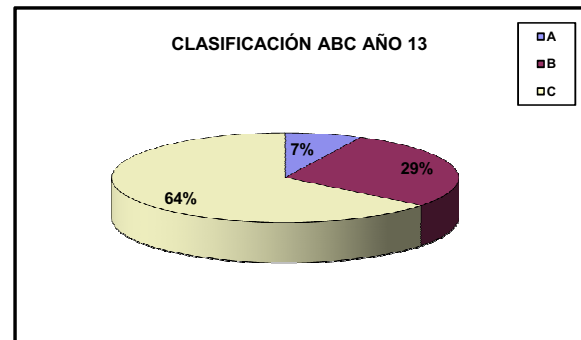
Clasificación	Referencias	Participación
A	1	7,14%
B	3	21,43%
C	10	71,43%
Total	14	



Clasificación	Referencias	Participación
A	1	7,14%
B	3	21,43%
C	10	71,43%
Total	14	



Clasificación	Referencias	Participación
A	1	7,14%
B	4	28,57%
C	9	64,29%
Total	14	

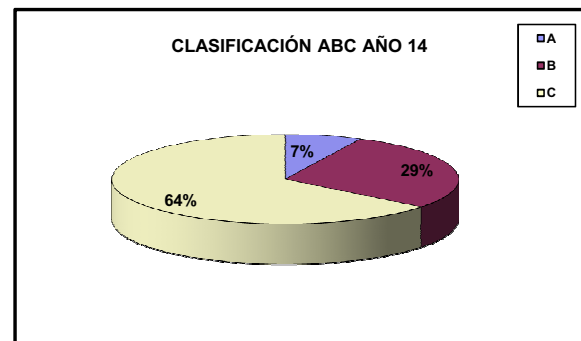


Referencia	Año 14	%	% Acum.	Clasific.
PF 25 GR	80.894.716	37,89%	37,89%	A
PF 30 GR Kerr	69.357.600	32,49%	70,38%	B
PF 54 GR	21.474.736	10,06%	80,44%	B
PF 60 GR	17.333.200	8,12%	88,56%	B
PF 47.5 GR	10.800.873	5,06%	93,62%	B
PF 18 GR	10.644.000	4,99%	98,60%	C
PF 27 GR	2.979.504	1,40%	100,00%	C
PF 22 GR	0	0,00%	100,00%	C
PF 23 GR	0	0,00%	100,00%	C
PF 28 GR	0	0,00%	100,00%	C
PF 30 GR	0	0,00%	100,00%	C
PF 30.5 GR	0	0,00%	100,00%	C
PF 44 GR	0	0,00%	100,00%	C
PF 52 GR	0	0,00%	100,00%	C
Totales	213.484.629			

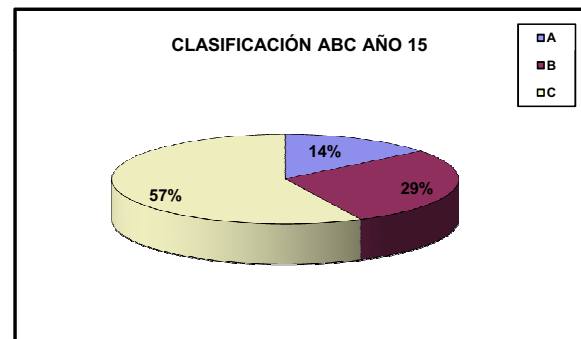
Referencia	Año 15	%	% Acum.	Clasific.
PF 25 GR	79.871.596	36,01%	36,01%	A
PF 30 GR Kerr	66.517.559	29,99%	66,00%	A
PF 54 GR	22.583.224	10,18%	76,18%	B
PF 60 GR	19.260.000	8,68%	84,86%	B
PF 18 GR	11.840.000	5,34%	90,20%	B
PF 47.5 GR	11.308.592	5,10%	95,30%	B
PF 27 GR	5.684.496	2,56%	97,86%	C
PF 22 GR	3.407.616	1,54%	99,40%	C
PF 52 GR	1.341.728	0,60%	100,00%	C
PF 23 GR	0	0,00%	100,00%	C
PF 28 GR	0	0,00%	100,00%	C
PF 30 GR	0	0,00%	100,00%	C
PF 30.5 GR	0	0,00%	100,00%	C
PF 44 GR	0	0,00%	100,00%	C
Totales	221.814.811			

Referencia	Año 16	%	% Acum.	Clasific.
PF 25 GR	81.770.459	34,47%	34,47%	A
PF 30 GR Kerr	67.167.359	28,31%	62,78%	A
PF 54 GR	22.948.997	9,67%	72,45%	B
PF 60 GR	18.432.400	7,77%	80,22%	B
PF 18 GR	13.510.000	5,69%	85,92%	B
PF 47.5 GR	11.087.270	4,67%	90,59%	B
PF 22 GR	9.195.352	3,88%	94,47%	B
PF 27 GR	8.658.192	3,65%	98,11%	C
PF 52 GR	2.637.581	1,11%	99,23%	C
PF 28 GR	1.835.000	0,77%	100,00%	C
PF 23 GR	0	0,00%	100,00%	C
PF 30 GR	0	0,00%	100,00%	C
PF 30.5 GR	0	0,00%	100,00%	C
PF 44 GR	0	0,00%	100,00%	C
Totales	237.242.610			

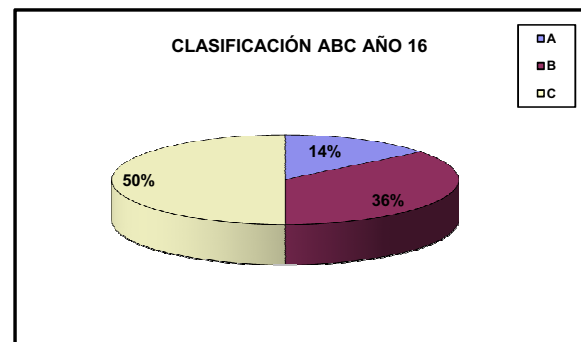
Clasificación	Referencias	Participación
A	1	7,14%
B	4	28,57%
C	9	64,29%
Total	14	



Clasificación	Referencias	Participación
A	2	14,29%
B	4	28,57%
C	8	57,14%
Total	14	



Clasificación	Referencias	Participación
A	2	14,29%
B	5	35,71%
C	7	50,00%
Total	14	

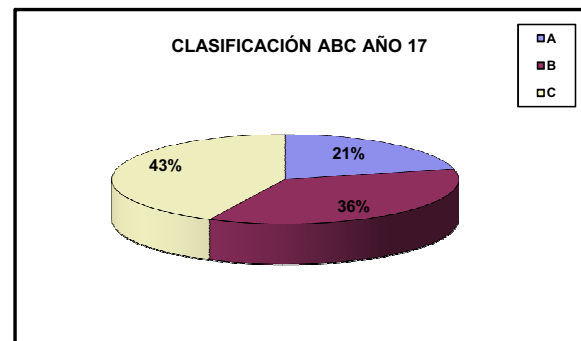


Referencia	Año 17	%	% Acum.	Clasific.
PF 25 GR	82.038.281	31,94%	31,94%	A
PF 30 GR Kerr	66.859.919	26,03%	57,97%	A
PF 54 GR	22.256.679	8,66%	66,63%	A
PF 60 GR	16.680.800	6,49%	73,13%	B
PF 18 GR	15.086.000	5,87%	79,00%	B
PF 22 GR	14.958.659	5,82%	84,82%	B
PF 27 GR	12.919.728	5,03%	89,85%	B
PF 47.5 GR	11.340.383	4,41%	94,27%	B
PF 30.5 GR	4.777.600	1,86%	96,13%	C
PF 52 GR	3.913.042	1,52%	97,65%	C
PF 28 GR	3.471.500	1,35%	99,00%	C
PF 30 GR	2.561.792	1,00%	100,00%	C
PF 23 GR	0	0,00%	100,00%	C
PF 44 GR	0	0,00%	100,00%	C
Totales	256.864.383			

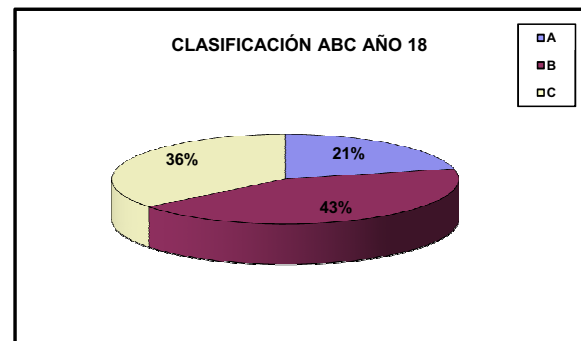
Referencia	Año 18	%	% Acum.	Clasific.
PF 25 GR	81.370.522	29,94%	29,94%	A
PF 30 GR Kerr	66.008.879	24,29%	54,24%	A
PF 54 GR	22.615.101	8,32%	62,56%	A
PF 22 GR	21.124.984	7,77%	70,33%	B
PF 60 GR	16.008.000	5,89%	76,22%	B
PF 18 GR	15.322.000	5,64%	81,86%	B
PF 27 GR	14.919.728	5,49%	87,35%	B
PF 47.5 GR	11.087.769	4,08%	91,43%	B
PF 30.5 GR	7.302.480	2,69%	94,12%	B
PF 52 GR	5.390.885	1,98%	96,10%	C
PF 28 GR	5.323.000	1,96%	98,06%	C
PF 30 GR	5.264.032	1,94%	100,00%	C
PF 23 GR	0	0,00%	100,00%	C
PF 44 GR	0	0,00%	100,00%	C
Totales	271.737.380			

Referencia	Año 19	%	% Acum.	Clasific.
PF 25 GR	81.801.941	27,89%	27,89%	A
PF 30 GR Kerr	64.346.399	21,94%	49,82%	A
PF 22 GR	27.455.383	9,36%	59,18%	A
PF 54 GR	23.228.321	7,92%	67,10%	A
PF 27 GR	18.172.208	6,20%	73,30%	B
PF 60 GR	16.286.000	5,55%	78,85%	B
PF 18 GR	15.236.000	5,19%	84,04%	B
PF 47.5 GR	10.985.156	3,74%	87,79%	B
PF 30.5 GR	10.167.200	3,47%	91,25%	B
PF 52 GR	6.874.069	2,34%	93,60%	B
PF 30 GR	6.598.288	2,25%	95,85%	B
PF 28 GR	6.548.000	2,23%	98,08%	C
PF 44 GR	4.000.000	1,36%	99,44%	C
PF 23 GR	1.636.944	0,56%	100,00%	C
Totales	293.335.909			

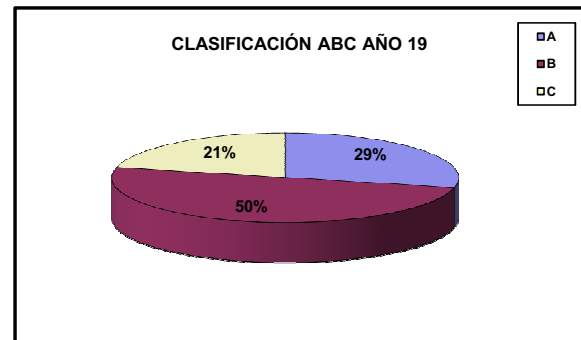
Clasificación	Referencias	Participación
A	3	21,43%
B	5	35,71%
C	6	42,86%
Total	14	



Clasificación	Referencias	Participación
A	3	21,43%
B	6	42,86%
C	5	35,71%
Total	14	



Clasificación	Referencias	Participación
A	4	28,57%
B	7	50,00%
C	3	21,43%
Total	14	

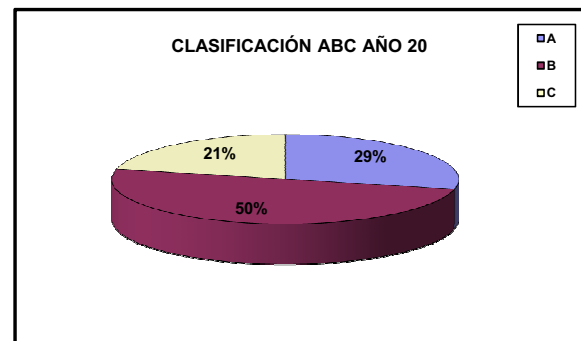


Referencia	Año 20	%	% Acum.	Clasific.
PF 25 GR	79.623.582	24,79%	24,79%	A
PF 30 GR Kerr	67.242.959	20,94%	45,73%	A
PF 22 GR	34.642.207	10,79%	56,52%	A
PF 54 GR	23.373.135	7,28%	63,80%	A
PF 27 GR	20.508.560	6,39%	70,19%	B
PF 60 GR	16.185.814	5,04%	75,23%	B
PF 30.5 GR	15.648.480	4,87%	80,10%	B
PF 18 GR	15.330.500	4,77%	84,87%	B
PF 47.5 GR	10.994.602	3,42%	88,30%	B
PF 30 GR	9.582.256	2,98%	91,28%	B
PF 44 GR	8.950.000	2,79%	94,07%	B
PF 52 GR	8.220.839	2,56%	96,63%	C
PF 28 GR	8.073.000	2,51%	99,14%	C
PF 23 GR	2.756.018	0,86%	100,00%	C
Totales	321.131.952			

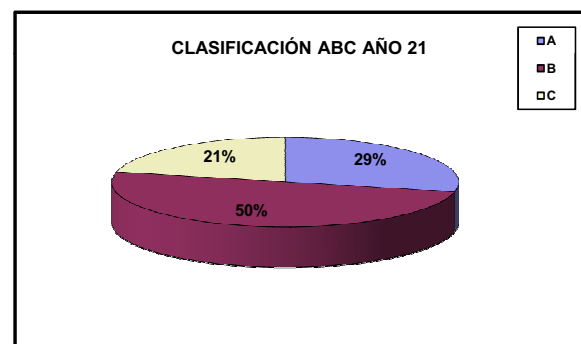
Referencia	Año 21	%	% Acum.	Clasific.
PF 25 GR	78.725.327	22,36%	22,36%	A
PF 30 GR Kerr	70.361.999	19,99%	42,35%	A
PF 22 GR	43.127.376	12,25%	54,61%	A
PF 54 GR	24.364.554	6,92%	61,53%	A
PF 27 GR	24.004.872	6,82%	68,35%	A
PF 30.5 GR	19.215.840	5,46%	73,81%	B
PF 60 GR	16.297.226	4,63%	78,44%	B
PF 18 GR	15.438.000	4,39%	82,82%	B
PF 44 GR	13.530.000	3,84%	86,66%	B
PF 30 GR	12.093.220	3,44%	90,10%	B
PF 47.5 GR	10.923.222	3,10%	93,20%	B
PF 52 GR	10.314.563	2,93%	96,13%	C
PF 28 GR	9.558.000	2,72%	98,85%	C
PF 23 GR	4.051.642	1,15%	100,00%	C
Totales	352.005.841			

Referencia	Año 22	%	% Acum.	Clasific.
PF 25 GR	75.664.830	19,99%	19,99%	A
PF 30 GR Kerr	73.371.599	19,38%	39,37%	A
PF 22 GR	52.785.109	13,94%	53,31%	A
PF 27 GR	25.610.792	6,76%	60,07%	A
PF 30.5 GR	25.244.832	6,67%	66,74%	A
PF 54 GR	25.083.641	6,63%	73,37%	B
PF 60 GR	16.720.678	4,42%	77,78%	B
PF 44 GR	16.155.770	4,27%	82,05%	B
PF 18 GR	15.309.892	4,04%	86,10%	B
PF 30 GR	14.612.388	3,86%	89,96%	B
PF 52 GR	11.391.117	3,01%	92,96%	B
PF 28 GR	10.894.000	2,88%	95,84%	B
PF 47.5 GR	10.576.066	2,79%	98,64%	C
PF 23 GR	5.165.029	1,36%	100,00%	C
Totales	378.585.743			

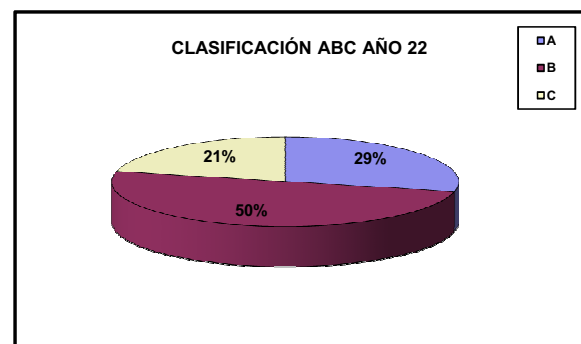
Clasificación	Referencias	Participación
A	4	28,57%
B	7	50,00%
C	3	21,43%
Total	14	



Clasificación	Referencias	Participación
A	5	35,71%
B	6	42,86%
C	3	21,43%
Total	14	



Clasificación	Referencias	Participación
A	5	35,71%
B	7	50,00%
C	2	14,29%
Total	14	

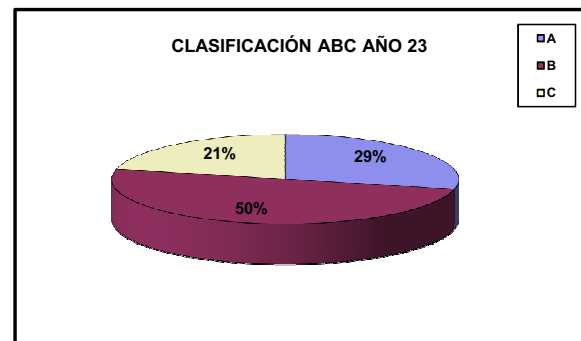


Referencia	Año 23	%	% Acum.	Clasific.
PF 25 GR	74.883.473	18,38%	18,38%	A
PF 30 GR Kerr	71.517.959	17,55%	35,93%	A
PF 22 GR	65.546.942	16,08%	52,01%	A
PF 30.5 GR	29.417.088	7,22%	59,23%	A
PF 27 GR	27.309.640	6,70%	65,93%	A
PF 54 GR	25.526.517	6,26%	72,19%	B
PF 44 GR	21.301.101	5,23%	77,42%	B
PF 30 GR	16.821.252	4,13%	81,55%	B
PF 60 GR	15.856.010	3,89%	85,44%	B
PF 18 GR	15.817.876	3,88%	89,32%	B
PF 52 GR	13.800.160	3,39%	92,71%	B
PF 28 GR	12.654.000	3,11%	95,81%	B
PF 47.5 GR	10.187.737	2,50%	98,31%	C
PF 23 GR	6.870.876	1,69%	100,00%	C
Totales	407.510.631			

