Blinkit Sales Analysis Report

1. Project Overview

This project focuses on analyzing Blinkit's sales data to understand overall sales performance, customer satisfaction, and inventory distribution. The main goal is to solve key business problems by identifying patterns, trends, and areas where performance can be improved. The analysis uses important KPIs to evaluate revenue, product demand, customer ratings, and stock movement. Python and SQL were used for data cleaning, processing, and analysis, while Power BI was used to create clear and interactive visualizations. The insights from this project help in making better data-driven decisions related to sales growth, customer experience, and inventory optimization.

2. Dataset Summary

- **Rows:** 8,523
-
- **Columns:** 13
-
- **Key Features:**

    a. **Outlet Information:** Outlet Size, Outlet Location Type, Outlet Establishment Year.
    b. **Product Details:** Item Type, Item Fat Content, Item Visibility, Item Weight.
    c. **Sales Information:** Item Outlet Sales.

- **Missing Data:**

    - Missing values are present in the Item Weight column.

3. Exploratory Data Analysis using Python

We began with data preparation and cleaning in Python:

- **Data Loading:** Imported the dataset using `pandas`.

- **Initial Exploration:** Used `df.dtypes` to check the data types and `.unique()` to check the unique values in 'Item Fat Content' column

- **Replaced Column Values :** Replaced ‘LF’ to Low Fat and ‘Reg’ to ‘Regular’ for better readability

- **Column Standardization:** Renamed columns to **snake case** for better readability and documentation.

4. KPI's Requirements

1. **Total Sales - $1,201,681**

- `total_sales = df['Sales'].sum()`

2. **Average Sales - $141**

- `avg_sales = df['Sales'].mean()`

3. **No of Items Sold - $8,523**

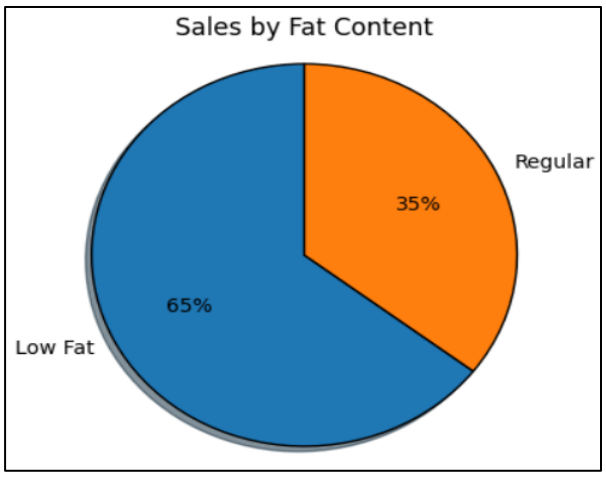
- `no_of_items_sold = df['Sales'].count()`

