

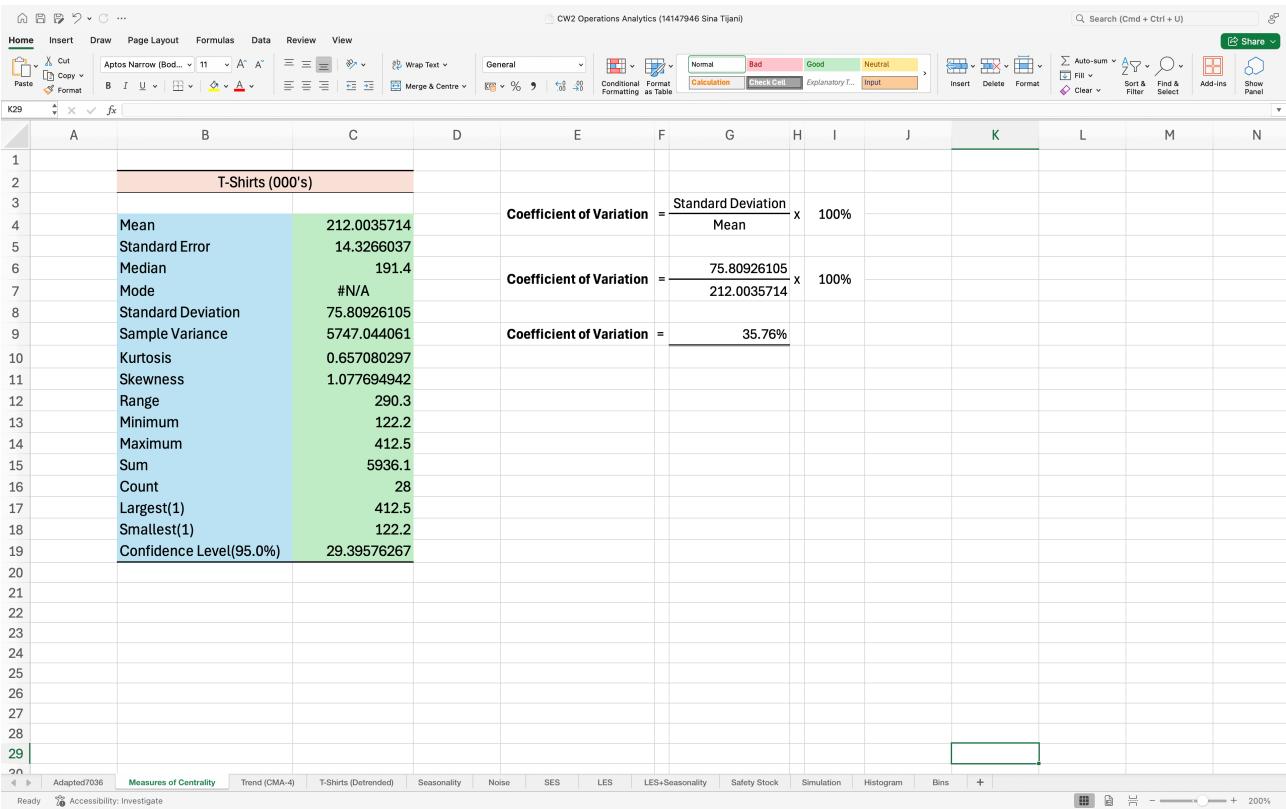
Inventory export optimisation LES seasonality forecasting analysis