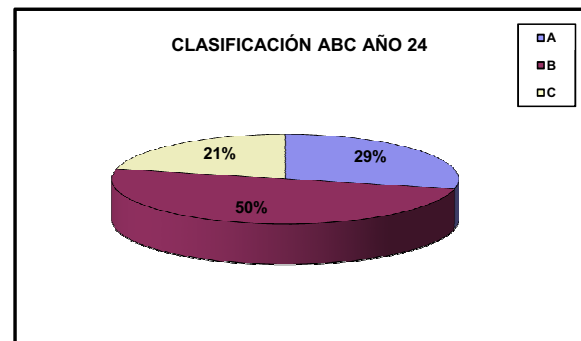
Referencia	Año 24	%	% Acum.	Clasific.
PF 22 GR	75.904.455	17,42%	17,42%	A
PF 25 GR	72.403.230	16,62%	34,04%	A
PF 30 GR Kerr	69.746.399	16,01%	50,05%	A
PF 30.5 GR	34.215.366	7,85%	57,90%	A
PF 27 GR	30.008.072	6,89%	64,79%	A
PF 44 GR	25.758.901	5,91%	70,70%	B
PF 54 GR	24.831.856	5,70%	76,40%	B
PF 30 GR	19.576.404	4,49%	80,89%	B
PF 52 GR	17.238.919	3,96%	84,85%	B
PF 60 GR	16.097.940	3,69%	88,55%	B
PF 18 GR	15.442.657	3,54%	92,09%	B
PF 28 GR	14.042.000	3,22%	95,31%	B
PF 47.5 GR	10.560.508	2,42%	97,74%	C
PF 23 GR	9.856.103	2,26%	100,00%	C
Totales	435.682.810			

Referencia	Año 25	%	% Acum.	Clasific.
PF 22 GR	87.469.874	18,71%	18,71%	A
PF 25 GR	71.317.321	15,25%	33,96%	A
PF 30 GR Kerr	70.382.519	15,05%	49,01%	A
PF 30.5 GR	38.889.462	8,32%	57,33%	A
PF 27 GR	31.310.824	6,70%	64,02%	A
PF 44 GR	30.410.789	6,50%	70,53%	B
PF 54 GR	24.612.169	5,26%	75,79%	B
PF 30 GR	21.855.492	4,67%	80,46%	B
PF 52 GR	19.713.650	4,22%	84,68%	B
PF 60 GR	16.925.998	3,62%	88,30%	B
PF 18 GR	15.300.781	3,27%	91,57%	B
PF 28 GR	15.074.000	3,22%	94,79%	B
PF 23 GR	13.310.457	2,85%	97,64%	C
PF 47.5 GR	11.028.813	2,36%	100,00%	C
Totales	467.602.149			

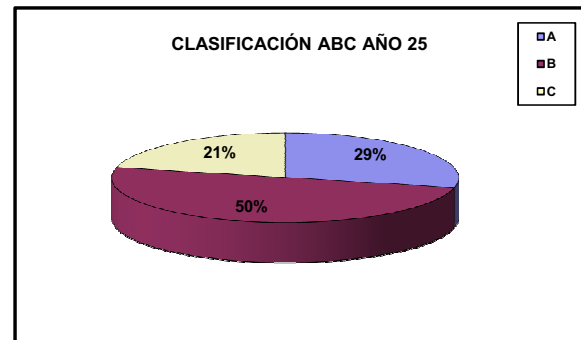
Clasificación	Referencias	Participación
A	5	35,71%
B	7	50,00%
C	2	14,29%
Total	14	



Clasificación	Referencias	Participación
A	5	35,71%
B	7	50,00%
C	2	14,29%
Total	14	



Clasificación	Referencias	Participación
A	5	35,71%
B	7	50,00%
C	2	14,29%
Total	14	

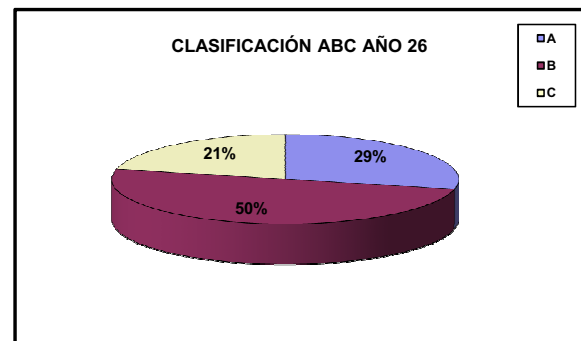


Referencia	Año 26	%	% Acum.	Clasific.
PF 22 GR	97.835.177	19,68%	19,68%	A
PF 25 GR	73.395.524	14,76%	34,44%	A
PF 30 GR Kerr	71.699.219	14,42%	48,86%	A
PF 30.5 GR	43.337.926	8,72%	57,57%	A
PF 44 GR	34.700.133	6,98%	64,55%	A
PF 27 GR	30.286.328	6,09%	70,64%	B
PF 54 GR	25.277.096	5,08%	75,73%	B
PF 30 GR	24.072.564	4,84%	80,57%	B
PF 52 GR	21.882.367	4,40%	84,97%	B
PF 60 GR	16.638.641	3,35%	88,31%	B
PF 28 GR	16.438.000	3,31%	91,62%	B
PF 23 GR	15.499.699	3,12%	94,74%	B
PF 18 GR	15.259.581	3,07%	97,81%	C
PF 47.5 GR	10.912.454	2,19%	100,00%	C
Totales	497.234.709			

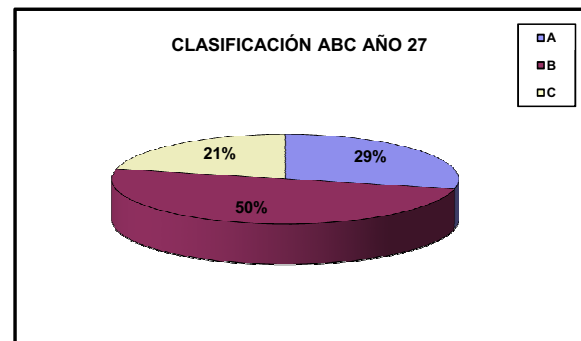
Referencia	Año 27	%	% Acum.	Clasific.
PF 22 GR	102.870.645	19,97%	19,97%	A
PF 30 GR Kerr	73.300.860	14,23%	34,20%	A
PF 25 GR	72.891.607	14,15%	48,36%	A
PF 30.5 GR	48.198.694	9,36%	57,71%	A
PF 44 GR	38.824.023	7,54%	65,25%	A
PF 27 GR	29.493.912	5,73%	70,98%	B
PF 30 GR	26.421.876	5,13%	76,11%	B
PF 54 GR	24.561.829	4,77%	80,87%	B
PF 52 GR	23.177.364	4,50%	85,37%	B
PF 23 GR	17.767.131	3,45%	88,82%	B
PF 28 GR	17.603.000	3,42%	92,24%	B
PF 18 GR	15.265.033	2,96%	95,21%	B
PF 60 GR	14.476.049	2,81%	98,02%	C
PF 47.5 GR	10.219.473	1,98%	100,00%	C
Totales	515.071.496			

Referencia	Año 28	%	% Acum.	Clasific.
PF 22 GR	107.039.456	20,35%	20,35%	A
PF 30 GR Kerr	72.192.780	13,73%	34,08%	A
PF 25 GR	70.809.276	13,46%	47,54%	A
PF 30.5 GR	51.261.574	9,75%	57,29%	A
PF 44 GR	42.720.023	8,12%	65,41%	A
PF 30 GR	28.731.972	5,46%	70,87%	B
PF 27 GR	27.661.496	5,26%	76,13%	B
PF 54 GR	24.818.113	4,72%	80,85%	B
PF 52 GR	24.046.953	4,57%	85,42%	B
PF 23 GR	20.073.554	3,82%	89,24%	B
PF 28 GR	17.057.777	3,24%	92,48%	B
PF 18 GR	14.899.597	2,83%	95,32%	B
PF 60 GR	14.635.888	2,78%	98,10%	C
PF 47.5 GR	9.999.052	1,90%	100,00%	C
Totales	525.947.511			

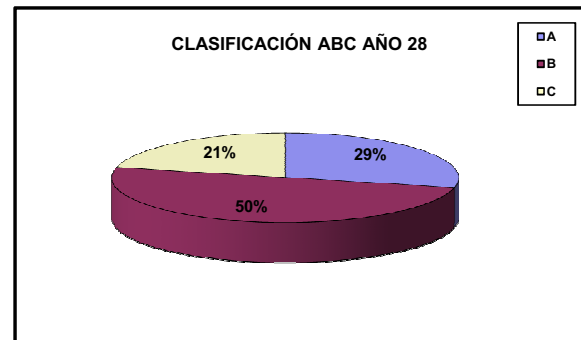
Clasificación	Referencias	Participación
A	5	35,71%
B	7	50,00%
C	2	14,29%
Total	14	



Clasificación	Referencias	Participación
A	5	35,71%
B	7	50,00%
C	2	14,29%
Total	14	

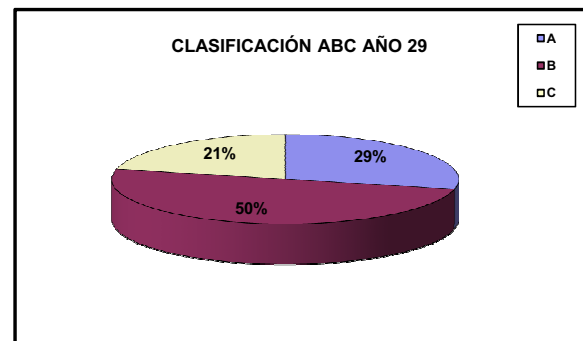


Clasificación	Referencias	Participación
A	5	35,71%
B	7	50,00%
C	2	14,29%
Total	14	



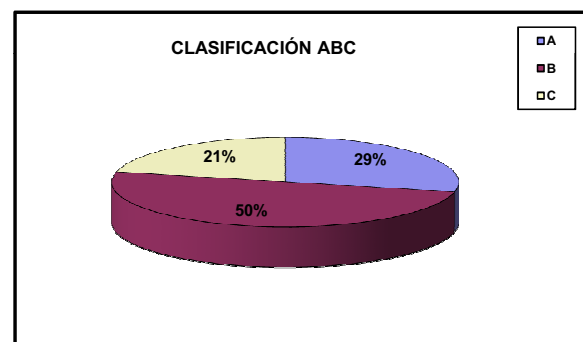
Referencia	Año 29	%	% Acum.	Clasific.
PF 22 GR	115.229.025	21,10%	21,10%	A
PF 30 GR Kerr	73.728.360	13,50%	34,59%	A
PF 25 GR	70.653.815	12,93%	47,53%	A
PF 30.5 GR	51.116.502	9,36%	56,89%	A
PF 44 GR	47.417.748	8,68%	65,57%	A
PF 30 GR	28.054.087	5,14%	70,70%	B
PF 52 GR	25.438.745	4,66%	75,36%	B
PF 27 GR	25.278.836	4,63%	79,99%	B
PF 54 GR	24.939.668	4,57%	84,55%	B
PF 23 GR	22.383.452	4,10%	88,65%	B
PF 18 GR	18.859.501	3,45%	92,10%	B
PF 60 GR	16.943.729	3,10%	95,21%	B
PF 28 GR	16.384.777	3,00%	98,20%	C
PF 47.5 GR	9.805.435	1,80%	100,00%	C
Totales	546.233.680			

Clasificación	Referencias	Participación
A	5	35,71%
B	7	50,00%
C	2	14,29%
Total	14	



Referencia	Año 30	%	% Acum.	Clasific.
PF 22 GR	120.588.706	21,35%	21,35%	A
PF 30 GR Kerr	75.151.080	13,31%	34,66%	A
PF 25 GR	71.567.451	12,67%	47,33%	A
PF 30.5 GR	52.890.368	9,37%	56,70%	A
PF 44 GR	50.998.846	9,03%	65,73%	A
PF 30 GR	28.154.039	4,99%	70,71%	B
PF 52 GR	25.926.193	4,59%	75,30%	B
PF 23 GR	25.471.262	4,51%	79,81%	B
PF 27 GR	25.239.204	4,47%	84,28%	B
PF 54 GR	25.125.432	4,45%	88,73%	B
PF 18 GR	21.791.218	3,86%	92,59%	B
PF 60 GR	16.833.655	2,98%	95,57%	B
PF 28 GR	15.400.277	2,73%	98,30%	C
PF 47.5 GR	9.627.085	1,70%	100,00%	C
Totales	564.764.816			

Clasificación	Referencias	Participación
A	5	35,71%
B	7	50,00%
C	2	14,29%
Total	14	



Referencia	Demanda Año 1		Demanda Año 2		Demanda Año 3		Año 4		Año 5		Año 6		Año 7	
	Clasificación	%	Clasificación	%	Clasificación	%	Clasificación	%	Clasificación	%	Clasificación	%	Clasificación	%
PF 18 GR	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,63%	C	1,28%
PF 22 GR	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%
PF 23 GR	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%
PF 25 GR	A	50,33%	A	48,72%	A	47,62%	A	46,69%	A	45,43%	A	43,65%	A	42,19%
PF 27 GR	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%
PF 28 GR	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%
PF 30 GR	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%
PF 30 GR Kerr	B	35,90%	B	36,51%	B	36,96%	B	36,65%	B	36,25%	B	35,58%	B	35,88%
PF 30.5 GR	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%
PF 44 GR	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%
PF 47.5 GR	C	0,50%	C	0,98%	C	1,56%	C	2,22%	C	2,65%	C	3,29%	C	3,75%
PF 52 GR	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%
PF 54 GR	C	11,56%	C	11,00%	B	10,50%	B	10,18%	B	10,37%	B	10,43%	B	10,01%
PF 60 GR	C	1,72%	C	2,79%	C	3,37%	C	4,27%	C	5,30%	C	6,42%	B	6,89%

Referencia	Año 8		Año 9		Año 10		Año 11		Año 12		Año 13		Año 14	
	Clasificación	%	Clasificación	%	Clasificación	%	Clasificación	%	Clasificación	%	Clasificación	%	Clasificación	%
PF 18 GR	C	1,88%	C	2,47%	C	2,99%	C	3,45%	C	3,93%	C	4,44%	C	4,99%
PF 22 GR	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%
PF 23 GR	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%
PF 25 GR	A	41,58%	A	42,01%	A	41,70%	A	40,49%	A	39,40%	A	39,23%	A	37,89%
PF 27 GR	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	1,40%
PF 28 GR	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%
PF 30 GR	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%
PF 30 GR Kerr	B	34,77%	B	33,45%	B	32,29%	B	32,19%	B	32,39%	B	33,24%	B	32,49%
PF 30.5 GR	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%
PF 44 GR	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%
PF 47.5 GR	C	4,05%	C	4,39%	C	4,83%	C	5,19%	C	5,19%	B	4,97%	B	5,06%
PF 52 GR	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,00%
PF 54 GR	B	9,92%	B	9,65%	B	9,40%	B	9,14%	B	9,53%	B	9,81%	B	10,06%
PF 60 GR	B	7,79%	B	8,03%	B	8,78%	B	9,54%	B	9,57%	B	8,31%	B	8,12%

Referencia	Año 15		Año 16		Año 17		Año 18		Año 19		Año 20		Año 21	
	Clasificación	%	Clasificación	%	Clasificación	%	Clasificación	%	Clasificación	%	Clasificación	%	Clasificación	%
PF 18 GR	B	5,34%	B	5,69%	B	5,87%	B	5,64%	B	5,19%	B	4,77%	B	4,39%
PF 22 GR	C	1,54%	B	3,88%	B	5,82%	B	7,77%	A	9,36%	A	10,79%	A	12,25%
PF 23 GR	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	0,56%	C	0,86%	C	1,15%
PF 25 GR	A	36,01%	A	34,47%	A	31,94%	A	29,94%	A	27,89%	A	24,79%	A	22,36%
PF 27 GR	C	2,56%	C	3,65%	B	5,03%	B	5,49%	B	6,20%	B	6,39%	A	6,82%
PF 28 GR	C	0,00%	C	0,77%	C	1,35%	C	1,96%	C	2,23%	C	2,51%	C	2,72%
PF 30 GR	C	0,00%	C	0,00%	C	1,00%	C	1,94%	B	2,25%	B	2,98%	B	3,44%
PF 30 GR Kerr	A	29,99%	A	28,31%	A	26,03%	A	24,29%	A	21,94%	A	20,94%	A	19,99%
PF 30.5 GR	C	0,00%	C	0,00%	C	1,86%	B	2,69%	B	3,47%	B	4,87%	B	5,46%
PF 44 GR	C	0,00%	C	0,00%	C	0,00%	C	0,00%	C	1,36%	B	2,79%	B	3,84%
PF 47.5 GR	B	5,10%	B	4,67%	B	4,41%	B	4,08%	B	3,74%	B	3,42%	B	3,10%
PF 52 GR	C	0,60%	C	1,11%	C	1,52%	C	1,98%	B	2,34%	C	2,56%	C	2,93%
PF 54 GR	B	10,18%	B	9,67%	A	8,66%	A	8,32%	A	7,92%	A	7,28%	A	6,92%
PF 60 GR	B	8,68%	B	7,77%	B	6,49%	B	5,89%	B	5,55%	B	5,04%	B	4,63%

