

1. Business Question: Exercise 1

1. Creating Business KPIs

Create the following KPIs

Total Order Lines	24530
Line Fill Rate	65.94
Volume Fill Rate	96.59
Total Orders	13652
On Time Delivery %	59.22
In Full Delivery %	52.61
On Time In Full %	28.74

2. Top Customers

🔗 Top_5_Customers							17h ago
customer_name	customer_id	city	total_ord...	otif_perce...	if_percent...	ot_percen...	
Foodtown	789301	New Jersey, US	51308168.994	69	78	89	
Whole Foods Market	789320	New Jersey, US	50681977.970	74	81	91	
Lidl	789420	New Jersey, US	50597079.189	59	79	75	
Wegmans	789401	New Jersey, US	49909681.091	67	79	85	
Price Rite	789601	New Jersey, US	49286809.848	62	67	92	

3. Top Customers (India)

🔗 Top_5_Indian_Customers							17h ago
customer_name	customer_id	city	total_ord...	otif_perce...	if_percent...	ot_percen...	
Propel Mart	789402	Ahmedabad	18726559	71	80	89	
Acclaimed Stores	789521	Ahmedabad	18464448	62	79	78	
Elite Mart	789902	Ahmedabad	18463957	73	81	90	
Vijay Stores	789102	Ahmedabad	18339388	73	81	90	
Viveks Stores	789503	Vadodara	18188178	71	82	86	

2. Business Question: Exercise 2

1. Quantify the revenue loss attributed to undelivered orders. Revenue Loss from Undelivered Orders (in Millions):

customer...	customer_name	city	currency	total_order_valu...	total_revenue_los...	%_revenue_loss
789601	Price Rite	New Jersey, US	USD	49.29	3.46	7.01
789520	Fairway Market	New Jersey, US	USD	46.42	3.34	7.20
789420	Lidl	New Jersey, US	USD	50.60	1.42	2.80
789101	Costco Wholesale	New Jersey, US	USD	49.21	1.40	2.84
789301	Foodtown	New Jersey, US	USD	51.31	1.38	2.69
789320	Whole Foods Market	New Jersey, US	USD	50.68	1.37	2.69
789401	Wegmans	New Jersey, US	USD	49.91	1.36	2.73
789103	Vijay Stores	Vadodara	INR	18.18	1.34	7.40
789501	Best Market	New Jersey, US	USD	46.95	1.33	2.84
789720	Colonial Farms	New Jersey, US	USD	48.84	1.30	2.66
789903	Elite Mart	Vadodara	INR	17.52	1.28	7.31
789122	Coolblue	Vadodara	INR	17.13	1.27	7.39
789702	Sorefoz Mart	Ahmedabad	INR	17.14	1.22	7.14
789201	Rel Fresh	New Jersey, US	USD	48.58	1.15	2.37
789220	ShopRite	New Jersey, US	USD	49.20	1.10	2.23
789421	Lotus Mart	Ahmedabad	INR	16.41	1.06	6.45
789202	Rel Fresh	Ahmedabad	INR	17.64	0.53	3.01
789622	Expert Mart	Vadodara	INR	17.65	0.51	2.88
789522	Acclaimed Stores	Vadodara	INR	16.46	0.50	3.05
789102	Vijay Stores	Ahmedabad	INR	18.34	0.50	2.73
789521	Acclaimed Stores	Ahmedabad	INR	18.46	0.49	2.63
789603	Info Stores	Vadodara	INR	18.17	0.47	2.60
789402	Propel Mart	Ahmedabad	INR	18.73	0.47	2.51
789902	Elite Mart	Ahmedabad	INR	18.46	0.45	2.46
789422	Lotus Mart	Vadodara	INR	17.23	0.43	2.50
789121	Coolblue	Ahmedabad	INR	17.01	0.43	2.51
789203	Rel Fresh	Vadodara	INR	16.19	0.42	2.62
789503	Viveks Stores	Vadodara	INR	18.19	0.41	2.28
789221	Atlas Stores	Ahmedabad	INR	16.75	0.40	2.40
789321	Chiptec Stores	Ahmedabad	INR	17.19	0.40	2.32
789621	Expert Mart	Ahmedabad	INR	17.44	0.40	2.27
789703	Sorefoz Mart	Vadodara	INR	17.00	0.38	2.25
789721	Logic Stores	Ahmedabad	INR	17.36	0.38	2.19
789303	Expression Stores	Vadodara	INR	16.94	0.35	2.05
789403	Propel Mart	Vadodara	INR	17.51	0.32	1.84