Excel Analysis

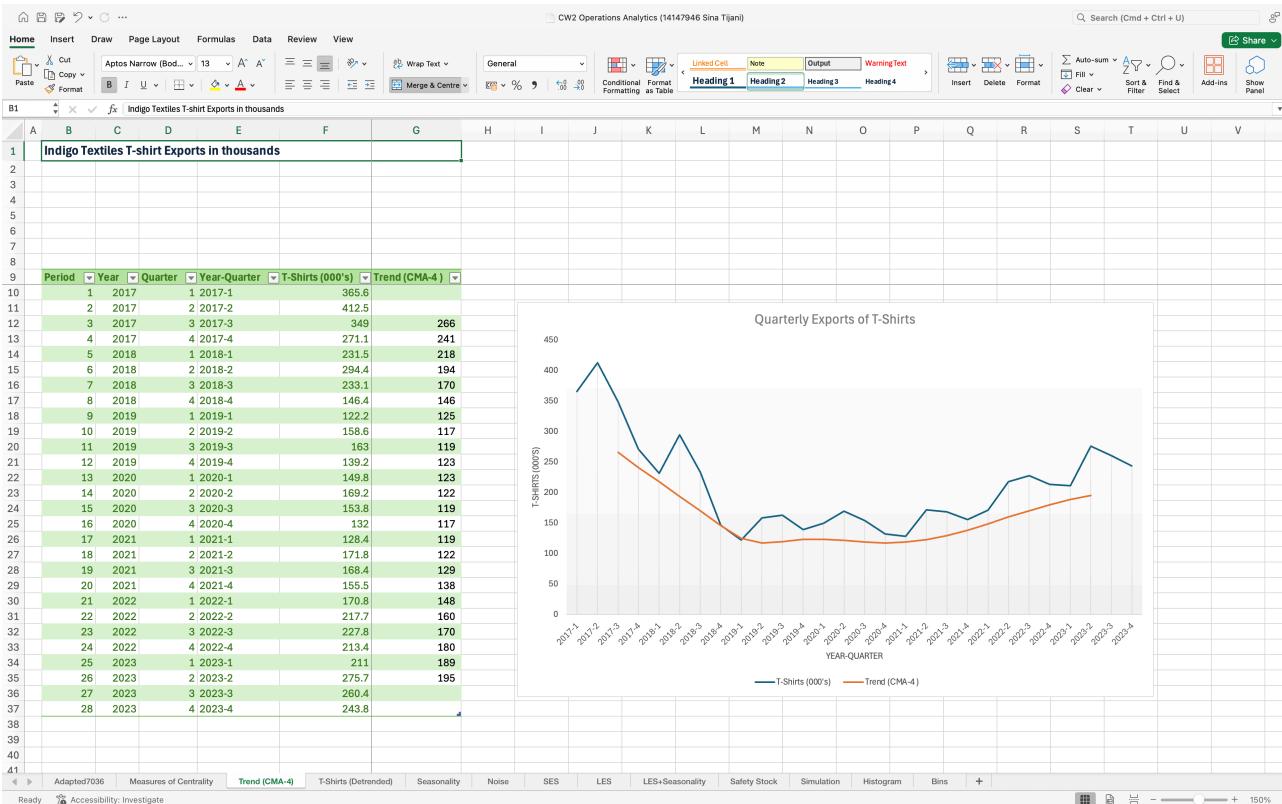
Table of Contents

Measures of Centrality	2
TREND (CMA-4)	2
T-SHIRTS (Detrended)	3
Seasonality	3
Noise	4
SES	4
LES	5
LES + Seasonality	5
SAFETY STOCK	6
MONTE-CARLOS SIMULATION	7
HISTOGRAM	8
BINS	8