Referencia	Año 22		Año 23		Año 24		Año 25		Año 26		Año 27		Año 28	
	Clasificación	%	Clasificación	%	Clasificación	%	Clasificación	%	Clasificación	%	Clasificación	%	Clasificación	%
PF 18 GR	B	4,04%	B	3,88%	B	3,54%	B	3,27%	C	3,07%	B	2,96%	B	2,83%
PF 22 GR	A	13,94%	A	16,08%	A	17,42%	A	18,71%	A	19,68%	A	19,97%	A	20,35%
PF 23 GR	C	1,36%	C	1,69%	C	2,26%	C	2,85%	B	3,12%	B	3,45%	B	3,82%
PF 25 GR	A	19,99%	A	18,38%	A	16,62%	A	15,25%	A	14,76%	A	14,15%	A	13,46%
PF 27 GR	A	6,76%	A	6,70%	A	6,89%	A	6,70%	B	6,09%	B	5,73%	B	5,26%
PF 28 GR	B	2,88%	B	3,11%	B	3,22%	B	3,22%	B	3,31%	B	3,42%	B	3,24%
PF 30 GR	B	3,86%	B	4,13%	B	4,49%	B	4,67%	B	4,84%	B	5,13%	B	5,46%
PF 30 GR Kerr	A	19,38%	A	17,55%	A	16,01%	A	15,05%	A	14,42%	A	14,23%	A	13,73%
PF 30.5 GR	A	6,67%	A	7,22%	A	7,85%	A	8,32%	A	8,72%	A	9,36%	A	9,75%
PF 44 GR	B	4,27%	B	5,23%	B	5,91%	B	6,50%	A	6,98%	A	7,54%	A	8,12%
PF 47.5 GR	C	2,79%	C	2,50%	C	2,42%	C	2,36%	C	2,19%	C	1,98%	C	1,90%
PF 52 GR	B	3,01%	B	3,39%	B	3,96%	B	4,22%	B	4,40%	B	4,50%	B	4,57%
PF 54 GR	B	6,63%	B	6,26%	B	5,70%	B	5,26%	B	5,08%	B	4,77%	B	4,72%
PF 60 GR	B	4,42%	B	3,89%	B	3,69%	B	3,62%	B	3,35%	C	2,81%	C	2,78%

Referencia	Año 29		Año 30	
	Clasificación	%	Clasificación	%
PF 18 GR	B	3,45%	B	3,86%
PF 22 GR	A	21,10%	A	21,35%
PF 23 GR	B	4,10%	B	4,51%
PF 25 GR	A	12,93%	A	12,67%
PF 27 GR	B	4,63%	B	4,47%
PF 28 GR	C	3,00%	C	2,73%
PF 30 GR	B	5,14%	B	4,99%
PF 30 GR Kerr	A	13,50%	A	13,31%
PF 30.5 GR	A	9,36%	A	9,37%
PF 44 GR	A	8,68%	A	9,03%
PF 47.5 GR	C	1,80%	C	1,70%
PF 52 GR	B	4,66%	B	4,59%
PF 54 GR	B	4,57%	B	4,45%
PF 60 GR	B	3,10%	B	2,98%

Históricamente han sido clasificación A
 En los últimos años pasaron a ser clasificación A



2. COSTOS

DATOS EN COP

Costo de Mantenimiento de Inventario		
Descripción	Valores Anuales COP	(r) \$/y
Alquiler Bodegas	\$ 1.215.000.000,00	\$ 0,05
Depreciación 10 Años	\$ 2.100.000.000,00	\$ 0,09
Impuestos	\$ 585.677.430,00	\$ 0,03
Seguros	\$ 385.890.455,00	\$ 0,02
Alquiler Montacargas	\$ 257.472.000,00	\$ 0,01
Electricidad / Agua	\$ 60.596.472,00	\$ 0,00
MOD	\$ 229.672.800,00	\$ 0,01
MOI	\$ 385.434.000,00	\$ 0,02
Costo Obsolescencia	\$ 390.000.000,00	\$ 0,02
Subtotal	\$ 5.609.743.157,00	\$ 0,25
Costo Oportunidad del Dinero 10%	\$ 22.500.000.000,00	\$ 0,20
Totales	\$ 2.294.743.157,00	\$ 0,45

Dato suministrado Dpto. Financiero
Dato suministrado Dpto. Financiero
Se estima promedio rentabilidad financiera

Alquiler Bodegas	mt2	Valor Metro Cuadrado	Costo Mensual	Costo Anual
Bodega 16, 17 y 19	7500	\$ 13.500	\$ 101.250.000	\$ 1.215.000.000

Inversiones realizadas en Bodegas	Costo Total	Observaciones
Sistema de Detección de Incendios	\$ 160.000.000	Sistema de Monitoreo / Estaciones de Alarma / Sistema de Perifoneo / Lámparas de Emergencia
Red Hídrica Red Contra incendios	\$ 330.000.000	Red Hídrica Certificada / Gabinetes / Trajes de Acercamiento al fuego
Tanque y Bomba Red Contra incendios	\$ 650.000.000	Tanque Reservorio de Agua certificada 850 m3 / Bomba Vertical 2000 gpm / 140 PSI
Refuerzo Estructura Pisos	\$ 660.000.000	Adecuaciones pisos carga Vertical 6 TN
Líneas de Vida Techos	\$ 90.000.000	Líneas de Vida Certificadas, para reparaciones en techo
Adecuaciones Eléctricas	\$ 150.000.000	Iluminación / Tableros de Servicios Certificados
Marcación de Bines (SAP)	\$ 60.000.000	Distribución almacenamiento / Marcación códigos de barras / dispositivos Hand Held
Total	\$ 2.100.000.000	

Alquiler de Montacargas	Cantidad	Valor Hora	Horas Día	Días	Costo Mes	Costo Anual
Montacargas 2.5 TN	6	\$ 14.900	8	30	\$ 21.456.000	\$ 257.472.000

Servicio	Consumo Promedio mes	Unidad	Costo Unitario	Costo Mes	Costo Anual
Electricidad	12450	Kilowatios	\$ 368	\$ 4.581.600	\$ 54.979.200
Agua	118	m3	\$ 3.967	\$ 468.106	\$ 5.617.272
Total					\$ 60.596.472

MOD	Cantidad	Salario Promedio mes	Costo Mensual	Costo Anual
Montacarguistas	7	\$ 2.293.200	\$ 16.052.400	\$ 192.628.800
Auxiliares	3	\$ 1.029.000	\$ 3.087.000	\$ 37.044.000
Total				\$ 229.672.800

MOI	Cantidad	Salario Promedio mes	Costo Anual
Jefe de Logística	1	\$ 8.614.200	\$ 103.370.400
Coordinador Almacén	1	\$ 5.497.800	\$ 65.973.600
Coordinador de Transporte	1	\$ 4.762.800	\$ 57.153.600
Coordinador de Inventario	1	\$ 4.512.900	\$ 54.154.800
Coordinador Materia Prima	1	\$ 4.512.900	\$ 54.154.800
Coordinador de Despachos	1	\$ 4.218.900	\$ 50.626.800
Total			\$ 385.434.000

Costo Obsolescencia	Promedio mes	Costo Anual
Costo Promedio PF	\$ 32.500.000	\$ 390.000.000

Costo de Ordenar (A) - Cambio de Referencia				
Descripción	Costo Hora	Horas	Total	Costo Total
MOD				\$ 36.432
Técnico Procesos	\$ 9.108	4	\$ 36.432	
MOI				\$ 90.650
Mecánico	\$ 11.025	4	\$ 44.100	
Matricelo	\$ 11.638	4	\$ 46.550	
Utilidad Preformas dejadas de fabricar	\$ 1.875.000	4	\$ 7.500.000	\$ 7.500.000
Costo Montacargas 10 TN	\$ 50.000	5	\$ 250.000	\$ 250.000
Costo Electricidad - Secado Resina	\$ 949.500	4	\$ 3.798.000	\$ 3.798.000
Scrap generado por purga				\$ 1.700.000
Totales				\$ 13.375.082

Estimado en Horas dejadas de producir (Utilidad PF * Unidades PF)

Valor equivalente para cada referencia que se desee cambiar.

Costo Variable por Unidad (v)		
Descripción	Costo Unitario	Observaciones
PREFORMA 18 GR	\$ 62,38	Dato suministrado Área Comercial
PREFORMA 22 GR	\$ 76,37	Dato suministrado Área Comercial
PREFORMA 23 GR	\$ 79,52	Dato suministrado Área Comercial
PREFORMA 25 GR	\$ 85,83	Dato suministrado Área Comercial
PREFORMA 27 GR	\$ 100,19	Dato suministrado Área Comercial
PREFORMA 28 GR	\$ 102,81	Dato suministrado Área Comercial
PREFORMA 30 GR	\$ 104,41	Dato suministrado Área Comercial
PREFORMA 30 GR Kerr	\$ 105,65	Dato suministrado Área Comercial
PREFORMA 30.5 GR	\$ 107,61	Dato suministrado Área Comercial
PREFORMA 44 GR	\$ 163,73	Dato suministrado Área Comercial
PREFORMA 47.5 GR	\$ 166,41	Dato suministrado Área Comercial
PREFORMA 52 GR	\$ 192,96	Dato suministrado Área Comercial
PREFORMA 54 GR	\$ 197,59	Dato suministrado Área Comercial
PREFORMA 60 GR	\$ 221,57	Dato suministrado Área Comercial
Resina x Kilo	\$ 3.727,50	Dato suministrado Área Compras



**ANEXO F
MODELOS DE INVENTARIOS**

1. RESUMEN

A. Datos Obtenidos Con Proyección Mayo 2012

Item	EPQ	LT	ss	s	Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
PF 18 gr	4.630.361	14,63	835.901	2.973.099	\$ 62.945.265	\$ 62.945.265	\$ 23.429.411	\$ 17.671.512	\$ 166.991.454	0,82
PF 22 gr	9.844.653	16,62	846.403	8.172.658	\$ 163.833.478	\$ 163.833.478	\$ 29.042.743	\$ 119.716.186	\$ 476.425.886	0,74
PF 23 gr	4.433.995	17,96	295.402	2.144.154	\$ 76.833.700	\$ 76.833.700	\$ 10.554.259	\$ 26.330.013	\$ 190.551.672	0,72
PF 25 gr	7.153.925	25,70	582.730	5.251.778	\$ 133.803.548	\$ 133.803.548	\$ 22.472.362	\$ 79.851.455	\$ 369.930.914	0,74
PF 27 gr	3.932.077	7,49	242.752	720.094	\$ 85.851.932	\$ 85.851.932	\$ 10.928.198	\$ 32.873.634	\$ 215.505.696	0,71
PF 28 gr	3.032.178	13,60	77.798	420.250	\$ 67.931.363	\$ 67.931.363	\$ 3.593.715	\$ 15.436.523	\$ 154.892.965	0,65
PF 30 gr	4.068.119	9,07	98.070	962.648	\$ 92.564.285	\$ 92.564.285	\$ 4.600.903	\$ 28.661.290	\$ 218.390.764	0,65
PF 30 gr Kerr	6.607.381	20,39	1.724.513	5.824.555	\$ 152.125.602	\$ 152.125.602	\$ 81.864.898	\$ 103.217.228	\$ 489.333.330	0,85
PF 30.5 gr	5.492.265	22,25	639.209	3.817.417	\$ 128.801.696	\$ 128.801.696	\$ 30.908.012	\$ 73.993.017	\$ 362.504.420	0,78
PF 44 gr	4.372.393	18,03	327.777	2.922.968	\$ 156.004.654	\$ 156.004.654	\$ 24.113.246	\$ 108.548.213	\$ 444.670.767	0,73
PF 47.5 gr	1.884.301	8,86	46.062	281.958	\$ 68.334.634	\$ 68.334.634	\$ 3.444.214	\$ 5.206.781	\$ 145.320.264	0,76
PF 52 gr	2.871.679	13,02	395.445	1.287.109	\$ 120.753.359	\$ 120.753.359	\$ 34.285.281	\$ 65.034.831	\$ 340.826.831	0,79
PF 54 gr	2.793.662	13,67	56.343	1.053.085	\$ 120.291.805	\$ 120.291.805	\$ 5.002.189	\$ 32.269.308	\$ 277.855.107	0,67
PF 60 gr	2.159.391	10,99	671.407	1.219.803	\$ 104.266.203	\$ 104.266.203	\$ 66.843.087	\$ 48.488.047	\$ 323.863.541	0,86
Total	63.276.381		6.839.811		\$ 1.534.341.525	\$ 1.534.341.525	\$ 351.082.520	\$ 757.298.040	\$ 4.177.063.610	

Item	EOQ	LT	ss	s	Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
Resina PET	102.689	30,00	231.712	1.765.128	\$ 85.994.369	\$ 85.994.369	\$ 388.081.609	\$ 855.826.575	\$ 1.415.896.922	0,96

B. Datos Obtenidos Con Proyección Junio 2012

Item	EPQ	LT	ss	s	Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
PF 18 gr	4.861.713	15,36	879.190	2.670.090	\$ 66.090.262	\$ 66.090.262	\$ 24.642.750	\$ 19.481.506	\$ 176.304.779	0,82
PF 22 gr	10.120.078	17,08	833.410	8.647.866	\$ 168.417.066	\$ 168.417.066	\$ 28.596.921	\$ 126.508.518	\$ 491.939.572	0,74
PF 23 gr	4.539.864	18,39	296.975	2.055.005	\$ 78.668.244	\$ 78.668.244	\$ 10.610.481	\$ 27.602.377	\$ 195.549.345	0,72
PF 25 gr	7.153.958	25,70	551.034	5.286.535	\$ 133.804.169	\$ 133.804.169	\$ 21.250.067	\$ 79.852.196	\$ 368.710.601	0,73
PF 27 gr	3.877.973	7,39	237.629	831.801	\$ 84.670.630	\$ 84.670.630	\$ 10.697.566	\$ 31.975.192	\$ 212.014.018	0,71
PF 28 gr	3.051.314	13,69	124.036	772.186	\$ 68.360.088	\$ 68.360.088	\$ 5.729.574	\$ 15.631.982	\$ 158.081.732	0,70
PF 30 gr	4.181.449	9,33	85.847	1.100.773	\$ 95.142.941	\$ 95.142.941	\$ 4.027.491	\$ 30.280.426	\$ 224.593.799	0,63
PF 30 gr Kerr	6.650.838	20,53	1.695.396	5.543.265	\$ 153.126.144	\$ 153.126.144	\$ 80.482.651	\$ 104.579.428	\$ 491.314.367	0,85
PF 30.5 gr	5.532.388	22,41	660.957	3.582.852	\$ 129.742.652	\$ 129.742.652	\$ 31.959.598	\$ 75.078.072	\$ 366.522.974	0,78
PF 44 gr	4.351.574	17,94	331.661	2.749.338	\$ 155.261.836	\$ 155.261.836	\$ 24.398.973	\$ 107.516.967	\$ 442.439.611	0,73
PF 47.5 gr	1.890.682	8,89	35.279	283.212	\$ 68.566.044	\$ 68.566.044	\$ 2.637.926	\$ 5.242.106	\$ 145.012.119	0,73
PF 52 gr	2.910.729	13,19	397.341	1.353.411	\$ 122.395.401	\$ 122.395.401	\$ 34.449.646	\$ 66.815.585	\$ 346.056.033	0,79
PF 54 gr	2.833.921	13,87	65.848	1.227.221	\$ 122.025.296	\$ 122.025.296	\$ 5.846.038	\$ 33.206.058	\$ 283.102.688	0,68
PF 60 gr	2.141.871	10,90	681.858	957.631	\$ 103.420.241	\$ 103.420.241	\$ 67.883.564	\$ 47.704.425	\$ 322.428.472	0,86
Total	64.098.353		6.876.461		\$ 1.549.691.014	\$ 1.549.691.014	\$ 353.213.245	\$ 771.474.838	\$ 4.224.070.110	

Item	EOQ	LT	ss	s	Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
Resina PET	103.698	30,00	190.032	1.751.702	\$ 86.839.246	\$ 86.839.246	\$ 318.274.436	\$ 872.725.815	\$ 1.364.678.742	0,95

C. Datos Obtenidos Con Proyección Julio 2012

Item	EPQ	LT	ss	s	Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
PF 18 gr	5.103.307	16,12	888.952	2.864.022	\$ 69.374.502	\$ 69.374.502	\$ 24.916.366	\$ 21.465.812	\$ 185.131.182	0,81
PF 22 gr	10.290.045	17,37	891.067	8.751.488	\$ 171.245.624	\$ 171.245.624	\$ 30.575.313	\$ 130.793.614	\$ 503.860.175	0,75
PF 23 gr	4.649.127	18,83	292.234	1.811.355	\$ 80.561.589	\$ 80.561.589	\$ 10.441.096	\$ 28.947.004	\$ 200.511.277	0,71
PF 25 gr	7.200.693	25,87	564.603	5.722.554	\$ 134.678.275	\$ 134.678.275	\$ 21.773.313	\$ 80.898.909	\$ 372.028.772	0,74
PF 27 gr	3.902.413	7,43	220.626	863.146	\$ 85.204.259	\$ 85.204.259	\$ 9.932.156	\$ 32.379.503	\$ 212.720.178	0,70
PF 28 gr	3.026.956	13,58	119.246	736.344	\$ 67.814.370	\$ 67.814.370	\$ 5.508.291	\$ 15.383.399	\$ 156.520.430	0,70
PF 30 gr	4.140.174	9,23	118.599	896.508	\$ 94.203.782	\$ 94.203.782	\$ 5.564.030	\$ 29.685.578	\$ 223.657.172	0,66
PF 30 gr Kerr	6.712.686	20,72	1.731.360	6.886.906	\$ 154.550.094	\$ 154.550.094	\$ 82.189.920	\$ 106.533.482	\$ 497.823.590	0,85
PF 30.5 gr	5.416.926	21,94	653.305	3.239.880	\$ 127.034.906	\$ 127.034.906	\$ 31.589.600	\$ 71.976.996	\$ 357.636.408	0,78
PF 44 gr	4.305.191	17,75	303.046	2.629.183	\$ 153.606.893	\$ 153.606.893	\$ 22.293.871	\$ 105.237.126	\$ 434.744.783	0,72
PF 47.5 gr	1.907.465	8,97	33.455	297.151	\$ 69.174.653	\$ 69.174.653	\$ 2.501.521	\$ 5.335.579	\$ 146.186.407	0,72
PF 52 gr	2.926.854	13,27	412.358	1.171.745	\$ 123.073.430	\$ 123.073.430	\$ 35.751.611	\$ 67.557.906	\$ 349.456.376	0,79
PF 54 gr	2.849.923	13,95	84.843	1.089.745	\$ 122.714.297	\$ 122.714.297	\$ 7.532.415	\$ 33.582.104	\$ 286.543.113	0,71
PF 60 gr	2.089.748	10,63	669.683	975.066	\$ 100.903.502	\$ 100.903.502	\$ 66.671.472	\$ 45.410.894	\$ 313.889.371	0,86
Total	64.521.506		6.983.376		\$ 1.554.140.176	\$ 1.554.140.176	\$ 357.240.976	\$ 775.187.905	\$ 4.240.709.233	