2. Identify customers with the most significant On-Time, In Full (OTIF) discrepancies

customer...	customer_name	city	actual_otif%	otif_target%	otif_gap%
789422	Lotus Mart	Vadodara	19.13	64	-44.87
789520	Fairway Market	New Jersey, US	7.26	51	-43.74
789521	Acclaimed Stores	Ahmedabad	18.27	62	-43.73
789522	Acclaimed Stores	Vadodara	16.72	60	-43.28
789421	Lotus Mart	Ahmedabad	8.53	51	-42.47
789122	Coolblue	Vadodara	7.36	49	-41.64
789420	Lidl	New Jersey, US	19.22	59	-39.78
789601	Price Rite	New Jersey, US	22.99	62	-39.01
789121	Coolblue	Ahmedabad	21.33	60	-38.67
789103	Vijay Stores	Vadodara	25.35	62	-36.65

3. Determine product categories that exhibit low 'In Full' delivery rates.

Low_In_Full_Categories	
category	in_full_rate
Dairy	65.85
Food	66.1
beverages	66.19

Category_In_Full_Rates				Jul 18, 2025
category	total_order_qty	total_delivery_qty	in_full%	
Food	730963	706011	96.58642092691422	
Dairy	4516913	4363317	96.59953601054525	
beverages	508147	490944	96.61456232153294	

4. Calculate the average delay time for late deliveries.

Overall_Average_Delay			
Metric	Value		
Overall Averag	1.69		
Customer_Wise_Delays			
customer...	customer_name	average_delay_d...	late_orders_count
789420	Lidl	1.88	542
789121	Coolblue	1.87	494
789421	Lotus Mart	1.86	493
789521	Acclaimed Stores	1.81	514
789422	Lotus Mart	1.81	508
789520	Fairway Market	1.8	484
789522	Acclaimed Stores	1.79	501
789122	Coolblue	1.79	520
789501	Best Market	1.71	101
789903	Elite Mart	1.64	107
789303	Expression Stores	1.59	103
789621	Expert Mart	1.55	114
789703	Sorefoz Mart	1.55	96
789401	Wegmans	1.55	107
789103	Vijay Stores	1.54	92
789622	Expert Mart	1.54	117
789301	Foodtown	1.52	134
789601	Price Rite	1.52	113
789702	Sorefoz Mart	1.52	119
789202	Rel Fresh	1.52	100
789320	Whole Foods Marke	1.51	124
789102	Vijay Stores	1.51	132
789220	ShopRite	1.51	99
789603	Info Stores	1.5	119
789721	Logic Stores	1.49	114
789101	Costco Wholesale	1.49	119
789720	Colonial Farms	1.47	129
789503	Viveks Stores	1.46	136
789201	Rel Fresh	1.46	101
789221	Atlas Stores	1.45	128
789403	Propel Mart	1.45	84
789203	Rel Fresh	1.45	107
789321	Chiptec Stores	1.42	108
789902	Elite Mart	1.38	99
789402	Propel Mart	1.29	101

Category_Wise_Delays			Jul 18, 2025
category	average_delay_...	late_orders_count	
Food	1.7	1160	
Dairy	1.69	4758	
beverages	1.67	1141	

5. Identify product categories with the lowest 'In Full' delivery rates. What could this indicate about supply chain bottlenecks?