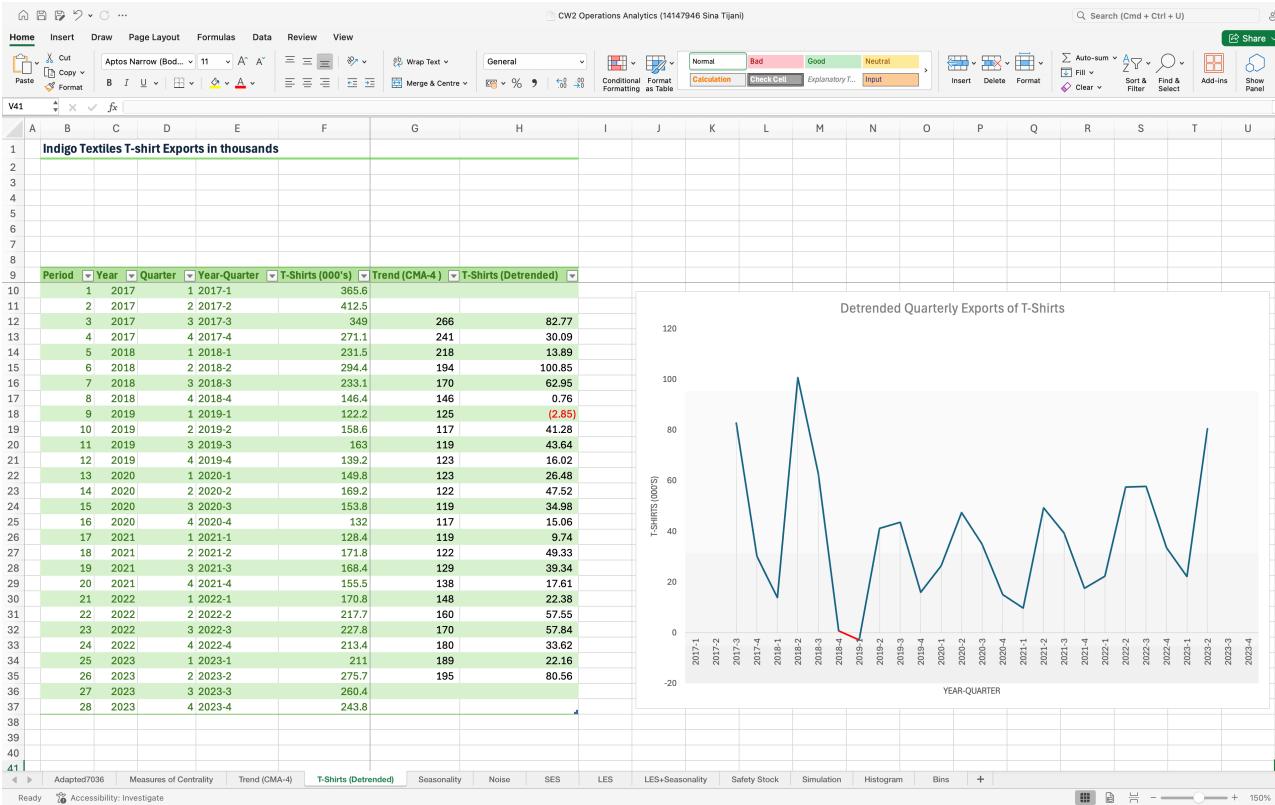
Measures of Centrality



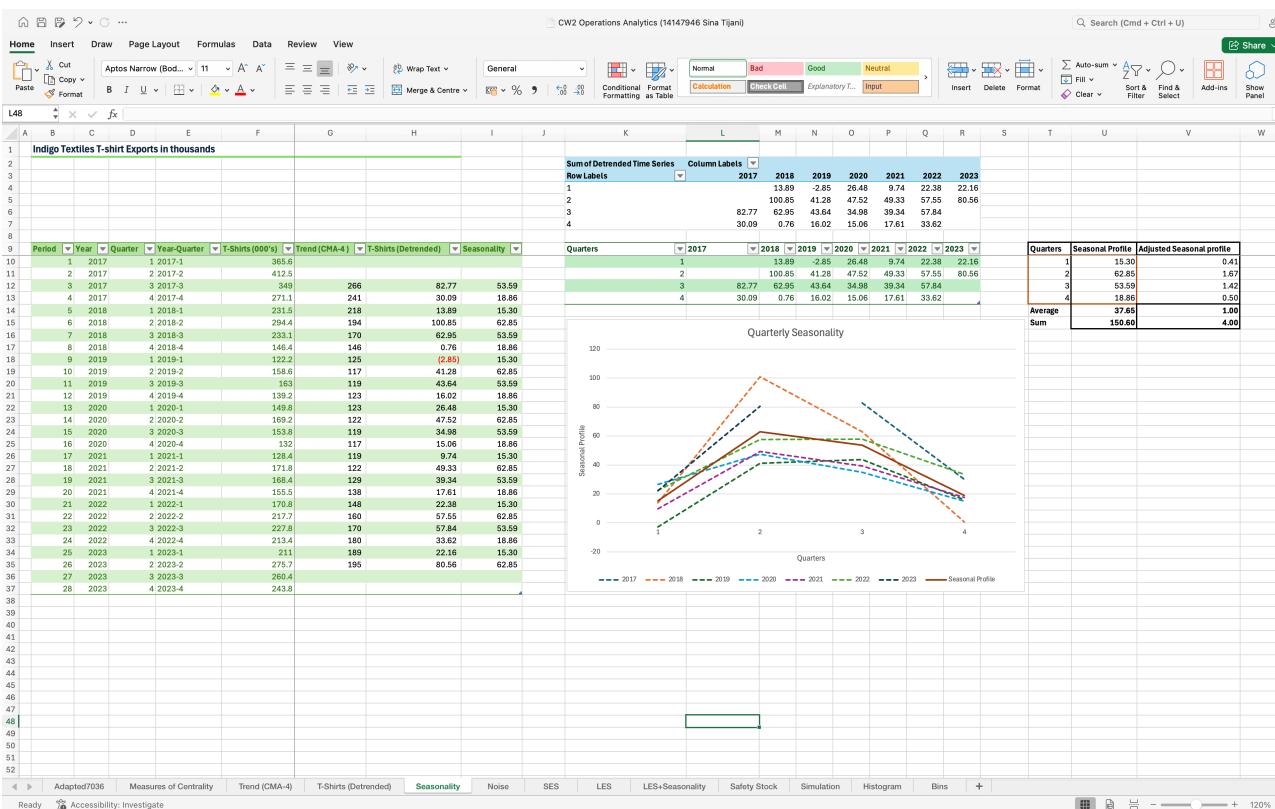
TREND (CMA-4)