Item	EOQ	LT	ss	s	Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
Resina PET	103.974	30,00	194.525	1.759.224	\$ 87.070.041	\$ 87.070.041	\$ 325.800.002	\$ 877.370.922	\$ 1.377.311.006	0,95



2. SIMULACIÓN ENTREGAS

A. Simulación Entregas Cliente - Ventas Mayo 2012

Item	EPQ	s	Inventario Inicial	Venta Real	ss	Inv. Parcial	Semaforo (s)	Decisión	OP	Inventario Final	Semaforo (s)
PF 18 gr	4.630.361	2.973.099	7.281.344	3.329.952	835.901	3.951.392		No se Genera OP	-	3.951.392	
PF 22 gr	9.844.653	8.172.658	14.811.429	13.172.235	846.403	1.639.194		Se Genera OP	9.844.653	11.483.847	
PF 23 gr	4.433.995	2.144.154	6.171.429	2.867.810	295.402	3.303.619		No se Genera OP	-	3.303.619	
PF 25 gr	7.153.925	5.251.778	6.958.389	5.543.136	582.730	1.415.253		Se Genera OP	7.153.925	8.569.178	
PF 27 gr	3.932.077	720.094	12.074.127	2.562.688	242.752	9.511.439		No se Genera OP	-	9.511.439	
PF 28 gr	3.032.178	420.250	4.459.355	1.420.000	77.798	3.039.355		No se Genera OP	-	3.039.355	
PF 30 gr	4.068.119	962.648	11.208.649	2.924.736	98.070	8.283.913		No se Genera OP	-	8.283.913	
PF 30 gr Kerr	6.607.381	5.824.555	8.100.000	5.848.200	1.724.513	2.251.800		Se Genera OP	6.607.381	8.859.181	
PF 30.5 gr	5.492.265	3.817.417	6.171.429	3.640.320	639.209	2.531.109		Se Genera OP	5.492.265	8.023.373	
PF 44 gr	4.372.393	2.922.968	6.063.158	3.515.493	327.777	2.547.665		Se Genera OP	4.372.393	6.920.058	
PF 47.5 gr	1.884.301	281.958	4.253.538	845.000	46.062	3.408.538		No se Genera OP	-	3.408.538	
PF 52 gr	2.871.679	1.287.109	5.514.894	2.193.083	395.445	3.321.811		No se Genera OP	-	3.321.811	
PF 54 gr	2.793.662	1.053.085	4.698.798	2.511.680	56.343	2.187.118		No se Genera OP	-	2.187.118	
PF 60 gr	2.159.391	1.219.803	4.520.645	967.149	671.407	3.553.496		No se Genera OP	-	3.553.496	
Total	63.276.381	37.051.576	102.287.181	51.341.482	6.839.811	50.945.699			33.470.617	84.416.316	

Item	EOQ	s	Inventario Inicial	Consumo Real	ss	Inv. Parcial	Semaforo (s)	Decisión	OC	Inventario Final	Semaforo (s)
Resina PET	102.689	1.667.554	2.900.000	953.551	134.138	1.946.449		No se Genera OP	-	1.946.449	

B. Simulación Entregas Cliente - Ventas Junio 2012

Item	EPQ	s	Inventario Inicial	Venta Real	ss	Inv. Parcial	Semaforo (s)	Decisión	OP	Inventario Final	Semaforo (s)
PF 18 gr	4.861.713	2.670.090	3.951.392	3.709.402	879.190	241.990		Se Genera OP	4.861.713	5.103.702	
PF 22 gr	10.120.078	8.647.866	11.483.847	11.503.150	833.410	(19.303)		Se Genera OP	10.120.078	10.100.775	
PF 23 gr	4.539.864	2.055.005	3.303.619	2.419.846	296.975	883.773		Se Genera OP	4.539.864	5.423.637	
PF 25 gr	7.153.958	5.286.535	8.569.178	6.074.253	551.034	2.494.925		Se Genera OP	7.153.958	9.648.883	
PF 27 gr	3.877.973	831.801	9.511.439	2.646.768	237.629	6.864.671		No se Genera OP	-	6.864.671	
PF 28 gr	3.051.314	772.186	3.039.355	1.277.000	124.036	1.762.355		No se Genera OP	-	1.762.355	
PF 30 gr	4.181.449	1.100.773	8.283.913	2.399.648	85.847	5.884.265		No se Genera OP	-	5.884.265	
PF 30 gr Kerr	6.650.838	5.543.265	8.859.181	6.894.720	1.695.396	1.964.461		Se Genera OP	6.650.838	8.615.299	
PF 30.5 gr	5.532.388	3.582.852	8.023.373	3.264.624	660.957	4.758.749		No se Genera OP	-	4.758.749	
PF 44 gr	4.351.574	2.749.338	6.920.058	3.878.870	331.661	3.041.188		No se Genera OP	-	3.041.188	
PF 47.5 gr	1.890.682	283.212	3.408.538	892.000	35.279	2.516.538		No se Genera OP	-	2.516.538	
PF 52 gr	2.910.729	1.353.411	3.321.811	1.642.697	397.341	1.679.114		No se Genera OP	-	1.679.114	
PF 54 gr	2.833.921	1.227.221	2.187.118	2.161.080	65.848	26.038		Se Genera OP	2.833.921	2.859.959	
PF 60 gr	2.141.871	957.631	3.553.496	1.047.966	681.858	2.505.530		No se Genera OP	-	2.505.530	
Total	64.098.353	37.061.186	84.416.316	49.812.024	6.876.461	34.604.292			36.160.372	70.764.664	

Item	EOQ	s	Inventario Inicial	Consumo Real	ss	Inv. Parcial	Semaforo (s)	Decisión	OC	Inventario Final	Semaforo (s)
Resina PET	103.698	1.667.554	1.946.449	945.975	134.138	1.000.473		Se Genera OC	725.887	1.726.360	

C. Simulación Entregas Cliente - Ventas Julio 2012

Item	EPQ	s	Inventario Inicial	Venta Real	ss	Inv. Parcial	Semaforo (s)	Decisión	OP	Inventario Final	Semaforo (s)
PF 18 gr	5.103.307	2.864.022	5.103.702	4.333.491	888.952	770.211		Se Genera OP	5.103.307	5.873.518	
PF 22 gr	10.290.045	8.751.488	10.100.775	13.286.782	891.067	(3.186.007)		Se Genera OP	12.067.416	8.881.409	
PF 23 gr	4.649.127	1.811.355	5.423.637	2.169.365	292.234	3.254.272		No se Genera OP	-	3.254.272	
PF 25 gr	7.200.693	5.722.554	9.648.883	6.997.076	564.603	2.651.807		Se Genera OP	7.200.693	9.852.499	
PF 27 gr	3.902.413	863.146	6.864.671	1.962.720	220.626	4.901.951		No se Genera OP	-	4.901.951	
PF 28 gr	3.026.956	736.344	1.762.355	1.058.000	119.246	704.355		Se Genera OP	3.026.956	3.731.310	
PF 30 gr	4.140.174	896.508	5.884.265	2.962.000	118.599	2.922.265		No se Genera OP	-	2.922.265	
PF 30 gr Kerr	6.712.686	6.886.906	8.615.299	8.344.800	1.731.360	270.499		Se Genera OP	6.712.686	6.983.185	
PF 30.5 gr	5.416.926	3.239.880	4.758.749	4.508.048	653.305	250.701		Se Genera OP	5.416.926	5.667.628	
PF 44 gr	4.305.191	2.629.183	3.041.188	4.314.689	303.046	(1.273.501)		Se Genera OP	4.305.191	3.031.690	
PF 47.5 gr	1.907.465	297.151	2.516.538	965.239	33.455	1.551.299		No se Genera OP	-	1.551.299	
PF 52 gr	2.926.854	1.171.745	1.679.114	2.281.687	412.358	(602.573)		Se Genera OP	2.926.854	2.324.281	
PF 54 gr	2.849.923	1.089.745	2.859.959	2.174.240	84.843	685.719		Se Genera OP	2.849.923	3.535.642	
PF 60 gr	2.089.748	975.066	2.505.530	1.109.837	669.683	1.395.693		No se Genera OP	-	1.395.693	
Total	64.521.506	37.935.094	70.764.664	56.467.974	6.983.376	14.296.690			49.609.950	63.906.640	

Item	EOQ	s	Inventario Inicial	Consumo Real	ss	Inv. Parcial	Semaforo (s)	Decisión	OC	Inventario Final	Semaforo (s)
Resina PET	103.974	1.667.554	1.726.360	1.484.232	134.138	242.128		Se Genera OC	1.455.632	1.697.760	



4. COMPARACIÓN COSTOS

A. Comparación Costos Inventarios Actuales vs Proyectados Mayo 2012

Item	s	Inventario Inicial	SS	Inventario Final	Precio Unitario	Capital de Trabajo Inventario Inicial	Capital de Trabajo Inventario Proyectado
PF 18 gr	2.973.099	7.281.344	835.901	3.951.392	62,38	\$ 454.213.849	\$ 246.489.778
PF 22 gr	8.172.658	14.811.429	846.403	11.483.847	76,37	\$ 1.131.096.960	\$ 876.981.184
PF 23 gr	2.144.154	6.171.429	295.402	3.303.619	79,52	\$ 490.730.400	\$ 262.692.186
PF 25 gr	5.251.778	6.958.389	582.730	8.569.178	85,83	\$ 597.217.675	\$ 735.466.824
PF 27 gr	720.094	12.074.127	242.752	9.511.439	100,19	\$ 1.209.718.816	\$ 952.960.543
PF 28 gr	420.250	4.459.355	77.798	3.039.355	102,81	\$ 458.446.204	\$ 312.462.394
PF 30 gr	962.648	11.208.649	98.070	8.283.913	104,41	\$ 1.170.317.423	\$ 864.939.887
PF 30 gr Kerr	5.824.555	8.100.000	1.724.513	8.859.181	105,65	\$ 855.773.100	\$ 935.981.338
PF 30.5 gr	3.817.417	6.171.429	639.209	8.023.373	107,61	\$ 664.135.200	\$ 863.431.283
PF 44 gr	2.922.968	6.063.158	327.777	6.920.058	163,73	\$ 992.699.621	\$ 1.132.996.929
PF 47.5 gr	281.958	4.253.538	46.062	3.408.538	166,41	\$ 707.850.476	\$ 567.230.224
PF 52 gr	1.287.109	5.514.894	395.445	3.321.811	192,96	\$ 1.064.145.600	\$ 640.971.594
PF 54 gr	1.053.085	4.698.798	56.343	2.187.118	197,59	\$ 928.430.804	\$ 432.150.464
PF 60 gr	1.219.803	4.520.645	671.407	3.553.496	221,57	\$ 1.001.643.734	\$ 787.351.562
Subtotal	37.051.576	102.287.181	6.839.811	84.416.316	1.767	\$ 11.726.419.862	\$ 9.612.106.191
Resina	1.667.554	2.900.000	134.138	1.946.449	3.727,50	\$ 10.809.750.000	\$ 7.255.387.550
Total	38.719.130	105.187.181	6.973.949	86.362.765	5.495	\$ 22.536.169.862	\$ 16.867.493.742

B. Comparación Costos Inventarios Actuales vs Proyectados Junio 2012

Item	s	Inventario Inicial	SS	Inventario Final	Precio Unitario	Capital de Trabajo Inventario Inicial	Capital de Trabajo Inventario Proyectado
PF 18 gr	2.670.090	3.951.392	879.190	5.103.702	62,38	\$ 246.489.778	\$ 318.371.487
PF 22 gr	8.647.866	11.483.847	833.410	10.100.775	76,37	\$ 876.981.184	\$ 771.360.832
PF 23 gr	2.055.005	3.303.619	296.975	5.423.637	79,52	\$ 262.692.186	\$ 431.268.608
PF 25 gr	5.286.535	8.569.178	551.034	9.648.883	85,83	\$ 735.466.824	\$ 828.134.643
PF 27 gr	831.801	9.511.439	237.629	6.864.671	100,19	\$ 952.960.543	\$ 687.778.210
PF 28 gr	772.186	3.039.355	124.036	1.762.355	102,81	\$ 312.462.394	\$ 181.179.770
PF 30 gr	1.100.773	8.283.913	85.847	5.884.265	104,41	\$ 864.939.887	\$ 614.387.840
PF 30 gr Kerr	5.543.265	8.859.181	1.695.396	8.615.299	105,65	\$ 935.981.338	\$ 910.214.996
PF 30.5 gr	3.582.852	8.023.373	660.957	4.758.749	107,61	\$ 863.431.283	\$ 512.110.404
PF 44 gr	2.749.338	6.920.058	331.661	3.041.188	163,73	\$ 1.132.996.929	\$ 497.923.120
PF 47.5 gr	283.212	3.408.538	35.279	2.516.538	166,41	\$ 567.230.224	\$ 418.788.490
PF 52 gr	1.353.411	3.321.811	397.341	1.679.114	192,96	\$ 640.971.594	\$ 323.999.245
PF 54 gr	1.227.221	2.187.118	65.848	2.859.959	197,59	\$ 432.150.464	\$ 565.096.478
PF 60 gr	957.631	3.553.496	681.858	2.505.530	221,57	\$ 787.351.562	\$ 555.152.688
Subtotal	37.061.186	84.416.316	6.876.461	70.764.664	1.767	\$ 9.612.106.191	\$ 7.615.766.811
Resina	1.667.554	1.946.449	134.138	1.726.360	3.727,50	\$ 7.255.387.550	\$ 6.435.007.336
Total	38.728.740	86.362.765	7.010.599	72.491.024	5.495	\$ 16.867.493.742	\$ 14.050.774.147

C. Comparación Costos Inventarios Actuales vs Proyectados Julio 2012

Item	s	Inventario Inicial	ss	Inventario Final	Precio Unitario	Capital de Trabajo Inventario Inicial	Capital de Trabajo Inventario Proyectado
PF 18 gr	2.864.022	5.103.702	888.952	5.873.518	62,38	\$ 318.371.487	\$ 366.392.985
PF 22 gr	8.751.488	10.100.775	891.067	8.881.409	76,37	\$ 771.360.832	\$ 678.242.114
PF 23 gr	1.811.355	5.423.637	292.234	3.254.272	79,52	\$ 431.268.608	\$ 258.768.296
PF 25 gr	5.722.554	9.648.883	564.603	9.852.499	85,83	\$ 828.134.643	\$ 845.610.443
PF 27 gr	863.146	6.864.671	220.626	4.901.951	100,19	\$ 687.778.210	\$ 491.131.331
PF 28 gr	736.344	1.762.355	119.246	3.731.310	102,81	\$ 181.179.770	\$ 383.599.226
PF 30 gr	896.508	5.884.265	118.599	2.922.265	104,41	\$ 614.387.840	\$ 305.119.496
PF 30 gr Kerr	6.886.906	8.615.299	1.731.360	6.983.185	105,65	\$ 910.214.996	\$ 737.780.498
PF 30.5 gr	3.239.880	4.758.749	653.305	5.667.628	107,61	\$ 512.110.404	\$ 609.918.901
PF 44 gr	2.629.183	3.041.188	303.046	3.031.690	163,73	\$ 497.923.120	\$ 496.367.979
PF 47.5 gr	297.151	2.516.538	33.455	1.551.299	166,41	\$ 418.788.490	\$ 258.158.724
PF 52 gr	1.171.745	1.679.114	412.358	2.324.281	192,96	\$ 323.999.245	\$ 448.489.684
PF 54 gr	1.089.745	2.859.959	84.843	3.535.642	197,59	\$ 565.096.478	\$ 698.603.916
PF 60 gr	975.066	2.505.530	669.683	1.395.693	221,57	\$ 555.152.688	\$ 309.244.994
Subtotal	37.935.094	70.764.664	6.983.376	63.906.640	1.767	\$ 7.615.766.811	\$ 6.887.428.589
Resina	1.667.554	1.726.360	134.138	1.697.760	3.727,50	\$ 6.435.007.336	\$ 6.328.399.284
Total	39.602.648	72.491.024	7.117.514	65.604.400	5.495	\$ 14.050.774.147	\$ 13.215.827.873



5. RESULTADOS

A. Capital de Trabajo

Mes	Capital de Trabajo Inventario Inicial	Capital de Trabajo Inventario Proyectado	Variaciòn	Observaciones
Mayo 2012				
Preforma	\$ 11.726.419.862	\$ 9.612.106.191	-18,03%	Cumple
Resina PET	\$ 10.809.750.000	\$ 7.255.387.550	-32,88%	Cumple
Total	\$ 22.536.169.862	\$ 16.867.493.742	-25,15%	Cumple
Junio 2012				
Preforma	\$ 9.612.106.191	\$ 7.615.766.811	-20,77%	Cumple
Resina PET	\$ 7.255.387.550	\$ 6.435.007.336	-11,31%	Cumple
Total	\$ 16.867.493.742	\$ 14.050.774.147	-16,70%	Cumple
Julio 2012				
Preforma	\$ 7.615.766.811	\$ 6.887.428.589	-9,56%	Cumple
Resina PET	\$ 6.435.007.336	\$ 6.328.399.284	-1,66%	Cumple
Total	\$ 14.050.774.147	\$ 13.215.827.873	-5,94%	Cumple