Bottleneck Analysis_V2							Jul 18, 2025
category	week_of_year	in_full%	total_order_qty	number_of_orders	avg_order_qty	insight_flag	
Dairy	9	96.6546	123275	301	409.55	Stable	
Dairy	10	96.5741	400970	974	411.67	Stable	
Dairy	11	96.6746	413030	965	428.01	Stable	
Dairy	12	96.4286	399812	951	420.41	Stable	
Dairy	13	96.8503	408731	958	426.65	Unstable Fulfillment	
Dairy	14	96.6358	387398	968	400.20	Stable	
Dairy	15	96.5463	404035	964	419.12	Stable	
Dairy	16	96.6000	422879	978	432.39	Stable	
Dairy	17	96.4296	404071	973	415.28	Stable	
Dairy	18	96.7973	402914	962	418.83	Unstable Fulfillment	
Dairy	19	96.6456	414355	983	421.52	Stable	
Dairy	20	96.3475	335443	823	407.59	Stable	
Food	9	97.1292	15919	82	194.13	Stable	
Food	10	96.7306	64110	324	197.87	Unstable Fulfillment	
Food	11	96.3666	67842	354	191.64	Stable	
Food	12	96.6508	64643	336	192.39	Stable	
Food	13	96.4356	63377	330	192.05	Stable	
Food	14	96.6671	63428	324	195.77	Stable	
Food	15	97.0250	64773	339	191.07	Stable	
Food	16	96.4982	63939	330	193.75	Unstable Fulfillment	
Food	17	96.3050	65630	342	191.90	Stable	
Food	18	96.5312	66449	344	193.17	Stable	
Food	19	96.4006	69372	346	200.50	Stable	
Food	20	96.7421	61481	313	196.42	Stable	
beverages	9	95.9265	13821	99	139.61	Stable	
beverages	10	96.3362	46700	341	136.95	Unstable Fulfillment	
beverages	11	96.7559	49197	347	141.78	Unstable Fulfillment	
beverages	12	96.5608	45679	333	137.17	Stable	
beverages	13	96.4999	41027	314	130.66	Stable	
beverages	14	97.3322	46592	340	137.04	Unstable Fulfillment	
beverages	15	96.5711	46371	338	137.19	Unstable Fulfillment	
beverages	16	96.5001	44059	313	140.76	Stable	
beverages	17	96.5695	44309	329	134.68	Stable	
beverages	18	96.3305	45946	334	137.56	Stable	
beverages	19	96.6529	46129	340	135.67	Stable	
beverages	20	96.8656	38317	279	137.34	Stable	

3. Business Question: Exercise 3

1. Creating Business KPIs :

Supply_Chain_KPIs1	
KPI	Value
In-Full %	96.57
On-Time Delivery %	71.22
OTIF %	28.74
Order Cycle Time (days)	2.59
Average Delivery Delay (days)	1.68
Lead Time Variability	1.85
Category Demand Variability	0.46
Total Backorder Quantity	195751

1. Which product categories are facing the highest fulfilment and delivery challenges?

High_Backorder_Categories					17h ago
category	total_backorder_qty	avg_in_full_percent	avg_delivery_delay_days	total_orders	
Dairy	57982	96.56	0.42	4012	
Food	9854	96.58	0.43	1450	
beverages	6410	96.62	0.44	1363	

2. Are any customers consistently missing OTIF targets?

Underperforming_Customers				17h ago
customer_n...	city	weekly_otif_pct	variance_from_threshold	
Costco Wholesal	New Jersey, US	52.46	-25.48	
Vijay Stores	Ahmedabad	58.33	-28.08	
Vijay Stores	Vadodara	41.18	-57.14	
Coolblue	Ahmedabad	28.00	-61.66	
Coolblue	Vadodara	9.52	-77.77	
Rel Fresh	New Jersey, US	66.10	-20.30	
Rel Fresh	Ahmedabad	65.63	-24.87	
Rel Fresh	Vadodara	62.75	-23.62	
ShopRite	New Jersey, US	62.26	-20.99	
Atlas Stores	Ahmedabad	41.18	-26.44	
Foodtown	New Jersey, US	64.29	-26.17	
Expression Store	Vadodara	70.21	-20.65	
Whole Foods Ma	New Jersey, US	70.21	-26.44	
Chiptec Stores	Ahmedabad	63.64	-18.44	
Wegmans	New Jersey, US	56.00	-24.39	
Propel Mart	Ahmedabad	59.18	-22.83	
Propel Mart	Vadodara	62.96	-18.98	
Lidl	New Jersey, US	21.43	-64.32	
Lotus Mart	Ahmedabad	10.64	-76.31	
Lotus Mart	Vadodara	33.33	-63.40	
Best Market	New Jersey, US	66.67	-26.24	
Viveks Stores	Vadodara	51.11	-25.98	
Fairway Market	New Jersey, US	10.71	-75.57	
Acclaimed Stores	Ahmedabad	35.29	-61.24	
Acclaimed Stores	Vadodara	19.23	-67.11	
Price Rite	New Jersey, US	16.67	-63.27	
Info Stores	Vadodara	55.36	-22.56	
Expert Mart	Ahmedabad	54.72	-22.69	
Expert Mart	Vadodara	51.72	-23.38	
Sorefoz Mart	Ahmedabad	24.56	-59.58	
Sorefoz Mart	Vadodara	64.52	-17.34	
Colonial Farms	New Jersey, US	57.14	-26.36	
Logic Stores	Ahmedabad	62.26	-24.84	
Elite Mart	Ahmedabad	67.24	-19.25	
Elite Mart	Vadodara	31.25	-53.10	