4. **Average Ratings - $4.0**

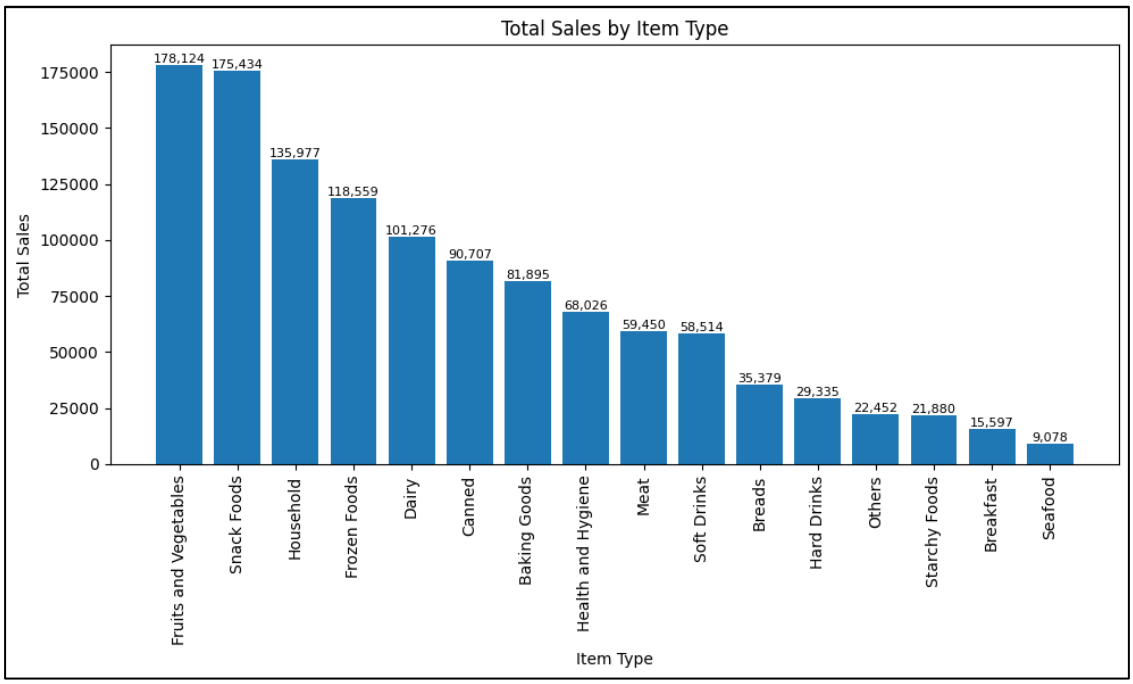
- `avg_ratings = df['Rating'].mean()`

5. Charts Requirements

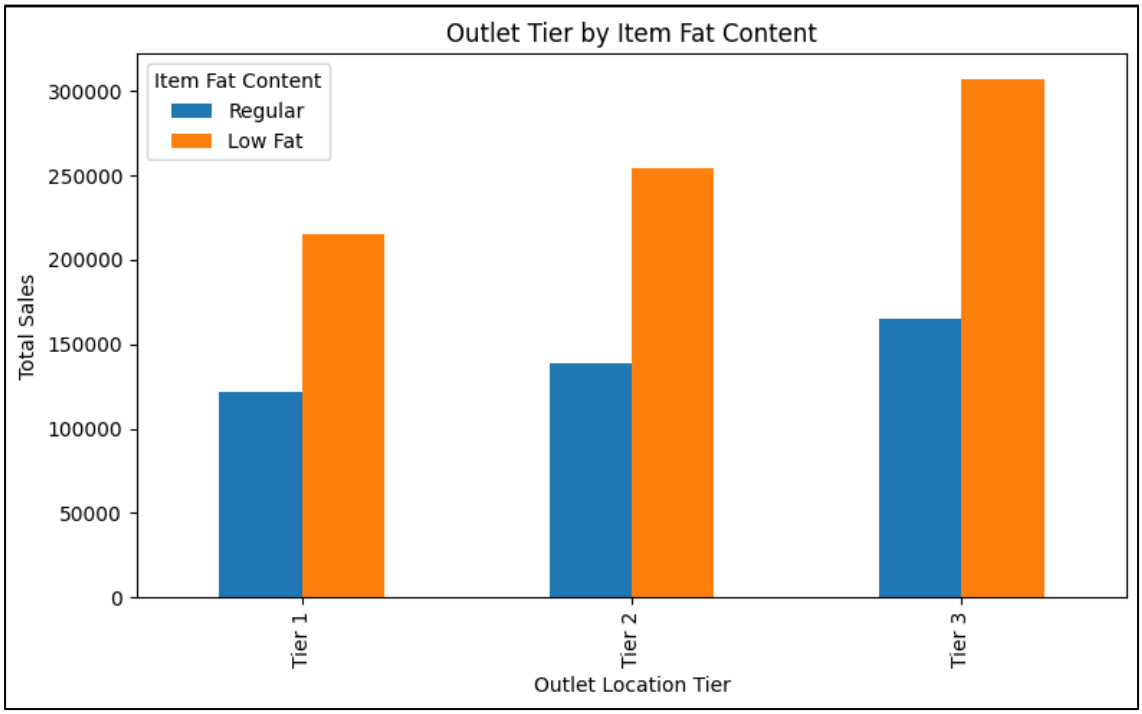
1. Total Sales by Fat Content



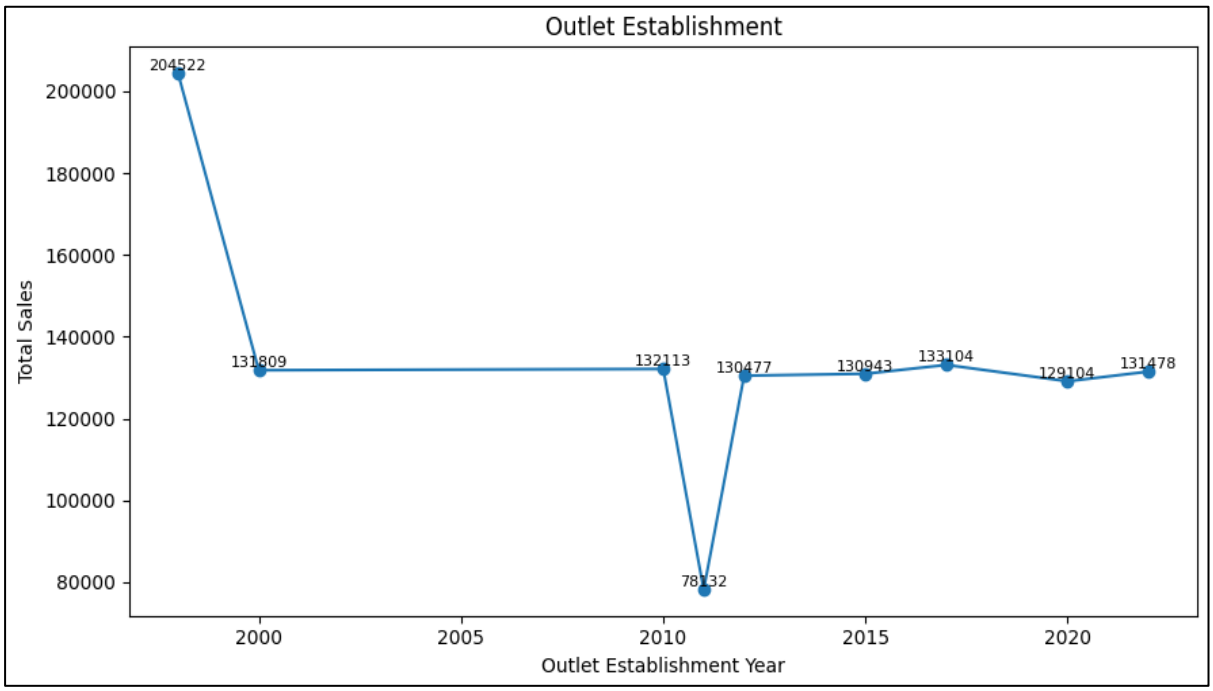
2. Total Sales by Item Type



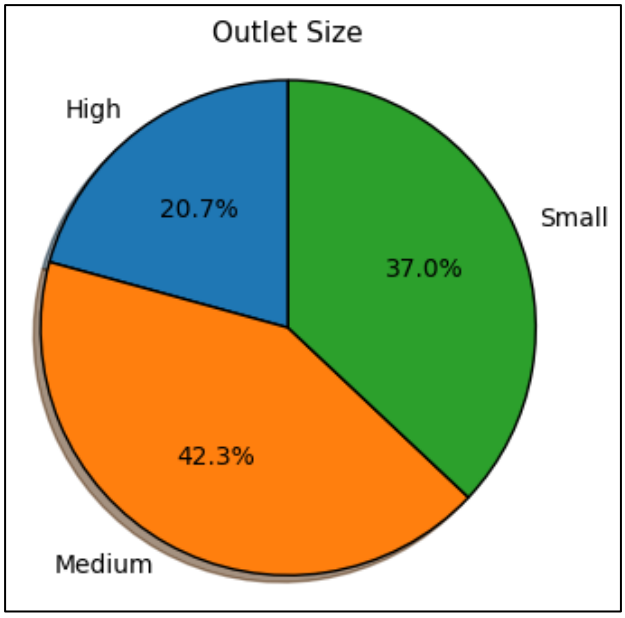
3. Fat Content by Outlet for Total Sales



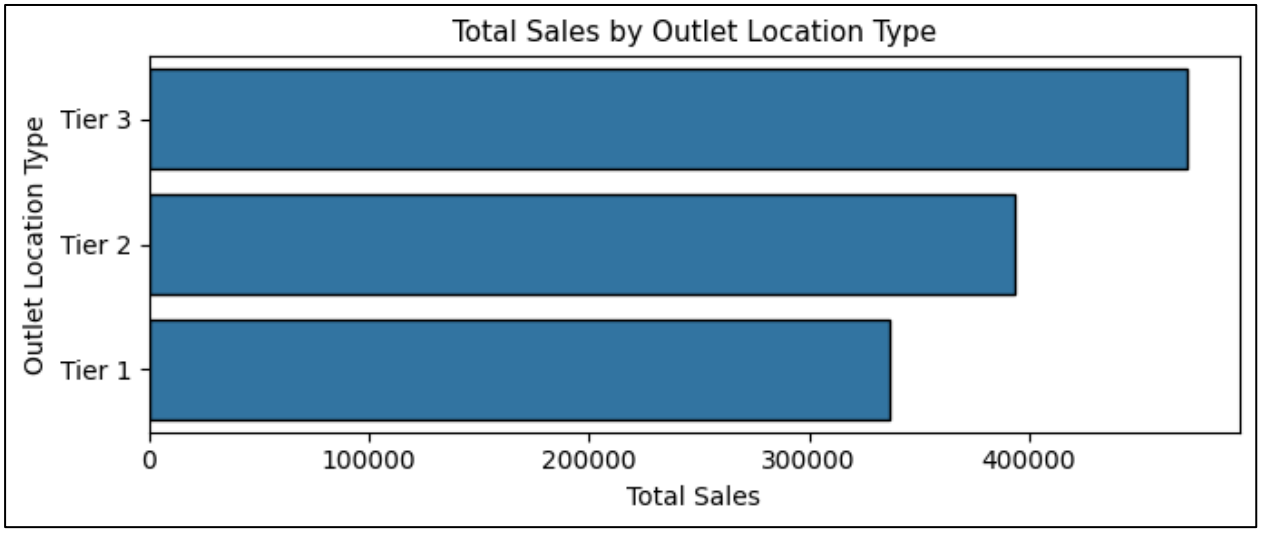
4. Fat Content by Outlet for Total Sales



5. Sales by Outlet Size



6. Sales by Outlet Location



6. Data Analysis using SQL (Business Transactions)

We performed structured analysis in PostgreSQL to answer key business questions:

1. **Underperforming outlets within the same location tier**

- This analysis identifies the lowest-selling outlets within each location tier to highlight stores that are underperforming compared to similar outlets.

	Outlet_Identifier	Outlet_Location_Type	total_sales	sales_rank
1	OUT019	Tier 1	73807.58	1
2	OUT049	Tier 1	130476.86	2
3	OUT046	Tier 1	132113.37	3
4	OUT017	Tier 2	129103.96	1
5	OUT045	Tier 2	130942.78	2
6	OUT035	Tier 2	133103.91	3
7	OUT010	Tier 3	78131.56	1
8	OUT027	Tier 3	130714.67	2
9	OUT018	Tier 3	131477.77	3

2. **Top 20% items contributing to total sales**

- This analysis finds the small group of products that collectively generate **around 80%** of the company's total sales.

