🛒 Blinkit Sales Analysis — SQL + Power BI Project

Project Overview

This project focuses on analyzing the Blinkit grocery sales dataset using a combination of **SQL (MySQL)** and **Power BI**.
The primary goals of the project were:

- Clean and standardize the dataset
- Optimize the data using appropriate SQL data types
- Calculate KPIs (Total Sales, Avg Sales, No. of Items, Avg Rating)
- Perform Exploratory Data Analysis (EDA) on sales, item types, outlet characteristics, and customer preferences
- Build a Power BI dashboard to visualize performance and assist business decision-making

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1. Data Cleaning & Preparation (SQL)

1.1 Renamed incorrect column

```
ALTER TABLE blinkit_data

RENAME COLUMN `item_Fat_Content` TO Item_Fat_Content;
```

Purpose: Ensures consistent casing and avoids errors in future queries.

1.2 Standardized Fat Content values

```
UPDATE blinkit_data

SET Item_Fat_Content =

  CASE

    WHEN Item_Fat_Content IN ('LF','low fat') THEN 'Low Fat'

    WHEN Item_Fat_Content = 'reg' THEN 'Regular'

    ELSE Item_Fat_Content

  END;
```

Purpose: Consolidates inconsistent values into clean categories for analysis.

1.3 Data type optimization

```
ALTER TABLE blinkit_data

MODIFY COLUMN Item_Fat_Content ENUM('Low Fat','Regular'),

MODIFY COLUMN Outlet_Location_Type ENUM('Tier 1','Tier 2','Tier 3'),
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MODIFY COLUMN Outlet_Size ENUM('Small','Medium','High'),

MODIFY COLUMN Item_Visibility DECIMAL(5,4),

MODIFY COLUMN Item_Weight DECIMAL(6,2),

MODIFY COLUMN Total_Sales DECIMAL(14,2),

MODIFY COLUMN Rating DECIMAL(3,1);

Purpose: Saves storage space, improves query performance, and ensures numeric operations behave correctly.

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2. Core KPIs (SQL + Dashboard)

These KPIs were calculated using SQL and visualized on the Power BI dashboard (Page 1).

- **Total Sales: $1.20M**
- **Average Sales: $141**
- **Number of Items Sold: 8523**
- **Average Rating: 3.9 / 5**

These KPIs indicate strong overall performance.

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3. Exploratory Data Analysis (SQL)

3.1 Total Sales by Fat Content

Consumers preferred **Low Fat** products:

- Low Fat → **$776K**
- Regular → **$425K**

3.2 Total Sales by Item Type

Top categories: (Page 1 bar chart)

- **Fruits & Vegetables:** $249K
- **Snack Foods:** $0.18M
- **Household, Frozen Foods, Dairy:** following closely

This shows customers frequently purchase essentials and ready-to-eat items.

3.3 Fat Content by Outlet Location

Tier-level preferences (Page 1 donut charts)

- Tier 3 outlets show the highest revenue contribution.
- Low Fat products are preferred across all tiers.

3.4 Sales by Outlet Establishment Year

Trend (Page 1 line chart) shows:

- Peak in **2018 ($205K)**
- Stable performance between **2019–2022 (~$130K yearly)**

Indicates maturity in store performance after 2018.

3.5 Outlet Size Sales Contribution

- **Medium Outlets:** $508K
- **Small Outlets:** $445K
- **High Outlets:** $249K

Medium outlets perform the best due to optimal space and demand balance.

3.6 Total Sales by Outlet Location Type

- **Tier 3:** $472K
- **Tier 2:** $393K
- **Tier 1:** $336K

Tier 3 dominates Blinkit sales performance.

3.7 Full Metrics by Outlet Type

(Page bottom table)

- **Supermarket Type1** leads with:
    - Sales: **$788K**
    - Items Sold: **6K**
    - Avg Rating: 4
- Grocery Stores, despite **lower sales**, have **highest item visibility** (0.10)

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4. Power BI Dashboard Creation (Visual Insights)

The Power BI dashboard includes:

Visuals Present (from uploaded PDF):

✓ KPI Cards (Sales, Avg Sales, Rating, No. of Items)
✓ Bar chart (Item Type Sales)
✓ Donut charts (Outlet Type & Fat Content)
✓ Area chart (Outlet Establishment Trend)
✓ Bar chart (Outlet Location Sales)
✓ Tabular comparison of outlet types
✓ Filter Panel (Tier, Size, Item Type)

These visuals help stakeholders slice data by outlet, size, product type, and location.

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5. Key Insights

Based on SQL analysis + Power BI dashboard:

Sales Performance

- Blinkit generated **$1.20M** in sales.
- Average sale per item is **$141**.

Consumer Preferences

- **Low Fat** category dominated revenue ($776K).
- Top item categories were **Fruits & Vegetables** and **Snack Foods**.

Outlet Analysis

- **Medium outlets** and **Tier 3 locations** are the strongest performers.
- **Supermarket Type1** is the highest revenue outlet type.

Yearly Trend

- Best-performing year: **2018 ($205K)**
- Stable sales from **2019–2022**.

Rating & Visibility

- Average item rating: **3.9**
- Grocery stores have **highest item visibility**, helping customer reach.

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6. Final Conclusion

The analysis shows that Blinkit's business is performing well, with strong sales from fruits, vegetables, and snack food categories.
To further improve business outcomes:

- Focus on **Medium-sized outlets** in **Tier 3** locations, as they drive the highest sales.

- Promote **Low Fat** products due to high customer preference.
- Improve rating-driven items by monitoring customer feedback.
- Expand inventory for high-selling categories like **Fresh Goods** and **Snack Foods**.

These actions will help Blinkit optimize inventory, increase customer satisfaction, and maximize revenue.

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7. Methods Used

Tools

- **SQL (MySQL)**
- **Power BI**
- **Excel (for initial checks)**

Techniques

- Data Cleaning
- Standardization
- KPI Calculation
- Aggregation & Grouping
- Trend Analysis
- Dashboard Visualization

Visualization Types

- Bar Charts
- Donut Charts
- KPI Cards
- Line/Area Charts
- Comparison Tables

Analysis Focus

- Sales Trends
- Product Category Contribution
- Outlet Performance
- Fat Content Preferences
- Customer Rating Patterns