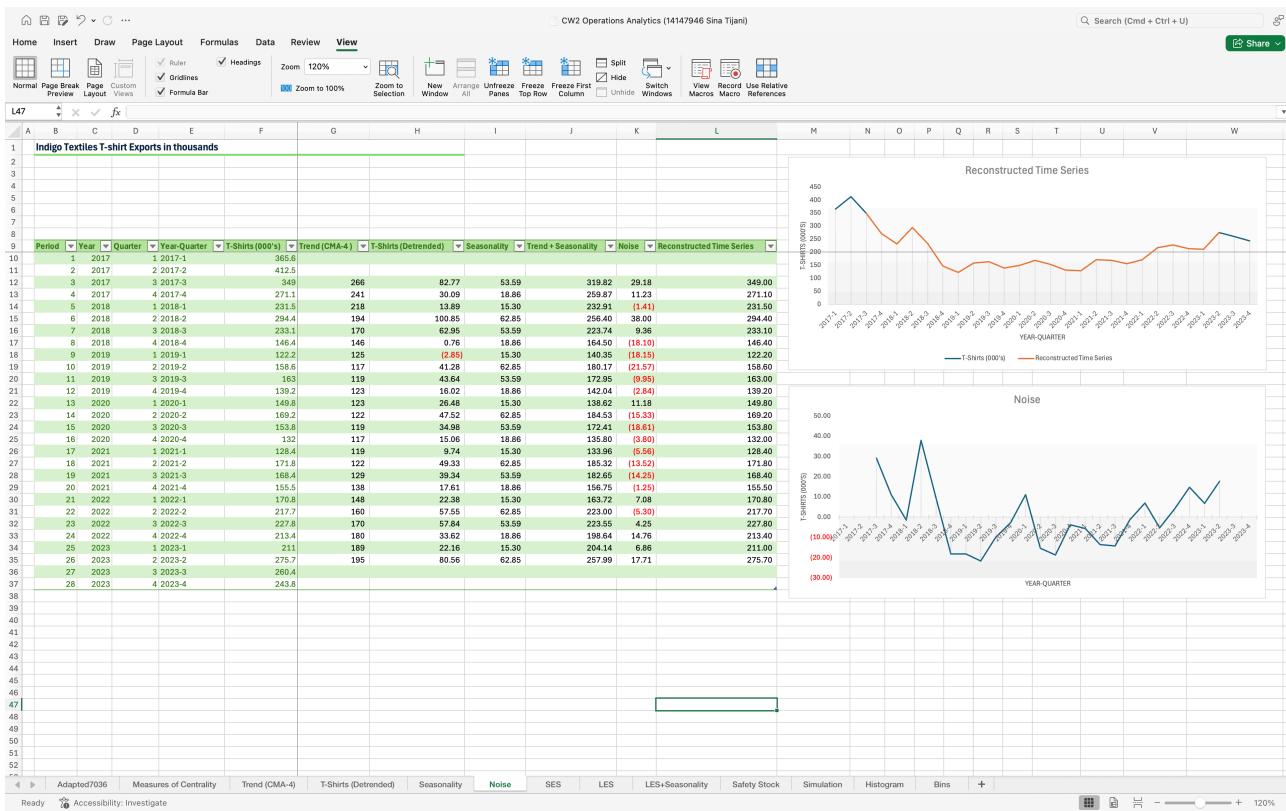
T-SHIRTS (Detrended)