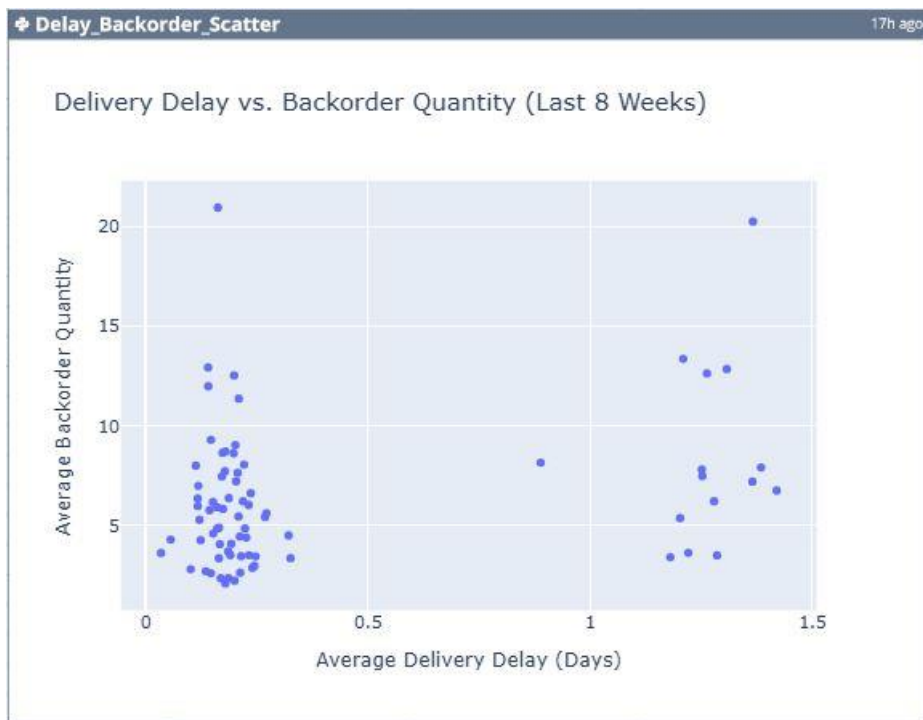
3. Where is lead-time variability threatening service levels?

Lead Time Variability Analysis				17h ago
category	lead_time_variability	avg_order_cycle_ti...	variability_flag	
Dairy	1.89	2.60	Normal	
Food	1.87	2.62	Normal	
beverages	1.76	2.55	Normal	

4. Which weeks experienced the worst demand swings and did that impact service?

Demand Swing Analysis						17h ago
week_of_year	category	total_order_qty	wow_pct_change	in_full_percent	on_time_d...	
10	Dairy	400970	225.26	96.48	69.99	
10	Food	64110	302.73	96.83	74.04	
10	beverages	46700	237.89	96.27	73.47	

5. Do long delivery delays correlate with larger backorders?



6. Which customers are improving—or worsening—in order cycle time?

Customer Cycle Time Trends				17h ago
customer_id	customer_name	slope	Trend	
789403	Propel Mart	0.0913	Worsening	
789221	Atlas Stores	0.0765	Worsening	
789503	Viveks Stores	0.0641	Worsening	
789702	Sorefoz Mart	0.0592	Worsening	
789501	Best Market	0.0588	Worsening	
789621	Expert Mart	-0.0375	Improving	
789122	Coolblue	-0.0179	Improving	
789421	Lotus Mart	-0.0173	Improving	
789301	Foodtown	0.0017	Improving	
789601	Price Rite	0.0018	Improving	

7. Are metro and non-metro customers served differently?

Metro_NonMetro_Comparison					17h ago
region_type	avg_in_full_percent	avg_on_time_delive...	avg_order_cycle_time_days	total_backorde...	
Metro	96.57	73.36	2.60	49955	
Non-Metro	96.61	70.17	2.66	105312	