**ANALYSIS REPORT OF INVENTORY OPTIMIZATION DATA**

**Basic Insights**

Missing Values: No missing values found.

Duplicates: No duplicate rows present.

No. of Instances: 5000 records

**Statistical Summary**

**Inventory Level:**

Mean: 546.037

Median: 541.5

Mode: 869

Standard Deviation: 261.2359847

Variance: 68244.23968

Quartiles:

Q1: 320.75

Q2: 541.5

Q3: 774

Skewness: 0.01479336 (The data is right skewed)

Kurtosis: -1.2063156 (Less outliers are present)

**Reorder Point:**

Mean: 275.2752

Median: 272

Mode: 236

**Correlation between Inventory level & Reorder point**

|  |  |  |
| --- | --- | --- |
|  | *Column 1* | *Column 2* |
| Column 1 | 1 |  |
| Column 2 | 0.015935575 | 1 |

The correlation coefficient between Inventory Level and Reorder Point is 0.0159.

**Regression Analysis**

SUMMARY OUTPUT

|  |  |
| --- | --- |
| *Regression Statistics* |  |
| Multiple R | 0.015935575 |
| R Square | 0.000253943 |
| Adjusted R Square | 5.39133E-05 |
| Standard Error | 261.2289425 |
| Observations | 5000 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | *df* | *SS* | *MS* | *F* | *Significance F* |
| Regression | 1 | 86633.25472 | 86633.25472 | 1.269527 | 0.2599095 |
| Residual | 4998 | 341066320.9 | 68240.5604 |  |  |
| Total | 4999 | 341152954.2 |  |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | *Coefficients* | *Standard Error* | *t Stat* | *P-value* | *Lower 95%* | *Upper 95%* | *Lower 95.0%* | *Upper 95.0%* |
| Intercept | 537.2034999 | 8.66674704 | 61.98444438 | 0 | 520.21287 | 554.1941 | 520.2129 | 554.1941 |
| X Variable 1 | 0.032089706 | 0.02848031 | 1.126733023 | 0.259909 | -0.023744 | 0.087924 | -0.02374 | 0.087924 |

**Transformation**

Date Transformation: Extracted year, month and day

**Feature wise Interpretation**

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| --- |
| Inventory level:  Highly varied across products |
| Reorder point:  Moderate variability |
| Lead Time:  Ranges from 1 to 30 days |
| Supplier ID:  Indicate multiple suppliers |
| Product ID:  Indicate multiple products |
| Warehouse ID:  Indicate multiple storage location  **Frequency Distribution**   |  |  | | --- | --- | | *Bin* | *Frequency* | | 0 | 0 | | 100 | 7 | | 200 | 581 | | 300 | 557 | | 400 | 542 | | 500 | 574 | | 600 | 539 | | 700 | 555 | | 800 | 548 | | 900 | 535 | | 1000 | 562 | | More | 0 | |

**Insights**

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| --- |
| * The supplier lead times vary from 1 to 30 days. |
| * "Low" seasonality is the most common among Seasonality |
| * The turnover ratio ranges from 0.2 to 17.8 |

**Recommendations**

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| --- |
| * Adjust reorder points based on historical demand patterns to reduce excess inventory. |
| * Focus on high turnover products |