

Statistical and Business Insights After preprocessing Project_217 Iron ore price analysis

column_name	Mean	Median	Mode	Variance	Std_Dev	Range	Skewness	Kurtosis	Statistical Insights	Business Insights
Iron_Ore_Price	12476.27762	12588.33018	12588.33018	19246861.59	4387.124524	21221.15646	0.056249884	-1.132150517	The price is relatively stable with minimal skewness, though the negative kurtosis suggests less extreme price fluctuations.	Indicates a stable pricing trend with minor variability, helping in budgeting and procurement. Target purchasing strategies for small price dips to maximize cost savings.
Global_Demand	1942.931356	1939.417023	1621.818674	64410.78324	253.7927959	896.5759159	0.015193001	-1.132122375	Demand has minimal skewness, indicating a balanced market demand, with some variations.	Stable global demand, ensuring the company can predict future demand. Adjust supply chain planning based on stable demand patterns.
Global_Supply	1955.936845	1957.790397	1831.942905	39181.85314	197.9440657	698.3803139	-	-1.100875451	Supply data shows a slight negative skew, meaning that higher supply values are more frequent.	Supply is slightly higher than demand, which could lead to reduced prices. Plan procurement when supply is abundant to minimize costs.
Freight_Rate	2504.513952	2521.17894	1501.963912	708240.9744	841.5705404	2996.642932	-	-1.138266576	Freight rates are relatively balanced but have significant variability, which may introduce uncertainty into transport cost calculations.	Freight costs have significant variability. Consider long-term contracts or alternate shipping options to stabilize costs and reduce risk.
Stockpile	53.60971362	52.96745705	12.31206804	623.3621168	24.96722085	89.9574286	0.044042599	-1.073109342	Stockpile levels are positively skewed, showing occasional higher values, possibly indicating overstocking situations.	Monitor stockpile levels to avoid overstocking or undersupply, optimizing inventory to reduce holding costs.
Production_Volume	123818.5293	123357.2601	123357.2601	1793992224	42355.54537	149863.6273	0.065832675	-1.1407772	Production volume shows stability with moderate variability, indicating efficient production with occasional surges.	Stable production volume ensures reliability. Align production rates with demand to prevent overproduction, reducing waste and cost.
Production_Cost	4474.275137	4455.098813	2807.23843	1964466.309	1401.594203	4963.045566	0.040445577	-1.100272049	Production costs are relatively stable with some fluctuations, but extreme outliers are less frequent.	Stable production costs allow for better financial planning. Minimize cost spikes through resource efficiency and technology upgrades.
Exchange_Rate_USD	6.482630341	6.475603466	5.029338141	0.712795287	0.844272046	2.990519537	-	-1.113049612	Exchange rates are stable with minimal fluctuations, allowing reliable international pricing.	Stable exchange rates mean consistent pricing for raw material imports, reducing financial risk.
Interest_Rate	5.713298891	5.801306283	1.417902899	6.514305505	2.552313755	8.948678068	-	-1.145443192	Interest rates have a slight negative skew with occasional lower values, reducing financial costs in some periods.	Lower interest rates may favorably affect capital costs. Consider borrowing during lower-rate periods for cost-effective expansions or investments.
Inflation_Rate	3.481103661	3.4522323	1.555316516	2.112700008	1.453512989	4.991760567	-0.0052759	-1.173909948	Inflation rates are steady, with little skewness or outlier data, ensuring predictable operating costs.	Stable inflation rates reduce uncertainty in budgeting for raw material costs and production expenses.
GDP_Growth_Importer	4.47029812	4.527929156	3.270888572	1.931284278	1.389706544	4.978643279	-	-1.114848828	GDP growth rates are moderately consistent, with occasional slight dips, indicating an overall positive trend in economic growth for importers.	Moderate GDP growth in importing countries signals continued demand for iron ore. This is favorable for long-term export strategies.

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Tariffs	7.725585084	7.698578581	5.205705389	17.44046956	4.176178822	14.95254914	-0.079302691	-1.027417762	Tariffs display slight negative skewness, indicating occasional lower tariffs but mostly centered around the mean.	Tariff variations should be monitored for impacts on profitability. Seek trade agreements or alternate suppliers to mitigate high tariff periods.
Steel_Production	1743.733634	1742.527665	1524.135943	19942.26262	141.2170762	499.3066629	0.063242178	-1.108529272	Steel production data is slightly positively skewed, indicating occasional higher production values, but generally steady.	Stable steel production allows for better market prediction and pricing strategies. Ensure production aligns with global demand to optimize sales opportunities.
Carbon_Emissions	1.986866719	1.987145587	1.234943881	0.321779988	0.567256545	1.993750093	0.010771727	-1.145200132	Carbon emissions have minimal variability, suggesting consistent production practices with low environmental impact deviations.	Stable carbon emissions are positive for maintaining environmental regulations. Explore further reduction strategies to enhance corporate responsibility and reduce costs.
Aluminum_Price	42540.78202	42605.13429	37426.27248	50332984.21	7094.57428	35751.10072	0.07766468	-0.379746055	Aluminum prices exhibit moderate skewness, with infrequent extreme price changes, allowing for predictive pricing models.	Stable aluminum pricing supports long-term contract negotiations and price forecasting. Utilize hedging to protect against occasional price increases.
Copper_Price	115140.1843	115427.3477	93907.46695	436704520.9	20897.47642	104764.9561	0.193136281	-0.529625472	Copper prices show a wider range and slight positive skewness, indicating some volatility but mostly within predictable ranges.	Copper prices exhibit occasional spikes; consider futures contracts to stabilize raw material costs for production.
Nickel_Price	248035.0249	242390.8698	204928.4084	2244782521	47379.13592	229665.0466	0.17211804	-0.780956453	Nickel prices show moderate skewness, indicating occasional extreme values, potentially due to global supply issues.	Nickel pricing is volatile, which could impact production costs. Secure reliable suppliers or stock up during low-price periods to offset future price spikes.