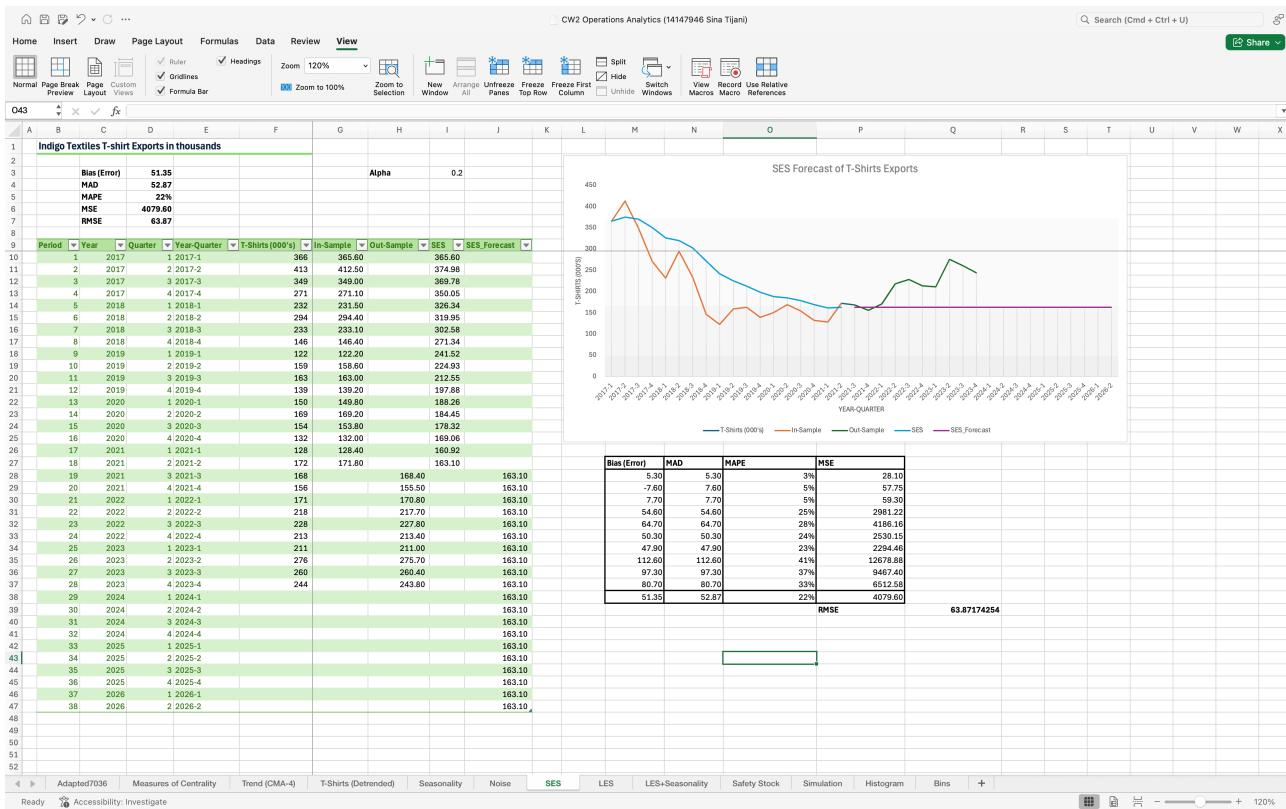
Seasonality