	Item_Identifier	total_sales	grand_total_sales	running_sales	cumulative_sales_pct
1	FDU12	2371.01	1201681.61	2371.01	0.20%
2	FDT07	2306.90	1201681.61	4677.91	0.39%
3	NCQ06	2294.71	1201681.61	6972.62	0.58%
4	FDL58	2111.65	1201681.61	9084.27	0.76%
5	NCB31	2104.73	1201681.61	11189.00	0.93%
6	FDX31	2104.46	1201681.61	13293.46	1.11%
7	FDF05	2103.13	1201681.61	15396.59	1.28%
8	FDR59	2096.58	1201681.61	17493.17	1.46%
9	FDP28	2087.85	1201681.61	19581.02	1.63%
10	FDA04	2072.07	1201681.61	21653.09	1.80%
11	FDF04	2064.94	1201681.61	23718.03	1.97%
12	FDY55	2058.19	1201681.61	25776.22	2.15%
13	FDX20	2041.95	1201681.61	27818.17	2.31%
14	FDZ20	2032.88	1201681.61	29851.05	2.48%
15	FDD29	2026.76	1201681.61	31877.81	2.65%
16	FDW26	2002.29	1201681.61	33880.10	2.82%
17	FDA15	1995.97	1201681.61	35876.07	2.99%
18	FDT21	1988.87	1201681.61	37864.94	3.15%
19	FDP25	1955.14	1201681.61	39820.08	3.31%

930 rows

3. **High-rated items but low sales**

- This analysis uncovers products that customers rate highly but have low sales, indicating missed sales potential.

	Item_Type	avg_rating	total_sales
1	Meat	4.02	59449.86

4. **Sales efficiency of new vs old outlets**

- This analysis compares how efficiently newer and older outlets generate sales to evaluate store performance over time.

	outlet_age_group	outlet_count	sales_per_item
1	New Outlet	4	347.44
2	Old Outlet	6	439.07

5. **Top 5 item categories with most fluctuating sales**

- This analysis identifies product categories with highly inconsistent sales, helping identify items that are harder to predict and manage in inventory.

	Item_Type	sales_fluctuation
1	Dairy	70.33
2	Starchy Foods	69.29
3	Frozen Foods	67.46
4	Breads	63.50
5	Household	62.39

7. Dashboard in Power BI

8. Business Recommendations

1. Improve Underperforming Outlets

- Underperforming outlets in similar locations indicate operational gaps rather than location issues.

- Replicate best practices from high-performing outlets and run targeted local promotions.

2. Prioritize Top 20% Revenue-Driving Items

- A small set of products contributes to most of the sales revenue.

- Ensure zero stock-outs, increase visibility, and negotiate better margins for these items.

3. Boost Sales of High-Rated but Low-Selling Products

- Some products have strong customer ratings but low sales due to poor visibility.

- Promote them using “Top Rated” tags, better placement, and smart bundling.

4. Optimize New vs Old Outlet Performance

- Sales efficiency varies between newer and older outlets.

- Use high-performing outlet benchmarks to improve **product selection** and strategy for weaker stores.

5. Control Inventory for High-Fluctuating Categories

- Certain item categories show unstable and unpredictable sales patterns.

- Apply dynamic inventory planning to reduce overstocking and minimize losses.

6. Align Product Mix with Outlet Size and Location

- Sales performance differs significantly by outlet size and location type.

- Stock the most suitable products in appropriate quantities for each outlet, based on its size and location, to avoid wasted space and increase sales.

7. Leverage Customer Ratings to Drive Sales

- A strong average rating indicates high customer satisfaction.

- Use ratings to promote trusted products and quickly fix issues in low-rated items.