B. Nivel de Servicio

Mes	Unidades Despachadas	Unidades Demandadas	Cumplimiento	Observaciones
Mayo 2012				
Preforma	51.341.482	51.341.482	100,00%	Cumple
Total	51.341.482	51.341.482	100,00%	Cumple
Junio 2012				
Preforma	49.812.024	49.812.024	100,00%	Cumple
Total	49.812.024	49.812.024	100,00%	Cumple
Julio 2012				
Preforma	56.467.974	56.467.974	100,00%	Cumple
Total	56.467.974	56.467.974	100,00%	Cumple

C. Rotación de Inventarios

Mes	Inventario Actual	Demanda Actual	Rotación	Observaciones
Mayo 2012				
Preforma	84.416.316	51.341.482	0,61	No Cumple
Resina PET	1.891.158	1.539.956	0,81	Cumple
Junio 2012				
Preforma	70.764.664	49.812.024	0,70	No Cumple
Resina PET	1.944.545	1.539.956	0,79	Cumple
Julio 2012				
Preforma	60.879.685	56.467.974	0,93	Cumple
Resina PET	1.997.932	1.539.956	0,77	Cumple



6. Ciclos Standard

Referencia	Mold Cav	Cycle Time (sec)	Unidades Hora	Unidades Dia
PF 18 gr	48	13,1	13.191	316.580
PF 22 gr	96	14,00	24.686	592.457
PF 23 gr	48	16,8	10.286	246.857
PF 25 gr	48	14,9	11.597	278.336
PF 27 gr	96	15,80	21.873	524.962
PF 28 gr	48	18,6	9.290	222.968
PF 30 gr	96	18,50	18.681	448.346
PF 30 gr Kerr	60	16,0	13.500	324.000
PF 30.5 gr	48	16,8	10.286	246.857
PF 44 gr	48	17,1	10.105	242.526
PF 47.5 gr	48	19,5	8.862	212.677
PF 52 gr	48	18,80	9.191	220.596
PF 54 gr	48	20,3	8.512	204.296
PF 60 gr	48	21,1	8.190	196.550



7. MODELO DE INVENTARIOS
PF 18 GR

A. Con Proyección Mayo 2012

LT	14,63	Dias
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Modelo Suavización Exponencial Alpha 0.84 Estacionalidad 2				
Periodo	Xt	Ft	et	e ^t 2
1	1098000	1396663,894	-298663,894	89.200.121.801,75
2	1262500	1145786,223	116713,777	13.622.105.718,36
3	1289500	1243825,796	45674,204	2.086.132.938,81
4	1027892	1282192,127	-254300,127	64.668.554.750,57
5	1677984	1068580,020	609403,980	371.373.210.389,11
6	944781	1580479,363	-635698,363	404.112.409.050,39
7	1082124	1046492,738	35631,262	1.269.586.823,06
8	1072800	1076422,998	-3622,998	13.126.115,23
9	1201452	1073379,680	128072,320	16.402.519.228,07
10	1304564	1180960,429	123603,571	15.277.842.825,42
11	5535904	1284787,429	4251116,571	18.071.992.103.629,90
12	4293717	4855725,349	-562008,349	315.853.383.869,16
13	4383638,336			
Demanda	21791218			19.365.871.097.139,80

A	\$ 13.375.082
f	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	σl	σL
PF 18 GR	21.791.218	\$ 62,38	0,98	0,65	0,03	4.630.361	4383638	146121,2779	14,6	2.137.197	1.326.851	926.461

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu-(k)	Gu(k) Aprox	ss	s
0,099958039	0,902251843	0,183461550	0,100017337	835.901	2.973.099

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 62.945.265	\$ 62.945.265	\$ 23.429.411	\$ 17.671.512	\$ 166.991.454	0,816538450

σl	1326851,06
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B. Con Proyección Junio 2012

LT	15,36	Dias
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Modelo Suavización Exponencial Alpha 0.84 Estacionalidad 2				
Periodo	Xt	Ft	et	e ^t 2
1	1262500	1145786,223	116713,777	13.622.105.718,36
2	1289500	1243825,796	45674,204	2.086.132.938,81
3	1027892	1282192,127	-254300,127	64.668.554.750,57
4	1677984	1068580,020	609403,980	371.373.210.389,11
5	944781	1580479,363	-635698,363	404.112.409.050,39
6	1082124	1046492,738	35631,262	1.269.586.823,06
7	1072800	1076422,998	-3622,998	13.126.115,23
8	1201452	1073379,680	128072,320	16.402.519.228,07
9	1304564	1180960,429	123603,571	15.277.842.825,42
10	5535904	1284787,429	4251116,571	18.071.992.103.629,90
11	4293717	4855725,349	-562008,349	315.853.383.869,16
12	3329952	4383638,336	-1053686,336	1.110.254.894.192,97
13	3498541,814			
Demanda	24023170			20.386.925.869.531,00

A	\$ 13.375.082
f	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	σl	σL
PF 18 GR	24.023.170	\$ 62,38	0,98	0,65	0,03	4.861.713	3498542	116618,0605	15,4	1.790.900	1.361.381	974.029

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu-(k)	Gu(k) Aprox	ss	s
0,099826898	0,902632588	0,183360462	0,099947504	879.190	2.670.090

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 66.090.262	\$ 66.090.262	\$ 24.642.750	\$ 19.481.506	\$ 176.304.779	0,816639538

σl	1361380,512
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C. Con Proyección Julio 2012

LT	16,12	Dias
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Modelo Suavización Exponencial Alpha 0.84 Estacionalidad 2				
Periodo	Xt	Ft	et	et^2
1	1289500	1243825,796	-45674,204	2.086.132.938,81
2	1027892	1282192,127	-254300,127	64.668.554.750,57
3	1677984	1068580,020	609403,980	371.373.210.389,11
4	944781	1580479,363	-635698,363	404.112.409.050,39
5	1082124	1046492,738	35631,262	1.269.586.823,06
6	1072800	1076422,998	-3622,998	13.126.115,23
7	1201452	1073379,680	128072,320	16.402.519.228,07
8	1304564	1180960,429	123603,571	15.277.842.825,42
9	5535904	1284787,429	4251116,571	18.071.992.103.629,90
10	4293717	4855725,349	-562008,349	315.853.383.869,16
11	3329952	4383638,336	-1053686,336	1.110.254.894.192,97
12	3709402	3498541,814	210860,186	44.462.018.156,54
13		3675664,370		
Demanda	26470072			20.417.765.781.969,20

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	σl	σL
PF 18 GR	26.470.072	\$ 62,38	0,98	0,65	0,03	5.103.307	3675664	122522,1457	16,1	1.975.070	1.362.410	998.691

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,102199916	0,89011704	0,186701522	0,102263229	888,952	2.864,022

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 69.374.502	\$ 69.374.502	\$ 24.916.366	\$ 21.465.812	\$ 185.131.182	0,813298478

σl	1362409,823
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8. MODELO DE INVENTARIOS
PF 22 GR

A. Con Proyección Mayo 2012

LT	16,62	Dias
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Modelo Descomposición Multiplicativa Estacionalidad 3				
Periodo	Xt	Ft	et	et^2
1	6330399	7057756,780	-727357,780	529.049.339.789,03
2	7186824	7571856,450	-385032,450	148.249.987.425,39
3	8485169	8085956,120	399212,880	159.370.923.637,28
4	9657733	8600055,790	1057677,210	1.118.681.080.623,49
5	12761833	9114155,460	3647677,540	13.305.551.435.578,70
6	10357513	9628255,130	729257,870	531.817.040.811,92
7	11565419	10142354,800	1423064,200	2.025.111.716.849,99
8	10365303	10656454,470	-291151,470	84.769.178.618,26
9	8443084	11170554,140	-272740,140	7.439.093.366.218,76
10	9956547	11684653,810	-1728106,810	2.986.353.148.028,42
11	13952876	12198753,480	1754122,520	3.076.945.813.659,59
12	11526006	12712853,150	-1186847,150	1.408.606.158.643,20
13	13226952	13226952,821		
Demanda	120588706			32.813.599.189.884,00

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	σI	σL
PF 22 GR	120.588.706	\$ 76,37	0,98	0,65	0,03	9.844.653	13226953	440898,43	16,6	7.326.255	1.727.152	1.285.410

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,15317529	0,658469163	0,255118353	0,153200208	846.403	8.172.658

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 163.833.478	\$ 163.833.478	\$ 29.042.743	\$ 119.716.186	\$ 476.425.886	0,744881647

σI	1727152,128
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B. Con Proyección Junio 2012

LT	17,08	Dias
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Modelo Descomposición Multiplicativa Estacionalidad 3				
Periodo	Xt	Ft	et	et^2
1	7186824	7573118,667	-386294,667	149.223.569.481,13
2	8485169	8085724,699	399444,301	159.555.749.334,27
3	9657733	8598330,732	1059402,268	1.122.333.165.400,93
4	12761833	9110936,765	3650896,235	13.329.043.320.884,80
5	10357513	9623542,797	733970,203	538.712.258.316,94
6	11565419	10136148,830	1429270,170	2.042.813.218.630,52
7	10365303	10648754,863	-283451,863	80.344.958.503,92
8	8443084	11161360,895	-2718276,895	7.389.029.280.331,62
9	9956547	11673966,928	-1717419,928	2.949.531.209.554,28
10	13952876	12186572,961	1766303,039	3.119.826.426.214,77
11	11526006	12699178,994	-1173172,994	1.376.334.872.692,44
12	13172235	13211785,026	-39550,026	1.564.204.571,79
13	13724391	13724391,059		
Demanda	127430542			32.258.312.233.917,40

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	σI	σL
PF 22 GR	127.430.542	\$ 76,37	0,98	0,65	0,03	10.120.078	13724391	457479,7	17,1	7.814.456	1.712.476	1.292.193

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,156634184	0,644958052	0,259477185	0,156676544	833.410	8.647.866

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 168.417.066	\$ 168.417.066	\$ 28.596.921	\$ 126.508.518	\$ 491.939.572	0,740522815

σI	1712475,938
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C. Con Proyección Julio 2012

LT	17,37	Dias
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Modelo Descomposición Multiplicativa Estacionalidad 3				
Periodo	Xt	Ft	et	et^2
1	8485169	8103507,459	381661,541	145.665.532.023,51
2	9657733	8559639,475	1098093,525	1.205.809.389.018,78
3	12761833	9015771,492	3746061,508	14.032.976.823.502,30
4	10357513	9471903,508	885609,492	784.304.171.898,96
5	11565419	9928035,525	1637383,475	2.681.024.645.139,71
6	10365303	10384167,541	-18864,541	355.870.914,31
7	8443084	10840299,558	-2397215,558	5.746.642.429.915,75
8	9956547	11296431,574	-1339884,574	1.795.290.672.023,57
9	13952876	11752563,591	2200312,409	4.841.374.698.880,66
10	11526006	12208695,607	-682689,607	466.065.099.634,07
11	13172235	12664827,624	507407,376	257.462.245.655,65
12	11503150	13120959,640	-1617809,640	2.617.308.031.425,50
13		13577091,657		
Demanda	131746868			34.574.279.610.032,80

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	σI	σL
PF 22 GR	131.746.868	\$ 76.37	0,98	0,65	0,03	10.290.045	13577092	452569,72	17,4	7.860.421	1.772.884	1.348.962

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,152562393	0,66055755	0,254448050	0,152668123	891,067	8.751.488

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 171.245.624	\$ 171.245.624	\$ 30.575.313	\$ 130.793.614	\$ 503.860.175	0,745551950

σI	1772883,619
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9. MODELO DE INVENTARIOS
PF 23 GR

A. Con Proyección Mayo 2012

LT	17,96	Dias
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Periodo	Xt	Ft	et	et^2
1	1636944	1476567,000	160377,000	25.720.782.129,00
2	1119074	1636944,000	-517870,000	268.189.336.900,00
3	1295624	1119074,000	176550,000	31.169.902.500,00
4	1113387	1295624,000	-182237,000	33.210.324.169,00
5	1705847	1113387,000	592460,000	351.008.851.600,00
6	2985227	1705847,000	1279380,000	1.636.813.184.400,00
7	3454354	2985227,000	469127,000	220.080.142.129,00
8	2189242	3454354,000	-1265112,000	1.600.508.372.544,00
9	2267432	2189242,000	78190,000	6.113.676.100,00
10	2306423	2267432,000	38991,000	1.520.298.081,00
11	2309898	2306423,000	3475,000	12.075.625,00
12	3087810	2309898,000	777912,000	605.147.079.744,00
13	3087810	3087810,000		
Demanda	25471262			4.779.494.025.921,00

A	\$ 13.375.082
f	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	σ	σL
PF 23 GR	25.471.262	\$ 79.52	0,98	0,65	0,03	4.433.995	3087810	102927	18	1.848.752	659.166	510.045

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu-(k)	Gu(k) Aprox	ss	s
0,173866707	0,579167467	0,281238090	0,174458728	295.402	2.144.154

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 76.833.700	\$ 76.833.700	\$ 10.554.259	\$ 26.330.013	\$ 190.551.672	0,718761910

σ	659165,7279
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B. Con Proyección Junio 2012

LT	18,39	Dias
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Periodo	Xt	Ft	et	et^2
1	1119074	1636944,000	-517870,000	268.189.336.900,00
2	1295624	1119074,000	176550,000	31.169.902.500,00
3	1113387	1295624,000	-182237,000	33.210.324.169,00
4	1705847	1113387,000	592460,000	351.008.851.600,00
5	2985227	1705847,000	1279380,000	1.636.813.184.400,00
6	3454354	2985227,000	469127,000	220.080.142.129,00
7	2189242	3454354,000	-1265112,000	1.600.508.372.544,00
8	2267432	2189242,000	78190,000	6.113.676.100,00
9	2306423	2267432,000	38991,000	1.520.298.081,00
10	2309898	2306423,000	3475,000	12.075.625,00
11	3087810	2309898,000	777912,000	605.147.079.744,00
12	2867810	3087810,000	-220000,000	48.400.000.000,00
13	2867810	2867810,000		
Demanda	26702128			4.802.173.243.792,00

A	\$ 13.375.082
f	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	σ	σL
PF 23 GR	26.702.128	\$ 79.52	0,98	0,65	0,03	4.539.864	2867810	95593,667	18,4	1.758.030	660.728	517.321

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu-(k)	Gu(k) Aprox	ss	s
0,175514229	0,57406316	0,282962531	0,175898652	296.975	2.055.005

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 78.668.244	\$ 78.668.244	\$ 10.610.481	\$ 27.602.377	\$ 195.549.345	0,717037469

σ	660727,7836
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C. Con Proyección Julio 2012

LT	18,83	Dias
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Modelo Promedio Movil Simple Estacionalidad 1				
Periodo	Xt	Ft	et	et^2
1	1295624	1119074,000	176550,000	31.169.902,500,00
2	1113387	1295624,000	-182237,000	33.210.324,169,00
3	1705847	1113387,000	592460,000	351.008.851,600,00
4	2985227	1705847,000	1279380,000	1.636.813.184,400,00
5	3454354	2985227,000	469127,000	220.080.142,129,00
6	2189242	3454354,000	-1265112,000	1.600.508.372,544,00
7	2267432	2189242,000	78190,000	6.113.676,100,00
8	2306423	2267432,000	38991,000	1.520.298,081,00
9	2309898	2306423,000	3475,000	12.075,625,00
10	3087810	2309898,000	777912,000	605.147.079,744,00
11	2867810	3087810,000	-220000,000	48.400.000,000,00
12	2419846	2867810,000	-447964,000	200.671.745,296,00
13		2419846,000		
Demanda	28002900			4.734.655.652.188,00

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	σl	σL
PF 23 GR	28.002.900	\$ 79,52	0,98	0,65	0,03	4.649,127	2419846	80661,533	18,8	1.519,120	656,066	519,817

Regla de Decision para hallar k

Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,178875692	0,562187442	0,286994158	0,179282948	292,234	1,811,355

Costos

Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 80.561,589	\$ 80.561,589	\$ 10.441,096	\$ 28,947,004	\$ 200.511,277	0,713005842

σl	656066,4914
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10. MODELO DE INVENTARIOS
PF 25 GR

A. Con Proyección Mayo 2012

LT	25,70	Dias
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Modelo Suavización Exponencial Alpha 0.83 Estacionalidad 2				
Periodo	Xt	Ft	et	et ²
1	5542472	4764080,671	778391,329	605.893.060.467,85
2	5136129	5410145,083	-274016,083	75.084.813.498,73
3	6020422	5182711,872	837710,128	701.758.258.751,91
4	4955038	5878010,857	-922972,857	851.878.894.387,26
5	5720956	5111943,850	609012,150	370.895.798.884,81
6	7613105	5617423,628	1995681,372	3.982.744.138.056,03
7	6390152	7273838,163	-883686,163	780.901.234.372,06
8	6319211	6540379,092	-221168,092	48.915.325.020,92
9	6004881	6356809,687	-351928,687	123.853.800.691,83
10	5848461	6064709,054	-216248,054	46.763.220.781,93
11	6814000	5885223,278	928776,722	862.626.199.447,52
12	5202624	6656107,490	-1453483,490	2.112.614.255.748,42
13	5449716,924			
Demanda	71567451			10.563.929.000.109,30

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	cl	cl
PF 25 GR	71.567.451	\$ 85,83	0,98	0,65	0,03	7.153.925	5449717	181657,23	25,7	4.669.048	979.978	907.076

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,157735978	0,642426725	0,260298076	0,157334404	582.730	5.251.778

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 133.803.548	\$ 133.803.548	\$ 22.472.362	\$ 79.851.455	\$ 369.930.914	0,739701924

cl	979978,1538
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B. Con Proyección Junio 2012

