Strategic Decision Making with PowerBI

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"Data-Driven Insights for Blinkit: A Power BI Dashboard Project"

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Preliminary Report for Blinkit Grocery Sales Analysis

1. Problem Statement

To analyse sales and operational metrics of Blinkit grocery items to identify trends, optimize inventory, and improve customer satisfaction, focusing on outlet performance and product sales.

The goal is to analyze Blinkit's grocery sales data to:

- Understand product-level and outlet-level performance.
- Identify trends in sales, customer ratings, and product visibility.
- Highlight areas for operational and marketing improvements.

Key questions include:

- Which products or outlets contribute the most to sales?
- How does product visibility affect sales performance?
- What factors influence high ratings from customers?

2. Data Requirement

The data required to address the problem includes:

- **Product Attributes:**

1. Item identifier (unique codes for traceability).
2. Item type and category (e.g., Fruits, Beverages).
3. Weight and fat content (product-specific details).

- **Outlet Attributes:**

1. Outlet size, location, and type.
2. Year of establishment for operational history.

- **Performance Metrics:**

1. Sales value per product-outlet combination.
2. Visibility (how prominently the product is displayed).
3. Customer ratings (overall feedback).

3. Data Collection

The dataset contains 8,523 rows and 12 columns, representing various aspects of grocery sales data. Here's an overview of the columns:

Item Fat Content: Indicates the fat content of the items (e.g., "Regular," "Low Fat").

Item Identifier: Unique code for each item.

Item Type: Category of the item (e.g., "Fruits and Vegetables").

Outlet Establishment Year: Year the outlet was established.

Outlet Identifier: Unique code for each outlet.

Outlet Location Type: The location of the outlet (e.g., "Tier 1," "Tier 2").

Outlet Size: Size of the outlet (e.g., "Medium," "Small").

Outlet Type: Type of the outlet (e.g., "Supermarket Type1").

Item Visibility: Proportion of the product's visibility on shelves.

Item Weight: Weight of the items (with missing values).

Sales: Sales value for each item.

Rating: Customer rating for the item.

4. Data Validation

Data validation ensures consistency and accuracy:

Completeness: Check for missing data (e.g., missing item weights).

Accuracy: Verify data types (e.g., sales should be numerical, not text).

Range Validity:

- Outlet establishment years should align with plausible values.
- Sales values should not be negative or unrealistically high.

Consistency:

- Ensure no duplicate records exist for a single product-outlet pair.
- Confirm uniformity in categorical values (e.g., standardizing "low fat" and "Low Fat").

5. Data Cleaning (Treating Outliers)

Data cleaning focuses on preparing the dataset for analysis:

- **Handling Missing Values**:
    - Impute missing **Item Weight** values using average weights grouped by item type.
- **Outlier Detection and Treatment**:
    - Use statistical methods (e.g., interquartile range or Z-scores) to identify extreme values in **Sales** or **Item Visibility**.
    - Cap outliers to a reasonable range or investigate their causes for business insights.

6. Tools

The analysis leveraged the following tools:

- **Power BI**: To create dynamic dashboards and visualizations.
- **Tableau**: (If needed) for alternative dashboarding.
- **Python/Excel**: For data cleaning, manipulation, and validation.

7. Dashboard

Definition of a Dashboard

A dashboard is a visual representation of key performance metrics and data points that provides actionable insights at a glance. It is a tool used to monitor, analyze, and improve business operations in real time.

Importance of a Dashboard

- **Efficiency**: Allows decision-makers to access vital information quickly and easily.
- **Visualization**: Converts raw data into an easily understandable format using charts and graphs.
- **Performance Tracking**: Highlights trends, outliers, and patterns to identify areas for improvement.
- **Data-Driven Decisions**: Assists in strategic planning by providing clear insights.