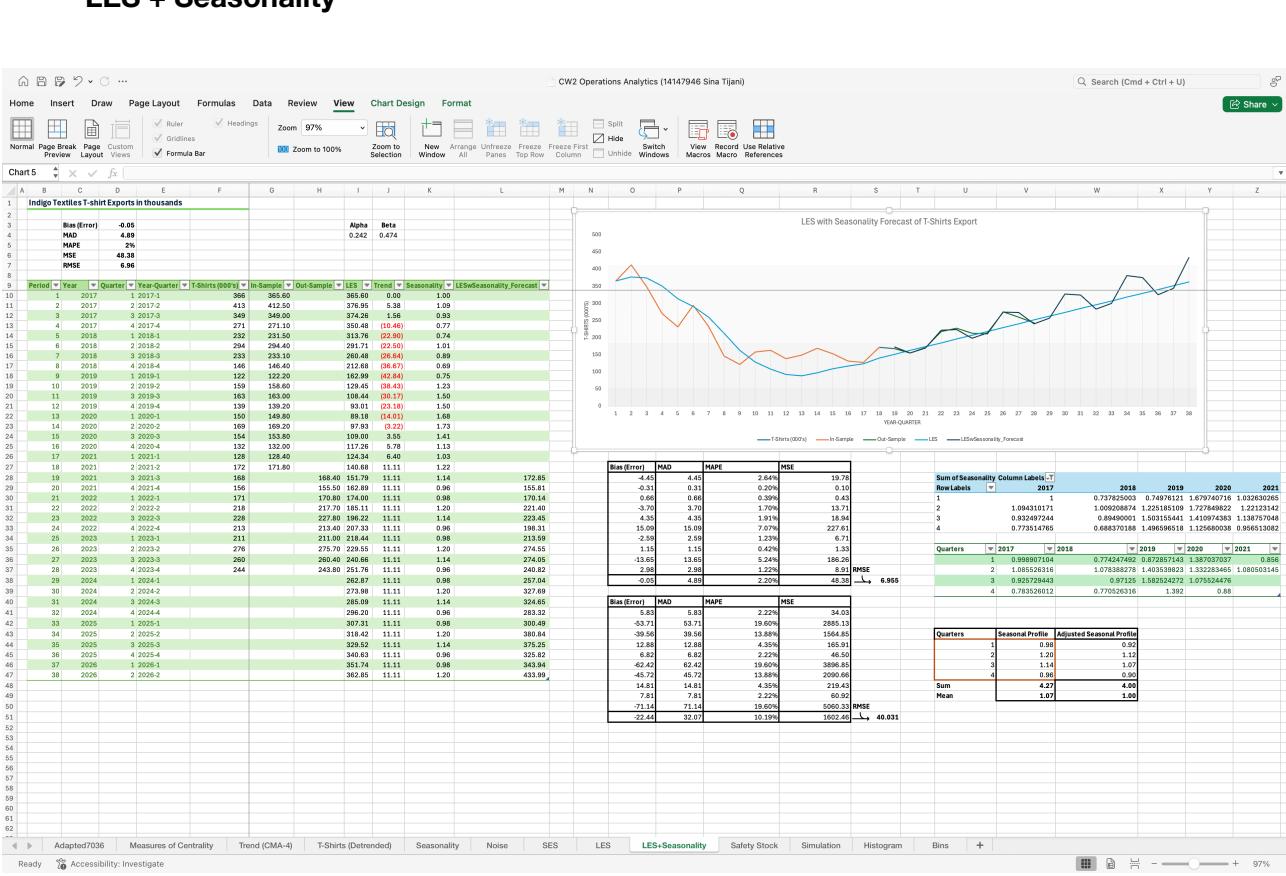
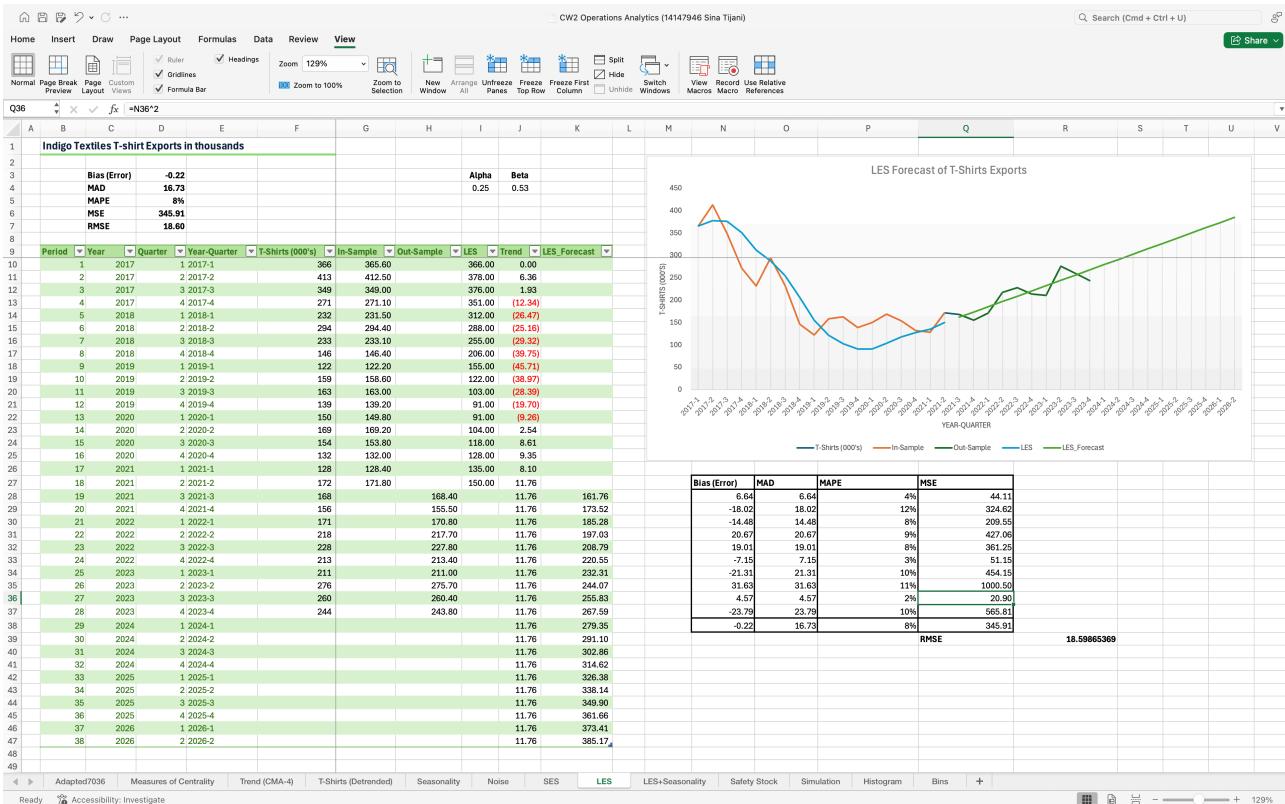
Noise