LT	25,70	Dias
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Modelo Suavización Exponencial Alpha 0.83 Estacionalidad 2				
Periodo	Xt	Ft	et	et ²
1	5136129	5410145,230	-274016,230	75.084.894.305,24
2	6020422	5182711,759	837710,241	701.758.447.707,79
3	4955038	5878011,259	-922973,259	851.879.636.916,02
4	5720956	5111943,454	609012,546	370.896.281.139,11
5	7613105	5617423,867	1995681,133	3.982.743.183.867,93
6	6390152	7273839,207	-883687,207	780.903.080.560,76
7	6319211	6540378,825	-221167,825	48.915.206.930,98
8	6004881	6356809,530	-351928,530	123.853.690.435,24
9	5848461	6064708,850	-216247,850	46.763.132.694,52
10	6814000	5885223,135	928776,865	862.626.465.840,62
11	5202624	6656107,933	-1453483,933	2.112.615.543.109,32
12	5543136	5449716,269	93419,731	8.727.246.217,13
13	5527254,646			
Demanda	71568115			9.966.766.809.724,66

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	cl	cl
PF 25 GR	71.568.115	\$ 85,83	0,98	0,65	0,03	7.153.958	5527255	184241,82	25,7	4.735.500	951.877	881.067

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,16239302	0,625417112	0,265848667	0,161809096	551.034	5.286.535

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 133.804.169	\$ 133.804.169	\$ 21.250.067	\$ 79.852.196	\$ 368.710.601	0,734151333

cl	951876,9406
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C. Con Proyección Julio 2012

LT	25,87	Dias
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Modelo Suavización Exponencial Alpha 0.83 Estacionalidad 2				
Periodo	Xt	Ft	et	et^2
1	6020422	5182711,759	837710,241	701.758.447.707,79
2	4955038	5878011,259	-922973,259	851.879.636.916,02
3	5720956	5111943,454	609012,546	370.896.281.139,11
4	7613105	5617423,867	1995681,133	3.982.743.183.867,93
5	6390152	7273839,207	-883687,207	780.903.080.560,76
6	6319211	6540378,825	-221167,825	48.915.206.930,98
7	6004881	6356809,530	-351928,530	123.853.690.435,24
8	5848461	6064708,850	-216247,850	46.763.132.694,52
9	6814000	5885223,135	928776,865	862.626.465.840,62
10	5202624	6656107,933	-1453483,933	2.112.615.543.109,32
11	5543136	5449716,269	93419,731	8.727.246.217,13
12	6074253	5527254,646	546998,354	299.207.199.650,75
13		5981263,280		
Demanda	72506239			10.190.889.115.070,20

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	σt	σL
PF 25 GR	72.506.239	\$ 85,83	0,98	0,65	0,03	7.200.693	5981263	199375,44	25,9	5.157.951	962.520	893.824

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,1611211	0,631671283	0,263800848	0,160152840	564.603	5.722.554

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 134.678.275	\$ 134.678.275	\$ 21.773.313	\$ 80.898.909	\$ 372.028.772	0,736199152

σt	962519,8517
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11. MODELO DE INVENTARIOS
PF 27 GR

A. Con Proyección Mayo 2012

LT	7,49	Días
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Modelo Suavización Exponencial Alpha 0.77 Estacionalidad 2				
Periodo	Xt	Ft	et	et ²
1	3252480	2450427,216	802052,784	643.288.668.027,00
2	2336352	3068007,860	-731655,860	535.320.297.066,01
3	3496312	2504632,848	991679,152	983.427.541.034,78
4	1605920	3268225,795	-1662305,795	2.763.260.556.021,80
5	1698848	1988250,333	-289402,333	83.753.710.256,27
6	2698432	1765410,537	933021,463	870.529.051.250,16
7	1302752	2483837,063	-1181085,063	1.394.961.927.004,33
8	1955008	1574401,565	380606,435	144.861.258.680,28
9	1912576	1867468,520	45107,480	2.034.684.765,10
10	1141280	1902201,280	-760921,280	579.001.193.697,09
11	1878876	1316291,894	562584,106	316.500.875.985,94
12	1960368	1749481,656	210886,344	44.473.050.216,83
13		1911864,141		
Demanda	25239204			8.361.412.814.005,58

A	\$ 13.375.082
f	0,45
Días/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	σl	σL
PF 27 GR	25.239.204	\$ 100,19	0,98	0,65	0,03	3.932.077	1911864	63728,805	7,49	477.342	871.853	435.642

Regla de Decisión para hallar k					
Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,180518654	0,557227202	0,288686103	0,180710702	242.752	720.094

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 85.851.932	\$ 85.851.932	\$ 10.928.198	\$ 32.873.634	\$ 215.505.696	0,711313897

σl 871853,4496

B. Con Proyección Junio 2012

LT	7,39	Días
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Modelo Suavización Exponencial Alpha 0.77 Estacionalidad 2				
Periodo	Xt	Ft	et	et ²
1	2336352	3068007,860	-731655,860	535.320.297.066,01
2	3496312	2504632,848	991679,152	983.427.541.034,78
3	1605920	3268225,795	-1662305,795	2.763.260.556.021,80
4	1698848	1988250,333	-289402,333	83.753.710.256,27
5	2698432	1765410,537	933021,463	870.529.051.250,16
6	1302752	2483837,063	-1181085,063	1.394.961.927.004,33
7	1955008	1574401,565	380606,435	144.861.258.680,28
8	1912576	1867468,520	45107,480	2.034.684.765,10
9	1141280	1902201,280	-760921,280	579.001.193.697,09
10	1878876	1316291,894	562584,106	316.500.875.985,94
11	1960368	1749481,656	210886,344	44.473.050.216,83
12	2562688	1911864,141	650823,859	423.571.695.692,94
13		2412998,512		
Demanda	24549412			8.141.695.841.671,52

A	\$ 13.375.082
f	0,45
Días/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	σl	σL
PF 27 GR	24.549.412	\$ 100,19	0,98	0,65	0,03	3.877.973	2412999	80433,284	7,39	594.173	860.322	426.913

Regla de Decisión para hallar k					
Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,181675282	0,55662123	0,288893123	0,180885700	237.629	831.801

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 84.670.630	\$ 84.670.630	\$ 10.697.566	\$ 31.975.192	\$ 212.014.018	0,711106877

σl 860322,13

C. Con Proyección Julio 2012

LT	7,43	Dias
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Modelo Suavización Exponencial Alpha 0.77 Estacionalidad 2				
Periodo	Xt	Ft	et	et^2
1	3496312	2504632,848	991679,152	983.427.541.034,78
2	1605920	3268225,795	-1662305,795	2.763.260.556.021,80
3	1698848	1988250,333	-289402,333	83.753.710.256,27
4	2698432	1765410,537	933021,463	870.529.051.250,16
5	1302752	2483837,063	-1181085,063	1.394.961.927.004,33
6	1955008	1574401,565	380606,435	144.861.258.680,28
7	1912576	1867468,520	45107,480	2.034.684.765,10
8	1141280	1902201,280	-760921,280	579.001.193.697,09
9	1878876	1316291,894	562584,106	316.500.875.985,94
10	1960368	1749481,656	210886,344	44.473.050.216,83
11	2562688	1911864,141	650823,859	423.571.695.692,94
12	2646768	2412998,512	233769,488	54.648.173.339,33
13		2593001,018		
Demanda	24859828			7.661.023.717.944,85

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	ci	cl
PF 27 GR	24.859.828	\$ 100,19	0,98	0,65	0,03	3.902.413	2593001	86433,367	7,43	642.520	834.540	415.422

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,187877223	0,531089963	0,297678220	0,188373396	220,626	863,146

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 85.204.259	\$ 85.204.259	\$ 9.932.156	\$ 32.379.503	\$ 212.720.178	0,702321780

ci	834539,8143
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12. MODELO DE INVENTARIOS
PF 28 GR

A. Con Proyección Mayo 2012

LT	13,60	Dias
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Modelo Suavización Exponencial Doble Alpha 0.59 Estacionalidad 4				
Periodo	Xt	Ft	et	et ²
1	1225000	1267103,181	-42103,181	1.772.677.858,79
2	1525000	1261193,600	263806,400	69.593.816.680,96
3	1485000	1457640,000	27360,000	748.569.600,00
4	1336000	1457640,000	-121640,000	14.796.289.600,00
5	1760000	1261193,600	498806,400	248.807.824.680,96
6	1388000	1754531,068	-366531,068	134.345.023.809,22
7	1032000	1400404,832	-368404,832	135.722.119.946,22
8	1364000	916478,089	447521,911	200.275.860.483,90
9	1165000	1267103,181	-102103,181	10.425.059.590,87
10	1289777	1124953,042	164823,958	27.166.937.237,09
11	963500	1262234,809	-298734,809	89.242.486.366,71
12	867000	909892,451	-42892,451	1.839.762.363,83
13		755454,488		
Demanda	15400277			934.736.428.218,55

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D dia	LT	XL	σl	σL
PF 28 GR	15.400.277	\$ 102,81	0,985	0,65	0,03	3.032.178	755454	25181,816	13,6	342.452	291.506	196.265

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,231740523	0,396392785	0,345907644	0,231684202	77.798	420.250

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 67.931.363	\$ 67.931.363	\$ 3.593.715	\$ 15.436.523	\$ 154.892.965	0,654092356

σl	291506,4989
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B. Con Proyección Junio 2012

LT	13,69	Dias
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Modelo Suavización Exponencial Doble Alpha 0.59 Estacionalidad 4				
Periodo	Xt	Ft	et	et ²
1	1525000	1261193,600	263806,400	69.593.816.680,96
2	1485000	1457640,000	27360,000	748.569.600,00
3	1336000	1457640,000	-121640,000	14.796.289.600,00
4	1760000	1261193,600	498806,400	248.807.824.680,96
5	1388000	1754531,068	-366531,068	134.345.023.809,22
6	1032000	1400404,832	-368404,832	135.722.119.946,22
7	1364000	916478,089	447521,911	200.275.860.483,90
8	1165000	1267103,181	-102103,181	10.425.059.590,87
9	1289777	1124953,042	164823,958	27.166.937.237,09
10	963500	1262234,809	-298734,809	89.242.486.366,71
11	867000	909892,451	-42892,451	1.839.762.363,83
12	1420000	755454,488	664545,512	441.620.736.908,06
13		1420862,460		
Demanda	15595277			1.374.584.487.267,81

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D dia	LT	XL	σl	σL
PF 28 GR	15.595.277	\$ 102,81	0,985	0,65	0,03	3.051.314	1420862	47362,082	13,7	648.150	353.500	238.754

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,191702151	0,519513909	0,301701208	0,191842596	124.036	772.186

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 68.360.088	\$ 68.360.088	\$ 5.729.574	\$ 15.631.982	\$ 158.081.732	0,698298792

σl	353499,9662
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C. Con Proyección Julio 2012

LT	13,58	Dias
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Modelo Suavización Exponencial Doble Alpha 0.59 Estacionalidad 4				
Periodo	Xt	Ft	et	et^2
1	1485000	1457640,000	27360,000	748.569.600,00
2	1336000	1457640,000	-121640,000	14.796.289.600,00
3	1760000	1261193,600	498806,400	248.807.824.680,96
4	1388000	1754531,068	-366531,068	134.345.023.809,22
5	1032000	1400404,832	-368404,832	135.722.119.946,22
6	1364000	916478,089	447521,911	200.275.860.483,90
7	1165000	1267103,181	-102103,181	10.425.059.590,87
8	1289777	1124953,042	164823,958	27.166.937.237,09
9	963500	1262234,809	-298734,809	89.242.486.366,71
10	867000	909892,451	-42892,451	1.839.762.363,83
11	1420000	755454,488	664545,512	441.620.736.908,06
12	1277000	1420862,460	-143862,460	20.696.407.254,08
13		1363677,317		
Demanda	15347277			1.325.687.077.840,93

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	cl	clL
PF 28 GR	15.347.277	\$ 102,81	0,985	0,65	0,03	3.026.956	1363677	45455,911	13,6	617.098	347.156	233.532

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,194424842	0,510619486	0,304808764	0,194539864	119,246	736,344

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 67.814.370	\$ 67.814.370	\$ 5.508.291	\$ 15.383.399	\$ 156.520.430	0,695191236

cl	347155,5949
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13. MODELO DE INVENTARIOS
PF 30 GR

A. Con Proyección Mayo 2012

LT	9,07	Dias
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Periodo	Xt	Ft	et	et ²
1	1334256	1778992,373	-444736,373	197.790.441.888,06
2	2983968	2582550,644	401417,356	161.135.893.666,51
3	2510964	2360054,400	150909,600	22.773.707.372,16
4	2519168	2540869,808	-21701,808	470.968.463,52
5	2208864	2582550,644	-373686,644	139.641.707.933,33
6	2755152	2167427,739	587724,261	345.419.807.352,55
7	2279088	2772539,230	-493451,230	243.494.116.565,03
8	2217072	2318321,582	-101249,582	10.251.477.781,15
9	2349312	2101136,623	248175,377	61.591.017.837,36
10	2310096	2272917,477	37178,523	1.382.242.594,75
11	1883907	2308094,255	-424187,255	179.934.827.177,35
12	2802192	1778992,373	1023199,627	1.046.937.475.729,27
13		2858545,868		
Demanda	28154039			2.410.823.684.361,05

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	cl	cl
PF 30 GR	28.154.039	\$ 104,41	0,985	0,65	0,03	4.068.119	2858546	95284,862	9,07	864.578	468.151	257.464

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu-(k)	Gu(k) Aprox	ss	s
0,237011258	0,380907144	0,351636076	0,237085113	98.070	962.648

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 92.564.285	\$ 92.564.285	\$ 4.600.903	\$ 28.661.290	\$ 218.390.764	0,648363924

cl 468151,46

B. Con Proyección Junio 2012

LT	9,33	Dias
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Periodo	Xt	Ft	et	et ²
1	2983968	2582550,644	401417,356	161.135.893.666,51
2	2510964	2360054,400	150909,600	22.773.707.372,16
3	2519168	2540869,808	-21701,808	470.968.463,52
4	2208864	2582550,644	-373686,644	139.641.707.933,33
5	2755152	2167427,739	587724,261	345.419.807.352,55
6	2279088	2772539,230	-493451,230	243.494.116.565,03
7	2217072	2318321,582	-101249,582	10.251.477.781,15
8	2349312	2101136,623	248175,377	61.591.017.837,36
9	2310096	2272917,477	37178,523	1.382.242.594,75
10	1883907	2308094,255	-424187,255	179.934.827.177,35
11	2802192	1778992,373	1023199,627	1.046.937.475.729,27
12	2924736	2858545,868	66190,132	4.381.133.562,17
13		3264688,632		
Demanda	29744519			2.217.414.376.035,17

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	cl	cl
PF 30 GR	29.744.519	\$ 104,41	0,985	0,65	0,03	4.181.449	3264689	108822,95	9,33	1.014.925	448.980	250.336

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu-(k)	Gu(k) Aprox	ss	s
0,250550244	0,342928276	0,365826210	0,250708699	85.847	1.100.773

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 95.142.941	\$ 95.142.941	\$ 4.027.491	\$ 30.280.426	\$ 224.593.799	0,634173790

cl 448980,0943

C. Con Proyección Julio 2012

LT	9,23	Dias
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Modelo Suav. Exp. Ajuste Tend. Alpha 0.74 Beta 0.71 Estacionalidad 4				
Periodo	Xt	Ft	et	et^2
1	2510964	2360054,400	150909,600	22.773.707.372,16
2	2519168	2540869,808	-21701,808	470.968.463,52
3	2208864	2582550,644	-373686,644	139.641.707.933,33
4	2755152	2167427,739	587724,261	345.419.807.352,55
5	2279088	2772539,230	-493451,230	243.494.116.565,03
6	2217072	2318321,582	-101249,582	10.251.477.781,15
7	2349312	2101136,623	248175,377	61.591.017.837,36
8	2310096	2272917,477	37178,523	1.382.242.594,75
9	1883907	2308094,255	-424187,255	179.934.827.177,35
10	2802192	1778992,373	1023199,627	1.046.937.475.729,27
11	2924736	2858545,868	66190,132	4.381.133.562,17
12	2399648	3264688,632	-865040,632	748.295.295.005,73
13		2527228,283		
Demanda	29160199			2.804.573.777.374,39

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	cl	σL
PF 30 GR	29.160.199	\$ 104,41	0,985	0,65	0,03	4.140.174	2527228	84240,943	9,23	777.909	504.937	280.143

Regla de Decision para hallar k

Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,221682142	0,423352677	0,336018983	0,222492113	118.599	896.508

Costos

Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 94.203.782	\$ 94.203.782	\$ 5.564.030	\$ 29.685.578	\$ 223.657.172	0,663981017

cl	504936,8797
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14. MODELO DE INVENTARIOS
PF 30 GR Kerr

A. Con Proyección Mayo 2012

LT	20,39	Dias
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Periodo	Xt	Ft	et	et ²
1	4856400	3879941,775	976458,225	953.470.665.322,71
2	5472000	4752341,586	719658,414	517.908.232.972,27
3	6949440	5958557,071	990882,929	981.848.978.254,50
4	7770240	8167978,536	-397738,536	158.195.943.112,83
5	5745600	8861330,378	-3115730,378	9.707.775.788.511,29
6	5745600	4777519,286	968080,714	937.180.269.271,54
7	8262720	4996208,741	3266511,259	10.670.095.806.450,80
8	5796900	9743792,438	-3946892,438	15.577.959.916.783,00
9	6511680	5159636,104	1352043,896	1.828.022.697.046,56
10	5472000	6232441,969	-760441,969	578.271.988.542,90
11	6549300	4878574,915	1670725,085	2.791.322.309.829,52
12	6019200	6933465,631	-914265,631	835.881.644.481,88
13		6031498,546		
Demanda	75151080			45.537.934.240.579,80