Overview of the Blinkit Dashboard

The provided dashboard visualizes Blinkit's sales, product performance, and outlet analysis using various charts and metrics:

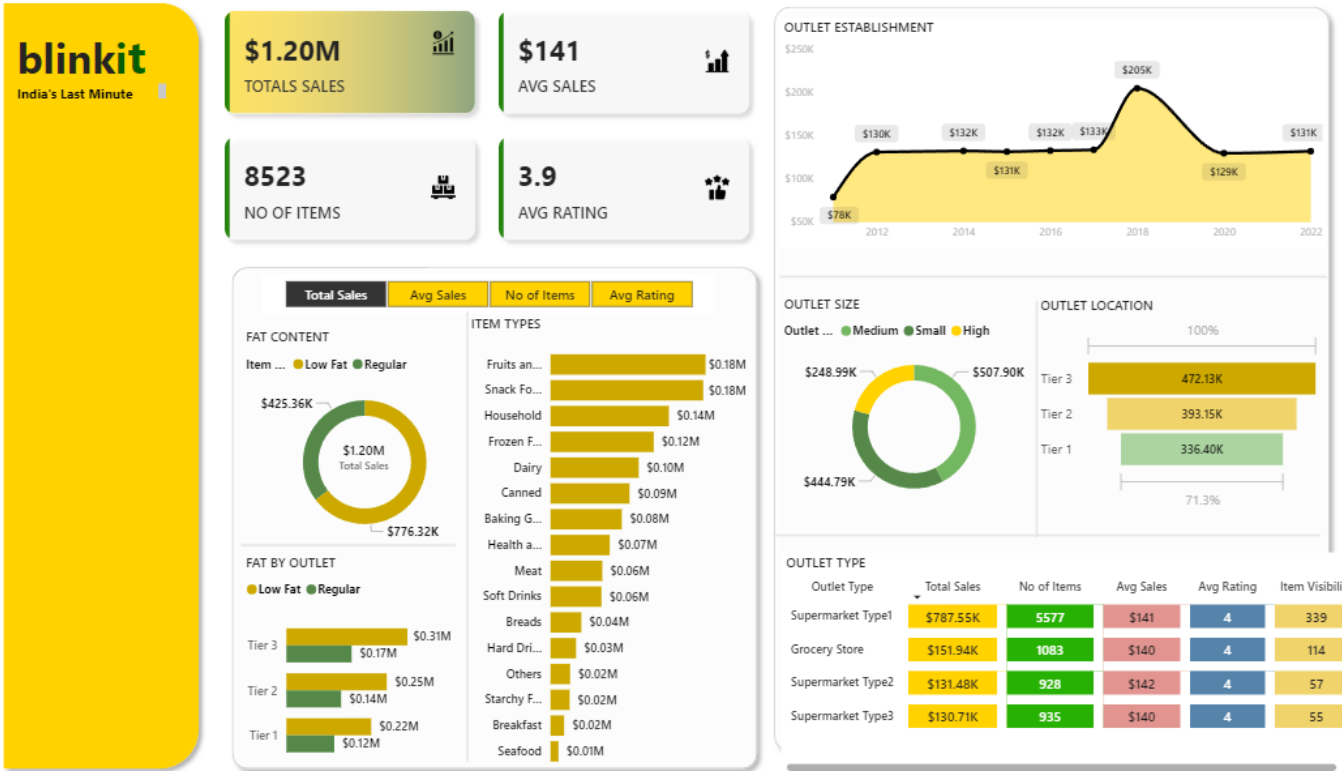
Key Metrics Displayed:

1. **Total Sales**: $1.20M - Represents the overall revenue generated across all products and outlets.
2. **Average Sales**: $141 - Indicates the average revenue per item/outlet.
3. **Number of Items**: 8,523 - Total unique items available for sale.
4. **Average Rating**: 3.9 - The average customer feedback score.