SES



LES



SAFETY STOCK

Indigo Textiles T-shirt Exports (Safety Stock)

Week after order	Quarter	Forecast	Expected Lead Time	→	10 Quarters
1 2024-1		257			
2 2024-2		328	Stockout Risk	3%	
3 2024-3		325	Service Level	97%	
4 2024-4		283			
5 2025-1		300	Z-score	1.88	
6 2025-2		381	RMSE	6.96	
7 2025-3		375	Lead Time Root	3.16	
8 2025-4		326			
9 2026-1		344	Safety Stock	→	41.37 T-Shirts
10 2026-2		434			
		3,353			
Re-order Point (ROP)					
Expected Demand					
+ Safety Stock					
Standard Deviation of Lead time Demand	RMSE	6.96	Reorder Point	→	3,394.38 for 10 Quarters of Expected Demand and Safety Stock
to find the safety stock, z-score of 97% we expect to keep of the service level was calculated to get 1.88. Root of the expected lead time of 10 quarters was calculated to get 3.16. and with the RMSE of 6.96 from the LES with seasonality model, the 3 were multiplied to get the Safety stock					

MONTE-CARLOS SIMULATION

CW2 Operations Analytics (14147946 Sina Tijani)

Home Insert Draw Page Layout Formulas Data Review View

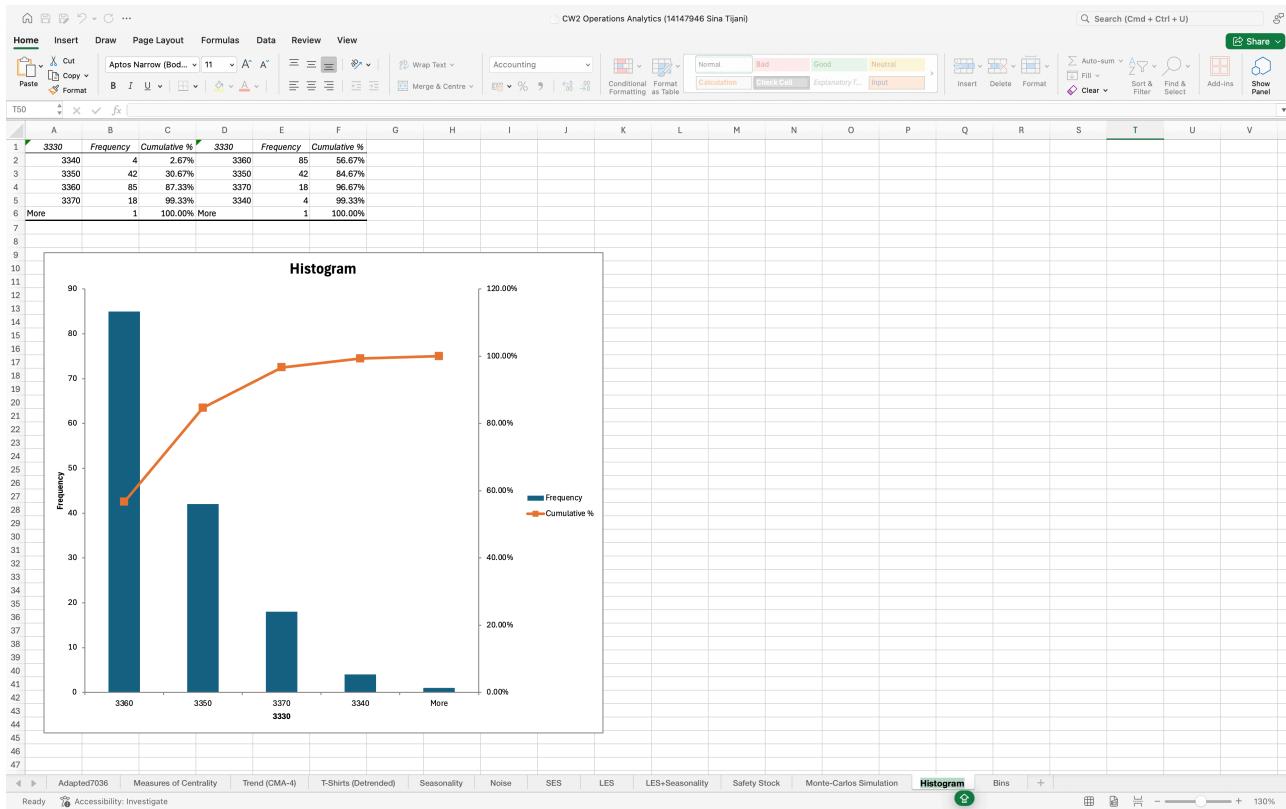
Accounting Normal Bad Good Neutral Calculation Check Cell Explanatory... Input

K48 A B C D E F G H I J K L M N O P Q R S

Indigo Textiles T-shirt Exports (Simulation)

