

# **Vendor Performance Analysis**

**Project overview:** To analyse vendor sales performance by evaluating key metrics such as total sales, revenue contribution, profit margins, and brand distribution. The goal is to identify top-performing and underperforming vendors, uncover sales trends, and provide actionable insights for improving vendor relationships, optimizing product assortment, and maximizing overall business profitability.

## **Technology Stack:**

Data Source: Csv Files.

- begin\_inventory.csv
- end\_inventory.csv
- purchases.csv
- purchase\_proces.csv
- sales.csv
- vendor\_invoice.csv

Database used: Microsoft SQL Server

Tools: Power BI, Python

## EDA(Exploratory Data Analysis):

1. Performed EDA on the available datasets.
  - Grouped the tables on the basis of their common data using group by.
  - Performed cleaning and preprocessing of data using python.
  - Created a final summary table using various joins and group by on tables.
  - Performed SQL queries along with python scripts.
2. Created a final summary table: vendor\_sales\_summary.

### Table Description:

	count	mean	std	min	25%	50%	75%	max
VendorNumber	8564.0	10107.074965	17635.714818	2.000000	3664.000000	7153.000000	9552.000000	2.013590e+05
Brand	8564.0	17614.670131	12946.130933	58.000000	5375.750000	17606.000000	24935.250000	9.063100e+04
PurchasePrice	8564.0	21.780897	81.189624	0.360000	6.660000	10.060000	17.850000	3.352930e+03
ActualPrice	8564.0	32.297467	112.420744	0.490000	9.990000	14.990000	25.990000	4.559990e+03
Volume	8564.0	864.332263	724.240079	50.000000	750.000000	750.000000	750.000000	2.000000e+04
TotalPurchaseQuantity	8564.0	3772.008991	12276.960631	1.000000	42.000000	431.000000	2666.750000	3.376600e+05
TotalPurchaseDollars	8564.0	35887.253324	136722.999153	0.710000	546.187500	5018.400000	26610.177500	3.811252e+06
TotalSalesQuantity	8564.0	3748.983419	12125.696083	1.000000	62.000000	490.500000	2675.000000	3.349390e+05
TotalSalesDollars	8564.0	51542.278077	186071.489729	1.980000	1355.580000	8483.780000	40622.112500	5.101920e+06
TotalSalesPrice	8564.0	22759.270732	49305.274018	0.990000	584.790000	4549.755000	22595.252500	6.728193e+05
TotalExciseTax	8564.0	2182.808183	12225.917775	0.100000	9.450000	84.810000	594.775000	3.682428e+05
FreightCost	8564.0	63449.647583	62268.879503	0.090000	14836.570000	55551.820000	89286.270000	2.570321e+05
GrossProfit	8564.0	15655.024752	51004.186873	0.040000	491.800000	3087.050000	12461.180000	1.290668e+06
ProfitMargin	8564.0	199.142508	938.728171	0.020846	35.007450	50.057658	78.970160	3.519286e+04
StockTurnover	8564.0	2.032054	6.686248	0.428571	0.945265	1.000000	1.120683	2.745000e+02
SalePurchaseRatio	8564.0	2.991425	9.387282	1.000208	1.350074	1.500577	1.789702	3.529286e+02

## Data Observations:

- Total Sales - 441 M
- Gross Profit - 134 M
- Average Profit Margin – 38.7 %
- Unsold Quantity- 197K

- Top 10 Vendors by Purchase Quantity:

### Top 10 Vendors by Purchase Quantity

```
[7]: top_10_vendors_purchase_quantity = df.groupby(['VendorName'])['TotalPurchaseQuantity'].sum().nlargest(10).reset_index()
```

```
[8]: top_10_vendors_purchase_quantity
```

	VendorName	TotalPurchaseQuantity
0	DIAGEO NORTH AMERICA INC	5407514
1	JIM BEAM BRANDS COMPANY	2567768
2	MARTIGNETTI COMPANIES	2489798
3	CONSTELLATION BRANDS INC	2299784
4	E & J GALLO WINERY	1817701
5	PERNOD RICARD USA	1632270
6	BACARDI USA INC	1385585
7	SAZERAC CO INC	1362753
8	M S WALKER INC	1283841
9	BROWN-FORMAN CORP	995138

## - Top 10 Brands by Sales Performance –

```
[12]: top_10_brands_total_sales
```

```
[12]:
```

	Description	TotalSalesDollars
0	Jack Daniels No 7 Black	\$8.0M
1	Tito's Handmade Vodka	\$7.4M
2	Grey Goose Vodka	\$7.2M
3	Capt Morgan Spiced Rum	\$6.4M
4	Absolut 80 Proof	\$6.2M
5	Jameson Irish Whiskey	\$5.7M
6	Ketel One Vodka	\$5.1M
7	Baileys Irish Cream	\$4.2M
8	Kahlua	\$3.6M
9	Tanqueray	\$3.5M

## - Top 10 Vendors by Purchase Dollars –

### ▼ Top 10 Vendors by purchase Dollars

```
[13]: vendor_performance = df.groupby('VendorName')['TotalPurchaseDollars'].sum().nlargest(10).reset_index()
```

```
[14]: vendor_performance['TotalPurchaseDollars'] = vendor_performance['TotalPurchaseDollars'].apply(format_currency)
```

```
[15]: vendor_performance
```

```
[15]:
```

	VendorName	TotalPurchaseDollars
0	DIAGEO NORTH AMERICA INC	\$50.1M
1	MARTIGNETTI COMPANIES	\$25.5M
2	PERNOD RICARD USA	\$23.9M
3	JIM BEAM BRANDS COMPANY	\$23.5M
4	BACARDI USA INC	\$17.4M
5	CONSTELLATION BRANDS INC	\$15.3M
6	BROWN-FORMAN CORP	\$13.2M
7	E & J GALLO WINERY	\$12.1M
8	ULTRA BEVERAGE COMPANY LLP	\$11.2M
9	M S WALKER INC	\$9.8M

- Total Sales Quantity & Sales Dollars: Some products show zero sales, indicating they were purchased but never sold.

- Freight Cost: Extreme variation from 0.09 to 257,032 suggests logistics inefficiencies , bulk shipments or erratic shipping cost across different products.

- Top 10 Vendors Total Sales contribution to Total Vendors Sale: So around 99% of total sales dollars contribution came from top 10% Vendors and others contributed to 1%. This shows the dominance of certain Vendors and power distribution financially among them.

## - **Recommendations:**

- Diversify vendor partnerships to reduce dependency on a few supplier and mitigate supply chain risks.
- Providing Bulk purchasing advantages to maintain competitive prices and encouraging more participations.
- Enhance marketing and distribution strategies for low performing vendors to drive higher sales volumes without compromising profit margins
- Managing high Freight Prices and tax related disparity to provide better margins to vendor.