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Advanced Data Visualisation

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## BLINKIT DASHBOARD REPORT

Submitted By

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**Data Science and Analytics**

**Section: K24DS**

**Course Code: INT555**

**Under the Guidance of**

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## **CERTIFICATE**

This is to certify that the declaration statement made by student is correct to the best of my knowledge and belief. They have completed this Project under my guidance and supervision. The present work is the result of their original investigation, effort and study. The Project is fit for the submission and partial fulfilment of the conditions for the award of M. Tech degree in “Computer Science and Engineering” from Lovely Professional University, Phagwara.

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**Date: 19/04/2024**

## **ACKNOWLEDGEMENT**

We extend our sincere gratitude to all those who contributed to the successful completion of this project, " BLINKIT DASHBOARD REPORT".

First and foremost, we would like to express our deepest appreciation to our project supervisor/advisor Pradeep Kumar, whose guidance, expertise, and encouragement were invaluable throughout the duration of this endeavor. Their insights and support significantly enriched the quality of our work and helped steer us in the right direction.

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Additionally, we express our appreciation to the open-source community for developing and maintaining the tools, frameworks, and technologies that formed the backbone of this project. Their commitment to collaboration and knowledge sharing is commendable and serves as a testament to the power of collective intelligence.

Last but not least, we acknowledge the support and understanding of our families, friends, and loved ones, whose encouragement and patience sustained us during moments of doubt and fatigue.

This project would not have been possible without the collective efforts and support of all individuals and entities mentioned above. I am sincerely grateful for their contributions and encouragement.

## **Introduction**

Blinkit, formerly known as Grofers, is a leading online grocery delivery platform in India that offers customers the convenience of shopping for everyday essentials from the comfort of their homes. Founded in December 2013 by Albinder Dhindsa and Saurabh Kumar, the company initially began as a grocery delivery service and has since evolved to become one of India's most prominent players in the quick-commerce space.

The primary objective of Blinkit is to provide fast, reliable, and cost-effective delivery of groceries, personal care products, household essentials, and more. With an emphasis on delivering items within minutes of ordering, Blinkit is redefining the way consumers shop for groceries by catering to their need for speed and convenience. The platform offers a wide selection of products, ranging from fresh fruits and vegetables to packaged foods, beverages, and daily-use items.

Blinkit differentiates itself by its robust delivery infrastructure, which includes a network of warehouses strategically placed across cities to ensure rapid fulfillment. These fulfillment centers, along with the company's fleet of delivery partners, enable Blinkit to offer hyperlocal deliveries, typically within 10-30 minutes of order placement. This makes it a preferred choice for urban dwellers who require quick access to groceries and other essential products.

In addition to its core offerings, Blinkit's tech-driven approach also sets it apart from traditional grocery stores. With a user-friendly mobile app and website, customers can easily browse products, place orders, and make payments through a secure online interface. The company also leverages data analytics to personalize recommendations, optimize inventory management, and ensure a seamless shopping experience for its customers.

Since its rebranding to Blinkit in 2022, the company has focused on expanding its reach, improving its logistics, and enhancing the overall customer experience. As the demand for instant deliveries continues to grow, Blinkit is well-positioned to capitalize on the evolving trends in the online grocery space, catering to a broad customer base and setting new standards in the fast-delivery industry.

## Source of Dataset:

The **Blinkit Dataset** is a comprehensive dataset available on Kaggle. It provides detailed data related to **Blinkit** (formerly Grofers), an Indian online grocery delivery platform. The dataset contains various aspects of Blinkit's operations, such as product details, customer information, transaction data, and more, making it a valuable resource for anyone looking to analyze trends in e-commerce, grocery delivery, and the quick-commerce industry in India.

The **source of the Blinkit dataset** is directly from Kaggle, an online platform known for hosting datasets, competitions, and data science projects. Kaggle enables data enthusiasts, researchers, and practitioners to access public datasets for analysis, machine learning modeling, and creating data-driven applications. The Blinkit dataset on Kaggle was uploaded by Mukesh Gadri and made available for anyone interested in performing data analysis or building predictive models related to the e-commerce and online grocery sectors.

### Source: Blinkit Dataset on Kaggle

The dataset includes a wide range of features, including:

1. **Product Information:** Details about the products listed on Blinkit, including product names, categories, and pricing.
2. **Customer Information:** Insights into customer demographics and behaviors, such as customer IDs, order frequency, and purchase patterns.
3. **Transaction Data:** Information about the purchases made, including transaction amounts, order statuses, and delivery times.
4. **Operational Data:** This could include aspects related to inventory management, delivery logistics, and regional performance.