Charts and Their Insights:

1. **Pie Chart: Fat Content vs. Total Sales**
    - Compares sales for **Low Fat** vs. **Regular** items.
    - Insight: Regular items generate a higher revenue ($776.32K) compared to Low Fat ($425.36K).
2. **Bar Chart: Item Types vs. Total Sales**
    - Highlights the sales contribution of various product categories.
    - Insight: **Fruits and Vegetables** and **Snack Foods** lead in sales, each contributing $0.18M.
3. **Line Chart: Outlet Establishment Trends**
    - Tracks revenue growth based on the establishment year of outlets.
    - Insight: A spike in sales occurred for outlets established in 2018 ($205K), followed by a dip in 2020 and recovery in 2022.
4. **Donut Chart: Outlet Size Distribution**
    - Displays sales performance based on outlet size (Small, Medium, High).
    - Insight: Large outlets outperform others with total sales of $507.90K.
5. **Bar Chart: Outlet Location Performance**
    - Compares sales across different location tiers (Tier 1, Tier 2, Tier 3).
    - Insight: **Tier 3 locations** generate the highest sales ($472.13K), followed by Tier 2 and Tier 1.

6. **Bar Chart: Outlet Type Performance**
    - Breaks down sales by outlet type (e.g., Supermarket Type 1, Grocery Store).
    - Insight: **Supermarket Type 1** is the top-performing outlet type, generating $787.55K in sales, followed by Grocery Stores at $151.94K.



8. Story Telling

What is Storytelling in Data Analytics?

Storytelling in data analytics involves presenting insights in a structured and meaningful way to communicate the narrative behind the data. It blends data, visuals, and context to provide actionable insights that drive decision-making. The goal is to make complex data accessible and relatable, enabling stakeholders to take informed actions.

Importance of Storytelling

1. **Clarity**: Helps simplify complex data into understandable insights.
2. **Engagement**: Captures the audience's attention using visual and contextual narratives.

3. **Action-Oriented Insights**: Converts numbers into meaningful stories that drive decisions.
4. **Problem Solving**: Highlights challenges and suggests solutions based on the data trends.

Storytelling from the Blinkit Dashboard

The dashboard tells the following key stories about Blinkit's operations and performance:

1. **Revenue Drivers**
    - **Story**: Regular products significantly outperform low-fat items in total sales ($776.32K vs. $425.36K). Fruits, Vegetables, and Snacks are the top contributors to revenue, each generating $0.18M.
    - **Takeaway**: Blinkit should continue prioritizing these high-demand categories while exploring ways to market low-fat items for health-conscious customers.
2. **Outlet Efficiency**
    - **Story**: Large outlets contribute the highest sales ($507.90K), followed by medium-sized ones ($444.79K). Tier 3 locations dominate with $472.13K in sales, indicating strong demand in these regions.
    - **Takeaway**: Investments in larger outlets in Tier 3 areas can maximize returns, while smaller outlets should be optimized for efficiency.
3. **Historical Trends**
    - **Story**: Sales spiked in 2018 ($205K) due to outlet expansions or promotional campaigns but dropped during 2020, likely due to pandemic-related challenges. A recovery trend is evident in 2022 ($131K).
    - **Takeaway**: Blinkit can analyze the success factors from 2018 and replicate them while preparing for future disruptions like those seen in 2020.
4. **Customer Insights**
    - **Story**: The average customer rating is 3.9, showing room for improvement in product quality, delivery efficiency, or customer experience.
    - **Takeaway**: A focus on improving customer satisfaction, particularly for underperforming outlet types, can enhance ratings and loyalty.
5. **Outlet Type Performance**
    - **Story**: Supermarket Type 1 leads with $787.55K in total sales and the highest number of items (5,577). Other outlet types, while contributing less, still show potential with focused improvement.

- **Takeaway**: Blinkit should continue supporting Supermarket Type 1 while experimenting with ways to boost sales in Grocery Stores and smaller outlet formats.

9. Conclusion

The Blinkit dashboard provides valuable insights into revenue trends, product performance, and outlet efficiency. By crafting a narrative around the data:

- Blinkit can make targeted decisions to enhance product offerings, improve customer satisfaction, and optimize outlet operations.
- Strategic investments in large outlets and Tier 3 locations will likely yield higher returns.
- Identifying and replicating successful historical strategies (e.g., 2018 campaigns) can help sustain growth.

Data storytelling transforms these findings into actionable strategies, making it an essential part of Blinkit's data-driven approach to decision-making.