--- Descriptive Statistics ---

Available numeric columns: ['order_id', 'order_date', 'quantity', 'unit_price', 'discount%', 'total_price', 'phone_number']
> Enter column names (comma-separated) for which to generate insights, or press Enter to include all: total_price, phone_number

Column: total_price

Mean: 12771.57

Median: 7759.00

Mode: 699.00

Range: 184746.00

Variance: 237845475.89

Standard Deviation: 15422.24

Interquartile Range (IQR): 12581.00

25th Percentile (Q1): 3556.00

75th Percentile (Q3): 16137.00

--- Insights ---

The range is notably large compared to the standard deviation, indicating potential outliers.

The interquartile range is smaller than the standard deviation, suggesting most data points are close to the center.
The variance indicates the spread of data points around the mean.

The coefficient of variation is high, suggesting considerable variability in the data.

Column: phone_number

Mean: 5960390946.88

Median: 5934934229.00

Mode: 8336323254.00

Range: 7949846116.00

Variance: 5565743830789640192.00

Standard Deviation: 2359182873.54

Interquartile Range (IQR): 4215267938.50

25th Percentile (Q1): 3963117819.00

75th Percentile (Q3): 8178385757.50

--- Insights ---

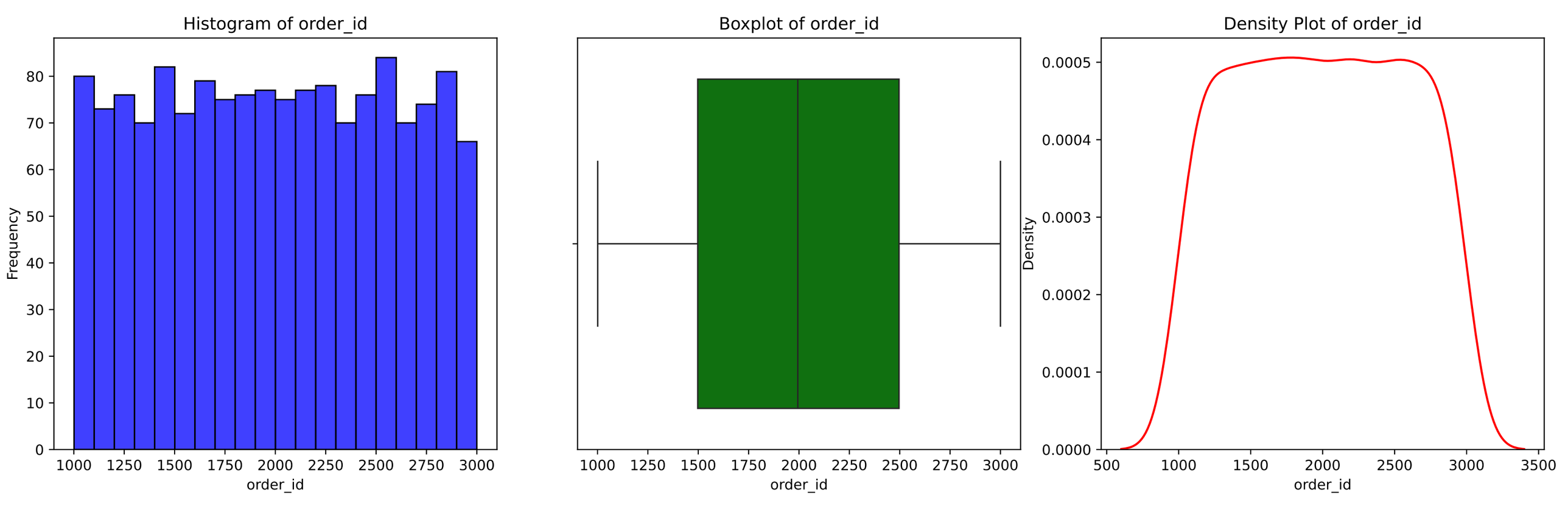
The variance indicates the spread of data points around the mean.

The data shows moderate variability with respect to the mean.

Summary statistics and insights generated successfully.

