Data Overview:

Dataset shape: (500, 10)
Missing values: 0

Column names:
['customer_id', 'num_orders', 'avg_order_value', 'last_order_days_ago', 'discount_used', 'subscription', 'customer_support_calls', 'delivery_issues', 'payment_issues', 'churned']

First 5 rows:

	customer_id	num_orders	avg_order_value	last_order_days_ago
0	1	39	68.48	104
1	2	29	14.33	176
2	3	15	95.42	147
3	4	43	89.80	117
4	5	8	33.48	85

	discount_used	subscription	customer_support_calls	delivery_issues
0	1	0	1	4
1	0	0	2	3
2	1	0	7	3
3	0	0	9	2
4	0	0	5	1

	payment_issues	churned
0	0	1
1	0	1
2	1	1
3	2	1
4	0	1

Basic statistics:

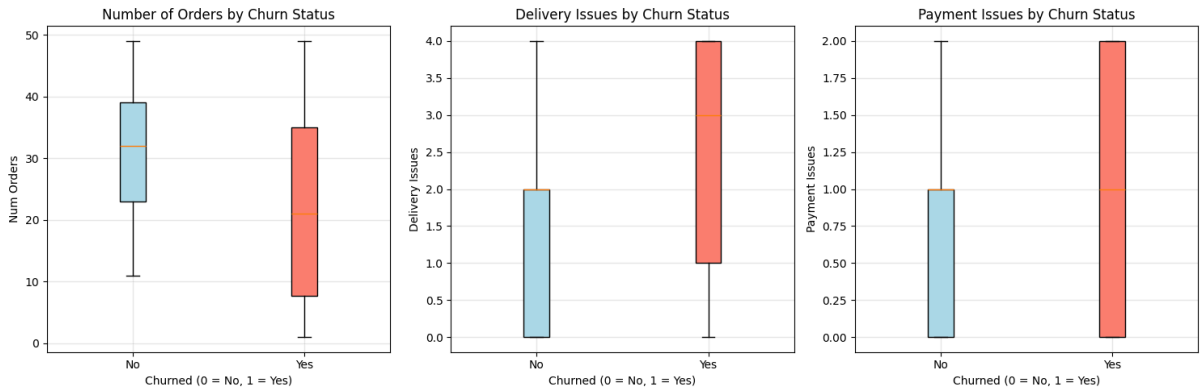
	customer_id	num_orders	avg_order_value	last_order_days_ago
count	500.000000	500.000000	500.000000	500.000000
mean	250.500000	25.678000	55.834280	96.420000
std	144.481833	14.127898	25.364873	58.686658
min	1.000000	1.000000	10.230000	0.000000
25%	125.750000	14.000000	33.475000	45.000000
50%	250.500000	26.000000	57.980000	97.000000
75%	375.250000	37.000000	76.792500	147.250000
max	500.000000	49.000000	99.790000	199.000000

	discount_used	subscription	customer_support_calls	delivery_issues
count	500.000000	500.000000	500.000000	500.000000
mean	0.528000	0.514000	4.484000	2.058000
std	0.499715	0.500305	2.828027	1.409471
min	0.000000	0.000000	0.000000	0.000000

25%	0.000000	0.000000	2.000000	1.000000
50%	1.000000	1.000000	4.000000	2.000000
75%	1.000000	1.000000	7.000000	3.000000
max	1.000000	1.000000	9.000000	4.000000

	payment_issues	churned
count	500.000000	500.000000
mean	0.982000	0.584000
std	0.826464	0.493387
min	0.000000	0.000000
25%	0.000000	0.000000
50%	1.000000	1.000000
75%	2.000000	1.000000
max	2.000000	1.000000

Churn distribution:
churned
1 292
0 208
Name: count, dtype: int64
Churn rate: 58.4%



T-test for Num Orders:
Mean (Not Churned): 31.16
Mean (Churned): 21.77
T-statistic: 7.7414
P-value: 5.53e-14
Significant: Yes

T-test for Delivery Issues:
Mean (Not Churned): 1.60
Mean (Churned): 2.39
T-statistic: -6.4290
P-value: 3.01e-10

Significant: Yes

T-test for Payment Issues:
Mean (Not Churned): 0.79
Mean (Churned): 1.12
T-statistic: -4.3878
P-value: 1.40e-05
Significant: Yes

Training set size: 400
Testing set size: 100
Training set churn rate: 58.5%
Testing set churn rate: 58.0%

Model 1 Performance:
Accuracy: 0.540
Precision: 0.591
Recall: 0.672
F1 Score: 0.629

Confusion Matrix for Model 1:

		Predicted	
		0	1
Actual	0	15	27
	1	19	39

Model 2 Performance:
Accuracy: 0.710
Precision: 0.738
Recall: 0.776
F1 Score: 0.756

Confusion Matrix for Model 2:

		Predicted	
		0	1
Actual	0	26	16
	1	13	45

Model 2 Coefficients:
Intercept: 0.2969
Delivery Issues: 0.5065
Payment Issues: 0.5997
Num Orders: -0.0572

Model 1 - Accuracy: 0.540
Model 1 - Precision: 0.591
Model 1 - Recall: 0.672
Model 1 - F1 Score: 0.629

Model 2 - Accuracy: 0.710
Model 2 - Precision: 0.738
Model 2 - Recall: 0.776
Model 2 - F1 Score: 0.756

Improvement from Model 1 to Model 2:
  Accuracy: +17.0 percentage points
  F1 Score: +12.7 percentage points

Likelihood Ratio Test (similar to ANOVA):
  LR Statistic: 21.9004
  P-value: 1.76e-05