Trials	Random # for LT Demand	LT Demand	Random # for LT Demand Share	LT Demand Share	T-Shirts Sold	Revenue	Variable Cost	Profit	Expected Lead Time Demand	St. Dev. of LT Demand
1	0.50	3353.02	0.592864	60%	2,011.81	£10,094.49	£9,053.15	£7,041.34	3,353	3,353
2	0.80	3361.83	0.597003	40%	1,984.73	£10,757.85	£9,056.80	£1,701.05	6.96	6.96
3	0.74	3355.85	0.597003	70%	2,309.08	£18,792.50	£9,053.15	£9,739.35	10.570.85	10.570.85
4	0.66	3351.82	0.592442	70%	2,349.08	£18,792.62	£10,570.85	£8,221.77	12.681.06	12.681.06
5	0.90	3369.12	0.591130	50%	1,681.06	£13,448.49	£7,564.78	£5,883.71	10.573.34	10.573.34
6	0.11	3344.32	0.579909	70%	2,341.02	£18,728.19	£10,534.61	£8,193.58	12.351.14	12.351.14
7	0.11	3343.49	0.584698	50%	1,672.19	£13,377.56	£7,524.87	£5,852.68	12.351.14	12.351.14
8	0.06	3342.30	0.548510	20%	1,668.46	£5,347.68	£3,008.07	£2,339.61	12.351.14	12.351.14
9	0.27	3344.68	0.594666	70%	2,344.07	£18,752.59	£10,548.33	£8,204.26	12.351.14	12.351.14
10	0.43	3351.87	0.528481	40%	1,340.75	£10,725.99	£6,033.37	£4,692.62	12.351.14	12.351.14
11	0.80	3358.76	0.803084	70%	2,351.14	£18,809.08	£10,580.11	£8,228.97	12.351.14	12.351.14
12	0.44	3351.92	0.642220	60%	2,011.15	£18,728.19	£10,534.61	£8,193.58	12.351.14	12.351.14
13	0.50	3344.48	0.505074	60%	2,000.00	£18,728.19	£10,534.61	£8,193.58	12.351.14	12.351.14
14	0.38	3350.88	0.580800	40%	1,340.35	£10,722.92	£6,031.59	£4,691.23	12.351.14	12.351.14
15	0.09	3343.86	0.597822	70%	2,340.70	£18,725.60	£10,533.15	£8,192.45	12.351.14	12.351.14
16	0.70	3356.61	0.739201	70%	2,349.63	£18,797.04	£10,573.34	£8,223.71	12.351.14	12.351.14
17	0.14	3345.59	0.887777	70%	2,341.91	£18,735.31	£10,538.61	£8,196.70	12.351.14	12.351.14
18	0.24	3347.99	0.969009	30%	1,004.40	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
19	0.64	3355.47	0.769186	70%	2,348.83	£18,790.63	£10,569.73	£8,220.90	12.351.14	12.351.14
20	0.31	3349.56	0.286108	40%	1,339.83	£10,718.60	£6,029.28	£4,689.39	12.351.14	12.351.14
21	0.69	3356.41	0.542671	50%	1,678.20	£13,425.63	£6,551.92	£5,873.72	12.351.14	12.351.14
22	0.94	3363.95	0.048369	50%	1,681.97	£13,455.79	£7,568.88	£5,886.91	12.351.14	12.351.14
23	0.59	3354.66	0.093179	70%	2,346.26	£18,786.10	£10,567.18	£8,218.92	12.351.14	12.351.14
24	0.50	3346.47	0.173223	40%	1,339.71	£10,717.66	£6,029.28	£4,689.39	12.351.14	12.351.14
25	0.36	3356.67	0.511143	70%	2,340.70	£18,725.60	£10,569.73	£8,196.89	12.351.14	12.351.14
26	0.16	3345.22	0.749205	60%	2,007.73	£16,061.86	£9,034.80	£7,027.06	12.351.14	12.351.14
27	0.86	3369.63	0.595335	60%	2,018.58	£16,131.03	£9,073.71	£7,057.33	12.351.14	12.351.14
28	0.30	3349.34	0.710289	60%	2,009.60	£16,076.81	£9,043.21	£7,033.61	12.351.14	12.351.14
29	0.30	3349.40	0.287436	40%	1,339.76	£10,718.09	£6,028.92	£4,689.16	12.351.14	12.351.14
30	0.69	3356.50	0.829199	70%	2,340.55	£18,796.39	£10,572.97	£8,223.42	12.351.14	12.351.14
31	0.35	3355.50	0.598905	60%	2,019.19	£16,076.81	£9,045.21	£7,033.61	12.351.14	12.351.14
32	0.71	3356.84	0.533469	70%	2,341.02	£18,796.33	£10,570.06	£8,224.27	12.351.14	12.351.14
33	0.40	3351.33	0.151780	30%	1,005.40	£8,043.18	£4,524.39	£3,518.89	12.351.14	12.351.14
34	0.78	3356.44	0.236485	40%	1,343.37	£10,747.00	£6,045.19	£4,701.81	12.351.14	12.351.14
35	0.92	3363.02	0.101516	30%	1,008.91	£8,071.26	£4,540.08	£3,531.18	12.351.14	12.351.14
36	0.33	3349.98	0.893728	60%	2,009.09	£16,079.93	£9,044.96	£7,034.97	12.351.14	12.351.14
37	0.23	3347.78	0.060647	60%	2,008.67	£16,069.37	£9,039.02	£7,030.35	12.351.14	12.351.14
38	0.64	3355.70	0.764466	70%	2,348.92	£18,796.32	£10,570.79	£8,223.42	12.351.14	12.351.14
39	0.00	3365.79	0.042402	60%	2,009.09	£16,069.34	£9,039.02	£7,030.35	12.351.14	12.351.14
40	0.87	3360.84	0.097088	30%	1,008.25	£8,061.01	£4,537.13	£3,528.88	12.351.14	12.351.14
41	0.44	3352.05	0.719328	60%	2,012.13	£16,089.85	£9,050.54	£7,038.31	12.351.14	12.351.14
42	0.52	3353.43	0.059516	30%	1,006.03	£8,048.24	£4,527.14	£3,521.11	12.351.14	12.351.14
43	0.48	3352.70	0.347456	50%	1,676.35	£13,410.79	£7,543.57	£5,867.22	12.351.14	12.351.14
44	0.35	3350.30	0.871689	70%	2,345.21	£18,761.66	£10,533.43	£8,208.23	12.351.14	12.351.14
45	0.55	3350.35	0.535379	50%	1,675.18	£13,410.41	£7,538.29	£5,863.12	12.351.14	12.351.14
46	0.35	3350.76	0.209560	60%	2,009.60	£16,076.81	£9,043.21	£7,033.61	12.351.14	12.351.14
47	0.24	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
48	0.20	3349.70	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
49	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
50	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
51	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
52	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
53	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
54	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
55	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
56	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
57	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
58	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
59	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
60	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
61	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
62	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
63	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
64	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
65	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
66	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
67	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
68	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
69	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
70	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
71	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
72	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
73	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
74	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
75	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
76	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
77	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
78	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
79	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
80	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17	£4,519.78	£3,515.39	12.351.14	12.351.14
81	0.30	3349.89	0.107223	30%	1,008.99	£8,035.17				

HISTOGRAM



BINS

CW2 Operations Analytics (14147946 Sina Tijani)

Bin	Frequency
3333.56754	0
3336.67079	3
3339.77403	2
3342.87728	9
3345.98053	6
3349.08378	28
3352.18702	25
3355.29027	23
3358.39352	29
3361.49676	13
3364.60001	7
3367.70326	4
More	1