--- Data Distribution Visualization ---

> Do you want to generate visualizations for 'order_id'? (yes/no): yes


Histogram of order_id
Frequency
order_id
Boxplot of order_id
order_id
Density Plot of order_id
Density
order_id

> Do you want to generate visualizations for 'order_date'? (yes/no): lll

Skipping visualizations for column: order_date

> Do you want to generate visualizations for 'quantity'? (yes/no): no

Skipping visualizations for column: quantity

> Do you want to generate visualizations for 'unit_price'? (yes/no): no

Skipping visualizations for column: unit_price

> Do you want to generate visualizations for 'discount%'? (yes/no): no

Skipping visualizations for column: discount%

> Do you want to generate visualizations for 'total_price'? (yes/no): no

Skipping visualizations for column: total_price

> Do you want to generate visualizations for 'phone_number'? (yes/no): no

Skipping visualizations for column: phone_number

Visualizations generated successfully.

--- Skewness and Kurtosis Analysis ---

Column: order_id

Skewness: -0.00

Kurtosis: -1.19

The data is approximately symmetric.

The data has light tails (platykurtic).

Column: order_date

Skewness: 0.01

Kurtosis: -1.22

The data is approximately symmetric.

The data has light tails (platykurtic).

Column: quantity

Skewness: 3.15

Kurtosis: 12.97

The data is highly positively skewed (right-skewed).

The data has heavy tails (leptokurtic).

Column: unit_price

Skewness: 1.30

Kurtosis: 0.71

The data is highly positively skewed (right-skewed).

The data has light tails (platykurtic).

Column: discount%

Skewness: 0.02

Kurtosis: -1.23

The data is approximately symmetric.

The data has light tails (platykurtic).

Column: total_price

Skewness: 3.79

Kurtosis: 25.73

The data is highly positively skewed (right-skewed).

The data has heavy tails (leptokurtic).

Column: phone_number

Skewness: 0.02

Kurtosis: -1.28

The data is approximately symmetric.

The data has light tails (platykurtic).

Skewness and kurtosis analysis completed successfully.

--- Fit Data to Normal Distribution ---

Analyzing column: order_id

Fitted Normal Parameters - Mean: 1995.18, Std Dev: 575.27

> Do you want to generate the visualization for 'order_id'? (yes/no): no

Kolmogorov-Smirnov Test: Statistic=0.0599, P-value=0.0000

KS Test: The data does not follow a normal distribution (reject null hypothesis).

Shapiro-Wilk Test: Statistic=0.9553, P-value=0.0000

Shapiro-Wilk Test: The data does not follow a normal distribution (reject null hypothesis).

Analyzing column: order_date

Fitted Normal Parameters - Mean: 20230670.27, Std Dev: 346.06

> Do you want to generate the visualization for 'order_date'? (yes/no): no

Kolmogorov-Smirnov Test: Statistic=0.0945, P-value=0.0000

KS Test: The data does not follow a normal distribution (reject null hypothesis).

Shapiro-Wilk Test: Statistic=0.9456, P-value=0.0000

Shapiro-Wilk Test: The data does not follow a normal distribution (reject null hypothesis).

Analyzing column: quantity

Fitted Normal Parameters - Mean: 3.52, Std Dev: 2.81

> Do you want to generate the visualization for 'quantity'? (yes/no): no

Kolmogorov-Smirnov Test: Statistic=0.2431, P-value=0.0000

KS Test: The data does not follow a normal distribution (reject null hypothesis).

Shapiro-Wilk Test: Statistic=0.6681, P-value=0.0000

Shapiro-Wilk Test: The data does not follow a normal distribution (reject null hypothesis).

Analyzing column: unit_price

Fitted Normal Parameters - Mean: 4079.38, Std Dev: 3645.67

> Do you want to generate the visualization for 'unit_price'? (yes/no): no

Kolmogorov-Smirnov Test: Statistic=0.2599, P-value=0.0000

KS Test: The data does not follow a normal distribution (reject null hypothesis).

Shapiro-Wilk Test: Statistic=0.8066, P-value=0.0000

Shapiro-Wilk Test: The data does not follow a normal distribution (reject null hypothesis).