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	σt	σL
PF 30 GR Kerr	75.151.080	\$ 105,65	0,98	0,65	0,03	6.607.381	6031499	201049,95	20,4	4.100.042	2.034.653	1.677.536

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,078774832	1,028003624	0,151974061	0,078966540	1.724.513	5.824.555

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 152.125.602	\$ 152.125.602	\$ 81.864.898	\$ 103.217.228	\$ 489.333.330	0,848025939

σt 2034652,846

B. Con Proyección Junio 2012

LT	20,53	Dias
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Periodo	Xt	Ft	et	et ²
1	5472000	4752341,586	719658,414	517.908.232.972,27
2	6949440	5958557,071	990882,929	981.848.978.254,50
3	7770240	8167978,536	-397738,536	158.195.943.112,83
4	5745600	8861330,378	-3115730,378	9.707.775.788.511,29
5	5745600	4777519,286	968080,714	937.180.269.271,54
6	8262720	4996208,741	3266511,259	10.670.095.806.450,80
7	5796900	9743792,438	-3946892,438	15.577.959.916.783,00
8	6511680	5159636,104	1352043,896	1.828.022.697.046,56
9	5472000	6232441,969	-760441,969	578.271.988.542,90
10	6549300	4878574,915	1670725,085	2.791.322.309.829,52
11	6019200	6933465,631	-914265,631	835.881.644.481,88
12	5848200	6031498,546	-183298,546	33.598.356.999,47
13		5623544,761		
Demanda	76142880			44.618.061.932.256,50

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	σt	σL
PF 30 GR Kerr	76.142.880	\$ 105,65	0,98	0,65	0,03	6.650.838	5623545	187451,49	20,5	3.847.869	2.013.998	1.665.958

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,079844005	1,017670035	0,154417396	0,080549580	1.695.396	5.543.265

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 153.126.144	\$ 153.126.144	\$ 80.482.651	\$ 104.579.428	\$ 491.314.367	0,845582604

σt 2013997,877

C. Con Proyección Julio 2012

LT	20,72	Dias
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Modelo Suav. Exp. Ajuste Tend. Alpha 0.87 Beta 0.89 Estacionalidad 2				
Periodo	Xt	Ft	et	et ²
1	6949440	5958557,071	990882,929	981.848.978.254,50
2	7770240	8167978,536	-397738,536	158.195.943.112,83
3	5745600	8861330,378	-3115730,378	9.707.775.788.511,29
4	5745600	4777519,286	968080,714	937.180.269.271,54
5	8262720	4996208,741	3266511,259	10.670.095.806.450,80
6	5796900	9743792,438	-3946892,438	15.577.959.916.783,00
7	6511680	5159636,104	1352043,896	1.828.022.697.046,56
8	5472000	6232441,969	-760441,969	578.271.988.542,90
9	6549300	4878574,915	1670725,085	2.791.322.309.829,52
10	6019200	6933465,631	-914265,631	835.881.644.481,88
11	5848200	6031498,546	-183298,546	33.598.356.999,47
12	6894720	5623544,761	1271175,239	1.615.886.488.799,24
13		7465254,156		
Demanda	77565600			45.716.040.188.083,50

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	cl	clL
PF 30 GR Kerr	77.565.600	\$ 105,65	0,98	0,65	0,03	6.712.686	7465254	248841,81	20,7	5.155.546	2.038.628	1.694.154

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,079245266	1,021961071	0,153399663	0,079889154	1.731.360	6.886.906

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 154.550.094	\$ 154.550.094	\$ 82.189.920	\$ 106.533.482	\$ 497.823.590	0,846600337

cl	2038627,885
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15. MODELO DE INVENTARIOS
PF 30.5 GR

A. Con Proyección Mayo 2012

LT	22,25	Dias
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Modelo Suavización Exponencial Alpha 0.58 Estacionalidad 4				
Periodo	Xt	Ft	et	et^2
1	2864720	2879941,775	-15221,775	231.702.431,77
2	5481280	4752341,586	728938,414	531.351.211.537,80
3	3567360	3912120,000	-344760,000	118.859.457.600,00
4	6028992	3712159,200	2316832,800	5.367.714.223.155,84
5	4172256	5055922,224	-883666,224	780.865.995.438,42
6	4798278	4543395,814	254882,186	64.964.928.699,36
7	4674096	4691227,482	-17131,482	293.487.672,56
8	4448464	4681291,222	-232827,222	54.208.515.492,23
9	4860768	4546251,433	314516,567	98.920.670.659,84
10	3062880	4728671,042	-1665791,042	2.774.859.795.714,10
11	4632528	3762512,238	870015,762	756.927.426.731,46
12	4298746	4267121,380	31624,620	1.000.116.601,88
13	4285463,660			
Demanda	52890368			10.550.197.531.735,30

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	cl	cl
PF 30.5 GR	52.890.368	\$ 107,61	0,98	0,65	0,03	5.492.265	4285464	142848,79	22,2	3.178.208	979.341	843.386

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,130243255	0,757907973	0,224253039	0,129384152	639.209	3.817.417

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 128.801.696	\$ 128.801.696	\$ 30.908.012	\$ 73.993.017	\$ 362.504.420	0,775746961

cl	979341,0369
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B. Con Proyección Junio 2012

LT	22,41	Dias
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Modelo Suavización Exponencial Alpha 0.58 Estacionalidad 4				
Periodo	Xt	Ft	et	et^2
1	5481280	4752341,586	728938,414	531.351.211.537,80
2	3567360	3912120,000	-344760,000	118.859.457.600,00
3	6028992	3712159,200	2316832,800	5.367.714.223.155,84
4	4172256	5055922,224	-883666,224	780.865.995.438,42
5	4798278	4543395,814	254882,186	64.964.928.699,36
6	4674096	4691227,482	-17131,482	293.487.672,56
7	4448464	4681291,222	-232827,222	54.208.515.492,23
8	4860768	4546251,433	314516,567	98.920.670.659,84
9	3062880	4728671,042	-1665791,042	2.774.859.795.714,10
10	4632528	3762512,238	870015,762	756.927.426.731,46
11	4298746	4267121,380	31624,620	1.000.116.601,88
12	3640320	4285463,660	-645143,660	416.210.341.421,53
13	3911280,337			
Demanda	53665968			10.966.176.170.725,00

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	cl	cl
PF 30.5 GR	53.665.968	\$ 107,61	0,98	0,65	0,03	5.532.388	3911280	130376,01	22,4	2.921.895	998.461	862.987

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,128214907	0,765894246	0,221869615	0,127602733	660.957	3.582.852

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 129.742.652	\$ 129.742.652	\$ 31.959.598	\$ 75.076.072	\$ 366.522.974	0,778130385

cl	998461,3695
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C. Con Proyección Julio 2012

LT	21,94	Dias
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Modelo Suavización Exponencial Alpha 0.58 Estacionalidad 4				
Periodo	Xt	Ft	et	et^2
1	3567360	3912120,000	-344760,000	118.859.457.600,00
2	6028992	3712159,200	2316832,800	5.367.714.223.155,84
3	4172256	5055922,224	-883666,224	780.865.995.438,42
4	4798278	4543395,814	254882,186	64.964.928.699,36
5	4674096	4691227,482	-17131,482	293.487.672,56
6	4448464	4681291,222	-232827,222	54.208.515.492,23
7	4860768	4546251,433	314516,567	98.920.670.659,84
8	3062880	4728671,042	-1665791,042	2.774.859.795.714,10
9	4632528	3762512,238	870015,762	756.927.426.731,46
10	4298746	4267121,380	31624,620	1.000.116.601,88
11	3640320	4285463,660	-645143,660	416.210.341.421,53
12	3264624	3911280,337	-646656,337	418.164.418.181,31
13		3536219,662		
Demanda	51449312			10.852.989.377.368,50

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	σt	σL
PF 30.5 GR	51.449.312	\$ 107,61	0,98	0,65	0,03	5.416.926	3536220	117873,99	21,9	2.586.576	993.295	849.516

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,127529775	0,76903196	0,220937169	0,126908033	653.305	3.239.880

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 127.034.906	\$ 127.034.906	\$ 31.589.600	\$ 71.976.996	\$ 357.636.408	0,779062831

σt	993295,2219
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16. MODELO DE INVENTARIOS
PF 44 GR

A. Con Proyección Mayo 2012

LT	18,03	Dias
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Modelo Descomposición Multiplicativa Estacionalidad 4				
Periodo	Xt	Ft	et	et ²
1	4000000	4191884,734	-191884,734	36.819.751.105,22
2	4950000	4202433,661	747566,339	558.855.431.097,35
3	4580000	4212982,588	367017,412	134.701.780.533,81
4	2625770	4223531,515	-1597761,515	2.552.841.860.127,46
5	5145331	4234080,443	911250,557	830.377.578.398,72
6	4457800	4244629,370	213170,630	45.441.717.601,69
7	4651888	4255178,297	396709,703	157.378.588.519,52
8	4289344	4265727,224	23616,776	557.752.104,53
9	4123890	4276276,151	-152386,151	23.221.539.094,61
10	3896000	4286825,078	-390825,078	152.744.241.925,94
11	4697725	4297374,006	400350,994	160.280.918.721,80
12	3581098	4307922,933	-726824,933	528.274.482.886,16
13		4318471,860		
Demanda	50998846			5.181.495.642.116,81

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	cl	cl
PF 44 GR	50.998.846	\$ 163,73	0,98	0,65	0,03	4.372.393	4318472	143949,06	18	2.595.190	686.327	532.048

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu-(k)	Gu(k) Aprox	ss	s
0,164360876	0,616067531	0,268924975	0,164309037	327.777	2.922.968

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 156.004.654	\$ 156.004.654	\$ 24.113.246	\$ 108.548.213	\$ 444.670.767	0,731075025

cl	686327,224
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B. Con Proyección Junio 2012

LT	17,94	Dias
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Modelo Descomposición Multiplicativa Estacionalidad 4				
Periodo	Xt	Ft	et	et ²
1	4950000	4301323,967	648676,033	420.780.595.508,22
2	4580000	4279741,312	300258,688	90.155.279.578,70
3	2625770	4258158,657	-1632388,657	2.664.692.728.327,45
4	5145331	4236576,002	908754,998	825.835.645.897,31
5	4457800	4214993,347	242806,653	58.955.070.600,54
6	4651888	4193410,692	458477,308	210.201.441.668,79
7	4289344	4171828,037	117515,963	13.810.001.483,20
8	4123890	4150245,382	-26355,382	694.606.178,52
9	3896000	4128662,727	-232662,727	54.131.944.703,82
10	4697725	4107080,072	590644,928	348.861.430.522,12
11	3581098	4085497,417	-504399,417	254.418.772.272,71
12	3515493	4063914,762	-548421,762	300.766.429.493,19
13		4042332,107		
Demanda	50514339			5.243.303.946.234,55

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	cl	cl
PF 44 GR	50.514.339	\$ 163,73	0,98	0,65	0,03	4.351.574	4042332	134744,4	17,9	2.417.677	690.409	533.936

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu-(k)	Gu(k) Aprox	ss	s
0,162999804	0,621163111	0,267246154	0,162942987	331.661	2.749.338

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 155.261.836	\$ 155.261.836	\$ 24.398.973	\$ 107.516.967	\$ 442.439.611	0,732753846

cl	690408,5711
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C. Con Proyección Julio 2012

LT	17,75	Dias
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Modelo Descomposición Multiplicativa Estacionalidad 4				
Periodo	Xt	Ft	et	et^2
1	4580000	4314801,350	265198,650	70.330.324.166,60
2	2625770	4282832,939	-1657062,939	2.745.857.582.443,90
3	5145331	4250864,528	894466,472	800.070.270.313,37
4	4457800	4218896,117	238903,883	57.075.065.533,24
5	4651888	4186927,706	464960,294	216.188.075.449,76
6	4289344	4154959,294	134384,706	18.059.249.075,72
7	4123890	4122990,883	899,117	808.410,55
8	3896000	4091022,472	-195022,472	38.033.764.755,33
9	4697725	4059054,061	638670,939	407.900.567.797,65
10	3581098	4027085,650	-445987,650	198.904.984.296,90
11	3515493	3995117,239	-479624,239	230.039.410.982,39
12	3878870	3963148,828	-84278,828	7.102.920.905,60
13		3931180,417		
Demanda	49443209			4.789.563.024.131,00

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	cl	σL
PF 44 GR	49.443.209	\$ 163,73	0,98	0,65	0,03	4.305.191	3931180	131039,35	17,8	2.326.137	659.860	507.584

Regla de Decisión para hallar k					
Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,169634681	0,597036904	0,275241371	0,169486834	303.046	2.629.183

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 153.606.893	\$ 153.606.893	\$ 22.293.871	\$ 105.237.126	\$ 434.744.783	0,724758629

cl	659859,6975
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17. MODELO DE INVENTARIOS
PF 47.5 GR

A. Con Proyección Mayo 2012

LT	8,86	Dias
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Modelo Suavización Exponencial Alpha 0.82 Estacionalidad 4				
Periodo	Xt	Ft	et	et'2
1	779687	982768,179	-203081,179	41.241.965.105,28
2	719172	816241,612	-97069,612	9.422.509.602,88
3	716702	736644,530	-19942,530	397.704.510,26
4	756723	720291,655	36431,345	1.327.242.866,91
5	728923	750165,358	-21242,358	451.237.772,47
6	825600	732746,624	92853,376	8.621.749.353,62
7	967455	808886,392	158568,608	25.144.003.316,68
8	825000	938912,651	-113912,651	12.976.091.973,95
9	890000	845504,277	44495,723	1.979.869.355,17
10	725678	881990,770	-156312,770	24.433.682.027,70
11	912000	753814,299	158185,701	25.022.716.134,22
12	780145	883526,574	-103381,574	10.687.749.789,81
13		798753,683		
Demanda	9627085			161.706.521.808,96

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	σl	σL
PF 47.5 GR	9.627.085	\$ 166,41	0,995	0,65	0,03	1.884.301	798754	26625,123	8,86	235.897	121.246	65.890

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,142987665	0,699068243	0,242254692	0,143104964	46.062	281.958

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 68.334.634	\$ 68.334.634	\$ 3.444.214	\$ 5.206.781	\$ 145.320.264	0,757745308

σl	121246,0015
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B. Con Proyección Junio 2012

LT	8,89	Dias
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Modelo Suavización Exponencial Alpha 0.82 Estacionalidad 4				
Periodo	Xt	Ft	et	et'2
1	719172	816241,612	-97069,612	9.422.509.602,88
2	716702	736644,530	-19942,530	397.704.510,26
3	756723	720291,655	36431,345	1.327.242.866,91
4	728923	750165,358	-21242,358	451.237.772,47
5	825600	732746,624	92853,376	8.621.749.353,62
6	967455	808886,392	158568,608	25.144.003.316,68
7	825000	938912,651	-113912,651	12.976.091.973,95
8	890000	845504,277	44495,723	1.979.869.355,17
9	725678	881990,770	-156312,770	24.433.682.027,70
10	912000	753814,299	158185,701	25.022.716.134,22
11	780145	883526,574	-103381,574	10.687.749.789,81
12	845000	798753,683	46246,317	2.138.721.810,73
13		836675,663		
Demanda	9692398			122.603.278.514,40

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	σl	σL
PF 47.5 GR	9.692.398	\$ 166,41	0,995	0,65	0,03	1.890.682	836676	27889,189	8,89	247.933	105.573	57.470

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,164492238	0,613861757	0,269653342	0,164903027	35.279	283.212

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 68.566.044	\$ 68.566.044	\$ 2.637.926	\$ 5.242.106	\$ 145.012.119	0,730346658

σl	105573,4464
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C. Con Proyección Julio 2012

LT	8,97	Dias
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Modelo Suavización Exponencial Alpha 0.82 Estacionalidad 4				
Periodo	Xt	Ft	et	et^2
1	716702	736644,530	-19942,530	397.704.510,26
2	756723	720291,655	36431,345	1.327.242.866,91
3	728923	750165,358	-21242,358	451.237.772,47
4	825600	732746,624	92853,376	8.621.749.353,62
5	967455	808886,392	158568,608	25.144.003.316,68
6	825000	938912,651	-113912,651	12.976.091.973,95
7	890000	845504,277	44495,723	1.979.869.355,17
8	725678	881990,770	-156312,770	24.433.682.027,70
9	912000	753814,299	158185,701	25.022.716.134,22
10	780145	883526,574	-103381,574	10.687.749.789,81
11	845000	798753,683	46246,317	2.138.721.810,73
12	892000	836675,663	55324,337	3.060.782.265,67
13		882041,619		
Demanda	9865226			116.241.551.177,19

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	σl	σL
PF 47.5 GR	9.865.226	\$ 166,41	0,995	0,65	0,03	1.907,465	882042	29401,387	8,97	263,696	102,798	56,207

Regla de Decision para hallar k

Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,169681581	0,595200932	0,275854584	0,169992733	33,455	297,151

Costos

Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 69.174.653	\$ 69.174.653	\$ 2.501.521	\$ 5.335.579	\$ 146.186.407	0,724145416

σl	102797,9267
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18. MODELO DE INVENTARIOS
PF 52 GR

A. Con Proyección Mayo 2012

LT	13,02	Dias
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Modelo Suavización Exponencial Alpha 0.86 Estacionalidad 3				
Periodo	Xt	Ft	et	et ²
1	1483184	1453553.607	29630,393	877.960.209,09
2	1346770	1479035,745	-132265,745	17.494.227.282,77
3	2093724	1365287,204	728436,796	530.620.165.343,28
4	1076554	1991742,849	-915188,849	837.570.628.603,06
5	2409043	1204680,439	1204362,561	1.450.489.178.810,36
6	3438759	2240432,241	1198326,759	1.435.987.020.298,71
7	2474731	3270993,254	-796262,254	634.033.576.827,55
8	2168717	2586207,716	-417490,716	174.298.497.555,49
9	2636725	2227165,700	409559,300	167.738.820.073,56
10	2165442	2579386,698	-413944,698	171.350.213.022,54
11	2667253	2223394,258	443858,742	197.010.583.095,35
12	1965291	2605112,776	-639821,776	409.371.905.147,80
13		2054866,049		
Demanda	25926193			6.026.842.776.269,55

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	σl	σL
PF 52 GR	25.926.193	\$ 192,96	0,98	0,65	0,03	2.871.679	2054866	68495,535	13	891.664	740.199	487.593

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,117790044	0,811014875	0,208678564	0,117891195	395.445	1.287.109

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 120.753.359	\$ 120.753.359	\$ 34.285.281	\$ 65.034.831	\$ 340.826.831	0,791321436

σl 740199,1609

B. Con Proyección Junio 2012

LT	13,19	Dias
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Modelo Suavización Exponencial Alpha 0.86 Estacionalidad 3				
Periodo	Xt	Ft	et	et ²
1	1346770	1479035,745	-132265,745	17.494.227.282,77
2	2093724	1365287,204	728436,796	530.620.165.343,28
3	1076554	1991742,849	-915188,849	837.570.628.603,06
4	2409043	1204680,439	1204362,561	1.450.489.178.810,36
5	3438759	2240432,241	1198326,759	1.435.987.020.298,71
6	2474731	3270993,254	-796262,254	634.033.576.827,55
7	2168717	2586207,716	-417490,716	174.298.497.555,49
8	2636725	2227165,700	409559,300	167.738.820.073,56
9	2165442	2579386,698	-413944,698	171.350.213.022,54
10	2667253	2223394,258	443858,742	197.010.583.095,35
11	1965291	2605112,776	-639821,776	409.371.905.147,80
12	2193083	2054866,049	138216,951	19.103.925.640,11
13		2173732,627		
Demanda	26636092			6.045.068.741.700,57

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	σl	σL
PF 52 GR	26.636.092	\$ 192,96	0,98	0,65	0,03	2.910.729	2173733	72457,754	13,2	956.070	741.318	491.639

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,118409305	0,808196997	0,209488593	0,118480367	397.341	1.353.411

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 122.395.401	\$ 122.395.401	\$ 34.449.646	\$ 66.815.585	\$ 346.056.033	0,790511407

σl 741317,5459

C. Con Proyección Julio 2012

LT	13,27	Dias
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Modelo Suavización Exponencial Alpha 0.86 Estacionalidad 3				
Periodo	Xt	Ft	et	et^2
1	2093724	1365287.204	728436.796	530.620.165.343.28
2	1076554	1991742.849	-915188.849	837.570.628.603.06
3	2409043	1204680.439	1204362.561	1.450.489.178.810.36
4	3438759	2240432.241	1198326.759	1.435.987.020.298.71
5	2474731	3270993.254	-796262.254	634.033.576.827.55
6	2168717	2586207.716	-417490.716	174.298.497.555.49
7	2636725	2227165.700	409559.300	167.738.820.073.56
8	2165442	2579386.698	-413944.698	171.350.213.022.54
9	2667253	2223394.258	443858.742	197.010.583.095.35
10	1965291	2605112.776	-639821.776	409.371.905.147.80
11	2193083	2054866.049	138216.951	19.103.925.640.11
12	1642697	2173732.627	-531035.627	281.998.836.942.76
13		1717041.988		
Demanda	26932019			6.309.573.351.360.56

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	cl	clL
PF 52 GR	26.932.019	\$ 192,96	0,98	0,65	0,03	2.926.854	1717042	57234.733	13,3	759.388	757.362	503.669

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,116221388	0,818708145	0,206476474	0,116294254	412.358	1.171.745

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 123.073.430	\$ 123.073.430	\$ 35.751.611	\$ 67.557.906	\$ 349.456.376	0.793523526

cl	757362,2498
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19. MODELO DE INVENTARIOS
PF 54 GR

A. Con Proyección Mayo 2012

LT	13,67	Días
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Modelo Promedio Movil Simple Estacionalidad 1				
Periodo	Xt	Ft	et	et^2
1	1782311	2000936,000	-218625,000	47.796.890.625,00
2	1868284	1782311,000	85973,000	7.391.356.729,00
3	2200936	1868284,000	332652,000	110.657.353.104,00
4	2248000	2200936,000	47064,000	2.215.020.096,00
5	2186204	2248000,000	-61796,000	3.818.745.616,00
6	2258432	2186204,000	72228,000	5.216.883.984,00
7	2145700	2258432,000	-112732,000	12.708.503.824,00
8	2223556	2145700,000	77856,000	6.061.556.736,00
9	2008741	2223556,000	-214815,000	46.145.484.225,00
10	2124568	2008741,000	115827,000	13.415.893.929,00
11	1892000	2124568,000	-232568,000	54.087.874.624,00
12	2186700	1892000,000	294700,000	86.848.090.000,00
13	2186700	2186700,000		
Demanda	25125432			396.363.653.492,00

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	cl	cl
PF 54 GR	25.125.432	\$ 197,59	0,99	0,65	0,03	2.793.662	2186700	72890	13,7	996.742	189.824	128.159

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,217984943	0,43963502	0,330100736	0,217069175	56,343	1.053,085

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 120.291.805	\$ 120.291.805	\$ 5.002.189	\$ 32.269.308	\$ 277.855.107	0,6698989264

cl	189823,7588
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B. Con Proyección Junio 2012

LT	13,87	Días
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Modelo Promedio Movil Simple Estacionalidad 1				
Periodo	Xt	Ft	et	et^2
1	1868284	1782311,000	85973,000	7.391.356.729,00
2	2200936	1868284,000	332652,000	110.657.353.104,00
3	2248000	2200936,000	47064,000	2.215.020.096,00
4	2186204	2248000,000	-61796,000	3.818.745.616,00
5	2258432	2186204,000	72228,000	5.216.883.984,00
6	2145700	2258432,000	-112732,000	12.708.503.824,00
7	2223556	2145700,000	77856,000	6.061.556.736,00
8	2008741	2223556,000	-214815,000	46.145.484.225,00
9	2124568	2008741,000	115827,000	13.415.893.929,00
10	1892000	2124568,000	-232568,000	54.087.874.624,00
11	2186700	1892000,000	294700,000	86.848.090.000,00
12	2511680	2186700,000	324980,000	105.612.000.400,00
13	2186700	2511680,000		
Demanda	25854801			454.178.763.267,00

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	cl	cl
PF 54 GR	25.854.801	\$ 197,59	0,99	0,65	0,03	2.833.921	2511680	83722,667	13,9	1.161.373	203.197	138.172

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,205100591	0,476563062	0,316836646	0,205124800	65,848	1.227,221

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 122.025.296	\$ 122.025.296	\$ 5.846.038	\$ 33.206.058	\$ 283.102.688	0,683163354

cl	203196,8958
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C. Con Proyección Julio 2012

LT	13,95	Días
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Modelo Promedio Movil Simple Estacionalidad 1				
Periodo	Xt	Ft	et	et ²
1	2200936	1868284,000	332652,000	110.657.353.104,00
2	2248000	2200936,000	47064,000	2.215.020.096,00
3	2186204	2248000,000	-61796,000	3.818.745.616,00
4	2258432	2186204,000	72228,000	5.216.883.984,00
5	2145700	2258432,000	-112732,000	12.708.503.824,00
6	2223556	2145700,000	77856,000	6.061.556.736,00
7	2008741	2223556,000	-214815,000	46.145.484.225,00
8	2124568	2008741,000	115827,000	13.415.893.929,00
9	1892000	2124568,000	-232568,000	54.087.874.624,00
10	2186700	1892000,000	294700,000	86.848.090.000,00
11	2511680	2186700,000	324980,000	105.612.000.400,00
12	2161080	2511680,000	-350600,000	122.920.360.000,00
13		2161080,000		
Demanda	26147597			569.707.766.538,00

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	cl	αL
PF 54 GR	26.147.597	\$ 197,59	0,99	0,65	0,03	2.849.923	2161080	72036	13,9	1.004.902	227.578	155.187

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,183644066	0,546710912	0,292288678	0,183765533	84.843	1.089.745

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 122.714.297	\$ 122.714.297	\$ 7.532.415	\$ 33.582.104	\$ 286.543.113	0,707711322

cl	227577,7123
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20. MODELO DE INVENTARIOS
PF 60 GR

A. Con Proyección Mayo 2012

LT	10,99	Días
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Modelo Suavización Exponencial Doble Alpha 0.65 Estacionalidad 4				
Periodo	Xt	Ft	et	et*2
1	1239200	1376994,761	-137794,761	18.987.396.244,45
2	1844214	1334567,869	509646,131	259.739.178.682,78
3	839412	2075595,850	-1236183,850	1.528.150.511.371,08
4	2347052	762370,346	1584681,654	2.511.215.944.102,52
5	1391732	2593982,321	-1202250,321	1.445.405.833.502,51
6	1143930	1472110,727	-328180,727	107.702.589.609,40
7	1161658	978578,845	183079,155	33.517.977.120,78
8	1057443	1011028,452	46414,548	2.154.310.247,81
9	981008	943165,013	37842,987	1.432.091.660,02
10	935839	883768,691	52070,309	2.711.317.053,03
11	2546241	858856,550	1687384,450	2.847.266.282.856,90
12	1345926	2981852,498	-1635926,498	2.676.255.505.762,18
13		1497464,144		
Demanda	16833655			11.434.538.938.213,40

A	\$ 13.375.082
r	0,45
Días/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	σl	σL
PF 60 GR	16.833.655	\$ 221,57	0,98	0,65	0,03	2.159.391	1497464	49915,471	11	548.396	1.019.560	616.995

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,06999702	1,088188751	0,138255895	0,070237157	671,407	1.219,803

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 104.266.203	\$ 104.266.203	\$ 66.843.087	\$ 48.488.047	\$ 323.863.541	0,861744105

σl 1019560,464

B. Con Proyección Junio 2012

LT	10,90	Días
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Modelo Suavización Exponencial Doble Alpha 0.65 Estacionalidad 4				
Periodo	Xt	Ft	et	et*2
1	1844214	1334567,869	509646,131	259.739.178.682,78
2	839412	2075595,850	-1236183,850	1.528.150.511.371,08
3	2347052	762370,346	1584681,654	2.511.215.944.102,52
4	1391732	2593982,321	-1202250,321	1.445.405.833.502,51
5	1143930	1472110,727	-328180,727	107.702.589.609,40
6	1161658	978578,845	183079,155	33.517.977.120,78
7	1057443	1011028,452	46414,548	2.154.310.247,81
8	981008	943165,013	37842,987	1.432.091.660,02
9	935839	883768,691	52070,309	2.711.317.053,03
10	2546241	858856,550	1687384,450	2.847.266.282.856,90
11	1345926	2981852,498	-1635926,498	2.676.255.505.762,18
12	967149	1497464,144	-530315,144	281.234.151.444,35
13		759191,604		
Demanda	16561604			11.696.785.693.413,30

A	\$ 13.375.082
r	0,45
Días/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	σl	σL
PF 60 GR	16.561.604	\$ 221,57	0,98	0,65	0,03	2.141.871	759192	25306,387	10,9	275.772	1.031.186	621.494

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,06892656	1,097128352	0,136292644	0,069009994	681,858	957,631

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 103.420.241	\$ 103.420.241	\$ 67.883.564	\$ 47.704.425	\$ 322.428.472	0,863707356

σl 1031185,8

C. Con Proyección Julio 2012

LT	10,63	Días
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Modelo Suavización Exponencial Doble Alpha 0.65 Estacionalidad 4				
Periodo	Xt	Ft	et	et^2
1	839412	2075595,850	-1236183,850	1.528.150.511.371,08
2	2347052	762370,346	1584681,654	2.511.215.944.102,52
3	1391732	2593982,321	-1202250,321	1.445.405.833.502,51
4	1143930	1472110,727	-328180,727	107.702.589.609,40
5	1161658	978578,845	183079,155	33.517.977.120,78
6	1057443	1011028,452	46414,548	2.154.310.247,81
7	981008	943165,013	37842,987	1.432.091.660,02
8	935839	883768,691	52070,309	2.711.317.053,03
9	2546241	858856,550	1687384,450	2.847.266.282.856,90
10	1345926	2981852,498	-1635926,498	2.676.255.505.762,18
11	967149	1497464,144	-530315,144	281.234.151.444,35
12	1047966	759191,604	288774,396	83.390.651.497,23
13		861677,318		
Demanda	15765356			11.520.437.166.227,80

A	\$ 13.375.082
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	D/m	EPQ	XI	D día	LT	XL	cl	clL
PF 60 GR	15.765.356	\$ 221,57	0,98	0,65	0,03	2.089.748	861677	28722,577	10,6	305.383	1.023.383	609.240

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,068601836	1,09921156	0,135837899	0,068726542	669.683	975.066

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 100.903.502	\$ 100.903.502	\$ 66.671.472	\$ 45.410.894	\$ 313.889.371	0,864162101

cl	1023382,856
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21. MODELO DE INVENTARIOS

RESINA

A. Con Proyección Mayo 2012

LT	30,00	Dias
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Modelo Descomposición Multiplicativa Estacionalidad 6				
Periodo	Xt	Ft	et	et^2
1	1191212,38	1419629,914	-228417,530	52.174.567.834,11
2	1395149,53	1429112,130	-33962,605	1.153.458.561,60
3	1432443,9	1438594,347	-6150,446	37.827.980,73
4	1423464,52	1448076,563	-24612,043	605.752.675,45
5	1542106,62	1457558,779	84547,842	7.148.337.666,23
6	1621716,69	1467040,995	154675,694	23.924.570.233,89
7	1600896,34	1476523,211	124373,129	15.468.675.219,79
8	1446964,96	1486005,428	-39040,469	1.524.158.197,83
9	1436158,04	1495487,644	-59329,609	3.520.002.498,05
10	1324968,18	1504969,860	-180001,683	32.400.605.947,15
11	1745742,68	1514452,076	231290,604	53.495.343.309,83
12	1500561,41	1523934,293	-23372,884	546.291.712,92
13		1533416,509		
Demanda	17661385,2			191.999.591.837,57

A	\$ 500.000
f	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	EOQ	XI	D día	LT	XL	σl	σL
RESINA	17.661.385	\$ 3.727,50	0,98	0,65	102.689	1533417	51113,8836	30	1.533.417	132.116	132.116

Regla de Decision para hallar k

Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,015545366	1,753856255	0,039727570	0,016019956	231.712	1.765.128

Costos

Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 85.994.369	\$ 85.994.369	\$ 388.081.609	\$ 855.826.575	\$ 1.415.896.922	0,960272430

σl	132115,5114
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B. Con Proyección Junio 2012

LT	30,00	Dias
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Modelo Descomposición Multiplicativa Estacionalidad 6				
Periodo	Xt	Ft	et	et^2
1	1395149,53	1416566,420	-21416,895	458.683.403,41
2	1432443,9	1428658,385	3785,516	14.330.132,55
3	1423464,52	1440750,349	-17285,830	298.799.915,81
4	1542106,62	1452842,314	89264,308	7.968.116.596,85
5	1621716,69	1464934,279	156782,410	24.580.724.227,08
6	1600896,34	1477026,243	123870,097	15.343.801.026,07
7	1446964,96	1489118,208	-42153,249	1.776.896.374,50
8	1436158,04	1501210,172	-65052,137	4.231.780.560,76
9	1324968,18	1513302,137	-188333,960	35.469.680.420,33
10	1745742,68	1525394,101	220348,579	48.553.496.098,03
11	1500561,41	1537486,066	-36924,657	1.363.430.327,90
12	1539955,92	1549578,031	-9622,111	92.585.010,83
13		1561669,995		
Demanda	18010128,8			140.152.324.094,11

A	\$ 500.000
f	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	EOQ	XI	D día	LT	XL	σl	σL
RESINA	18.010.129	\$ 3.727,50	0,98	0,65	103.698	1561670	52055,6665	30	1.561.670	112.877	112.877

Regla de Decision para hallar k

Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,018373715	1,683537098	0,046135582	0,019034332	190.032	1.751.702

Costos

Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 86.839.246	\$ 86.839.246	\$ 318.274.436	\$ 872.725.815	\$ 1.364.678.742	0,953864418

σl	112876,5714
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C. Con Proyección Julio 2012

LT	30,00	Dias
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Modelo Descomposición Multiplicativa Estacionalidad 6				
Periodo	Xt	Ft	et	et^2
1	1432443,9	1426020,751	6423,150	41.256.858,20
2	1423464,52	1437577,252	-14112,733	199.169.221,23
3	1542106,62	1449133,753	92972,868	8.643.954.209,81
4	1621716,69	1460690,255	161026,434	25.929.512.565,45
5	1600896,34	1472246,756	128649,585	16.550.715.617,50
6	1446964,96	1483803,257	-36838,298	1.357.060.212,10
7	1436158,04	1495359,758	-59201,723	3.504.844.058,26
8	1324968,18	1506916,260	-181948,083	33.105.104.801,65
9	1745742,68	1518472,761	227269,919	51.651.616.091,83
10	1500561,41	1530029,262	-29467,854	868.354.404,54
11	1539955,92	1541585,764	-1629,844	2.656.389,89
12	1491008,93	1553142,265	-62133,334	3.860.551.167,55
13		1564698,766		
Demanda	18105988,2			145.714.795.598,00

A	\$ 500.000
r	0,45
Dias/mes	30

Datos de entrada del modelo

Item	Demanda año	v	P2	B2	EOQ	Xi	D día	LT	XL	σI	σL
RESINA	18.105.988	\$ 3.727,50	0,98	0,65	103.974	1564699	52156,6255	30	1.564.699	115.095	115.095

Regla de Decision para hallar k					
Regla (Gu(k))	k	pu>(k)	Gu(k) Aprox	ss	s
0,018067497	1,690130904	0,045501457	0,018732217	194,525	1,759,224

Costos					
Co	Cc (Q/2)	Cc (ss)	Cs	TRC	P1
\$ 87.070,041	\$ 87.070,041	\$ 325.800,002	\$ 877.370,922	\$ 1.377.311,006	0,954498543

σI	115094,7418
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