Analyzing column: discount%

Fitted Normal Parameters - Mean: 15.13, Std Dev: 8.98

> Do you want to generate the visualization for 'discount%'? (yes/no): no

Kolmogorov-Smirnov Test: Statistic=0.0759, P-value=0.0000

KS Test: The data does not follow a normal distribution (reject null hypothesis).

Shapiro-Wilk Test: Statistic=0.9495, P-value=0.0000

Shapiro-Wilk Test: The data does not follow a normal distribution (reject null hypothesis).

Analyzing column: total_price

Fitted Normal Parameters - Mean: 12771.57, Std Dev: 15417.14

> Do you want to generate the visualization for 'total_price'? (yes/no): no

Kolmogorov-Smirnov Test: Statistic=0.2076, P-value=0.0000

KS Test: The data does not follow a normal distribution (reject null hypothesis).

Shapiro-Wilk Test: Statistic=0.6768, P-value=0.0000

Shapiro-Wilk Test: The data does not follow a normal distribution (reject null hypothesis).

Analyzing column: phone_number

Fitted Normal Parameters - Mean: 5960390946.88, Std Dev: 2358402074.95

> Do you want to generate the visualization for 'phone_number'? (yes/no): no

Kolmogorov-Smirnov Test: Statistic=0.0795, P-value=0.0000

KS Test: The data does not follow a normal distribution (reject null hypothesis).

Shapiro-Wilk Test: Statistic=0.9458, P-value=0.0000

Shapiro-Wilk Test: The data does not follow a normal distribution (reject null hypothesis).

Normal distribution analysis completed successfully.

--- Fit Data to Uniform Distribution ---

Analyzing column: order_id

Fitted Uniform Parameters - Min: 1001.00, Max: 3000.00

> Do you want to generate the visualization for 'order_id'? (yes/no): no

Analyzing column: order_date

Fitted Uniform Parameters - Min: 20230101.00, Max: 20231231.00

> Do you want to generate the visualization for 'order_date'? (yes/no): no

Analyzing column: quantity

Fitted Uniform Parameters - Min: 1.00, Max: 20.00

> Do you want to generate the visualization for 'quantity'? (yes/no): no

Analyzing column: unit_price

Fitted Uniform Parameters - Min: 495.00, Max: 12999.00

> Do you want to generate the visualization for 'unit_price'? (yes/no): no

Analyzing column: discount%

Fitted Uniform Parameters - Min: 0.00, Max: 30.00

> Do you want to generate the visualization for 'discount%'? (yes/no): no

Analyzing column: total_price

Fitted Uniform Parameters - Min: 100.00, Max: 184846.00

> Do you want to generate the visualization for 'total_price'? (yes/no): no

Analyzing column: phone_number

Fitted Uniform Parameters - Min: 2049976634.00, Max: 9999822750.00

> Do you want to generate the visualization for 'phone_number'? (yes/no): no

Kolmogorov-Smirnov Test: Statistic=0.0429, P-value=0.0075

KS Test: The data does not follow a uniform distribution (reject null hypothesis).

--- Fit Data to Exponential Distribution ---

Analyzing column: order_id

Fitted Exponential Parameters - Loc: 1001.00, Scale (1/Lambda): 994.18

> Do you want to generate the visualization for 'order_id'? (yes/no): no

Kolmogorov-Smirnov Test: Statistic=0.1561, P-value=0.0000

KS Test: The data does not follow an exponential distribution (reject null hypothesis).

Analyzing column: order_date

Fitted Exponential Parameters - Loc: 20230101.00, Scale (1/Lambda): 569.27

> Do you want to generate the visualization for 'order_date'? (yes/no): no

Kolmogorov-Smirnov Test: Statistic=0.1732, P-value=0.0000

KS Test: The data does not follow an exponential distribution (reject null hypothesis).

Analyzing column: quantity

Fitted Exponential Parameters - Loc: 1.00, Scale (1/Lambda): 2.52

> Do you want to generate the visualization for 'quantity'? (yes/no): no

Kolmogorov-Smirnov Test: Statistic=0.1860, P-value=0.0000

KS Test: The data does not follow an exponential distribution (reject null hypothesis).

Analyzing column: unit_price

Fitted Exponential Parameters - Loc: 495.00, Scale (1/Lambda): 3584.38

> Do you want to generate the visualization for 'unit_price'? (yes/no): no

Kolmogorov-Smirnov Test: Statistic=0.1293, P-value=0.0000

KS Test: The data does not follow an exponential distribution (reject null hypothesis).

Analyzing column: discount%

Fitted Exponential Parameters - Loc: 0.00, Scale (1/Lambda): 15.13

> Do you want to generate the visualization for 'discount%'? (yes/no): no

Kolmogorov-Smirnov Test: Statistic=0.1627, P-value=0.0000

KS Test: The data does not follow an exponential distribution (reject null hypothesis).

Analyzing column: total_price

Fitted Exponential Parameters - Loc: 100.00, Scale (1/Lambda): 12671.57

> Do you want to generate the visualization for 'total_price'? (yes/no): no

Kolmogorov-Smirnov Test: Statistic=0.0554, P-value=0.0002

KS Test: The data does not follow an exponential distribution (reject null hypothesis).

Analyzing column: phone_number

Fitted Exponential Parameters - Loc: 2049976634.00, Scale (1/Lambda): 3910414312.88

> Do you want to generate the visualization for 'phone_number'? (yes/no): no

Kolmogorov-Smirnov Test: Statistic=0.1412, P-value=0.0000

KS Test: The data does not follow an exponential distribution (reject null hypothesis).

--- Correlation and Covariance Analysis ---

Pearson Correlation Matrix:

	order_id	order_date	quantity	unit_price	discount%	total_price	phone_number
order_id	1.000000	-0.040350	0.018202	0.038081	0.001893	0.035824	-0.023909
order_date	-0.040350	1.000000	-0.015829	0.040106	0.040334	0.011291	0.029633
quantity	0.018202	-0.015829	1.000000	-0.038365	0.005131	0.517394	0.018691

unit_price 0.038081 0.040106 -0.038365 1.000000 -0.009795 0.632253 -0.025653

discount% 0.001893 0.040334 0.005131 -0.009795 1.000000 -0.064358 0.006856

total_price 0.035824 0.011291 0.517394 0.632253 -0.064358 1.000000 -0.017518

phone_number -0.023909 0.029633 0.018691 -0.025653 0.006856 -0.017518 1.000000

Covariance Matrix:

	order_id	order_date	quantity	unit_price	discount%	total_price	phone_number
order_id	3.311527e+05	-8.038074e+03	2.947090e+01	7.991762e+04	9.784591e+00	3.179304e+05	-3.245978e+10
order_date	-8.038074e+03	1.198384e+05	-1.541677e+01	5.063240e+04	1.253962e+02	6.027866e+04	2.420125e+10
quantity	2.947090e+01	-1.541677e+01	7.916009e+00	-3.936458e+02	1.296497e-01	2.245028e+04	1.240676e+08
unit_price	7.991762e+04	5.063240e+04	-3.936458e+02	1.329969e+07	-3.207976e+02	3.555977e+07	-2.207075e+11
discount%	9.784591e+00	1.253962e+02	1.296497e-01	-3.207976e+02	8.065487e+01	-8.913813e+03	1.452574e+08
total_price	3.179304e+05	6.027866e+04	2.245028e+04	3.555977e+07	-8.913813e+03	2.378455e+08	-6.373847e+11
phone_number	-3.245978e+10	2.420125e+10	1.240676e+08	-2.207075e+11	1.452574e+08	-6.373847e+11	5.565744e+18

--- Insights on Correlation ---

--- Simple Linear Regression ---

> Enter the dependent (target) variable: order_id, quantity

> Enter the independent (predictor) variable: quantity

Invalid variable(s) selected. Please ensure both are numeric columns.

--- Correlation Heatmap ---

> Do you want to generate a correlation heatmap? (yes/no): no

--- Pairwise Scatterplots ---

> Do you want to generate scatterplots for numeric columns? (yes/no): no