This dataset is particularly useful for machine learning practitioners, data analysts, and researchers interested in:

- **Predicting customer behavior:** Using transaction data to predict future purchases or analyze buying patterns.
- **Demand forecasting:** Analyzing trends and demand for various grocery items across different regions.
- **Customer segmentation:** Identifying different customer groups based on their purchasing habits or demographic details.
- **Optimization of delivery routes and logistics:** Using operational data to improve delivery efficiency and reduce costs.

## Exploratory Data Analysis (EDA)

### 1. Data Import

- a. Open Power BI Desktop.
- b. Click on “Get Data” and select the appropriate data source (e.g., Excel, CSV, SQL Server).
- c. Load the Blinkit dataset into Power BI.

### 2. Data Cleaning in Power Query Editor

- a. Click on Transform Data to open Power Query Editor.
- b. Remove nulls: Identify and handle missing values (replace or remove).
- c. Remove duplicates: Eliminate duplicate rows using the “Remove Duplicates” option.
- d. Change data types: Ensure all columns have the correct data types (e.g., convert strings to dates, numbers).
- e. Format columns: Rename columns for clarity and consistency.

### 3. Creating New Columns (Feature Engineering)

- a. Create calculated columns using DAX (Data Analysis Expressions):
- b. Total Price = Quantity × Price
- c. Order Month/Year = FORMAT([Order Date], "MMM YYYY")
- d. Day of Week = WEEKDAY([Order Date])
- e. Customer Category = IF([Order Count] > 5, "Frequent", "Occasional")

### 4. Understanding the Dataset

The Blinkit dashboard provides insights into sales, product categories, outlet types, and customer interactions. The key dimensions and metrics include:

- Outlet Location Type: Tier 1, Tier 2, Tier 3
- Outlet Size: Small, Medium, High
- Item Type: Variety of product categories
- Fat Content: Low Fat, Regular
- Outlet Type: Grocery Store, Supermarket Type 1/2/3

Key Metrics:

- Total Sales: \$1.20M
- Average Sales: \$141
- Average Rating: 3.9
- Number of Items: 8,523

### 5. Univariate Analysis

- a. Sales Distribution by Item Type
  - Highest Sales: Fruits & Vegetables, Snack Foods (~\$0.18M each)
  - Lowest Sales: Seafood, Breakfast, Starchy Foods (< \$0.02M)
- b. Fat Content Analysis
  - Regular Fat: \$776.32K

- Low Fat: \$425.36K

c. Outlet Type Performance

- Supermarket Type 1 has the highest total sales (\$787.55K)
- Grocery Store has the highest item visibility (0.10) but lower total sales.

## 6. Bivariate Analysis

a. Fat Content vs Outlet Tier

- Regular fat products lead in all tiers
- Tier 3 dominates in total fat content sales (~\$0.31M)

b. Sales by Outlet Size

- Medium: \$507.9K
- High: \$444.79K
- Small: \$248.99K

c. Outlet Location vs Sales

- Tier 3: \$472.13K
- Tier 2: \$393.15K
- Tier 1: \$336.40K

## 7. Time Series Analysis: Outlet Establishment Over Years

- 2012–2016: Gradual growth (~\$130K)
- 2018: Peak at \$205K
- 2020: Drop to \$129K (possible pandemic effect)
- 2022: Stabilized at \$131K

## 8. Multivariate Analysis: Outlet Type vs Metrics

- Supermarket Type 1 has the highest:
  - Total Sales: \$787.55K
  - No. of Items: 5,577
  - Avg Sales: \$141
  - Avg Rating: 4
- All outlet types have consistent avg rating (4)

## 9. Insights & Observations

- Customer ratings remain consistently high across all outlet types.
- Tier 3 outlets contribute the most to total sales.
- Supermarket Type 1 outperforms others in all major metrics.
- Items like Seafood, Breakfast, and Breads have low sales.
- Regular fat content items are preferred over Low Fat items.

## Analysis on Dataset

### 1. Sales Distribution by Item Type

#### i. Introduction

This analysis identifies which product categories generate the highest and lowest revenue, offering insight into customer preferences and category performance.

#### ii. Specific Requirements, Functions & Formulas

- Power BI Functions Used:
    - DAX Measure: Total Sales = `SUM('SalesData'[Sales])`
    - Visuals: Bar chart
    - Filter: Slicer for item categories
  - Requirement: Display categories from highest to lowest total sales.
- #### iii. Analysis Results
- *Top Performers*: Fruits & Vegetables, Snack Foods (~\$0.18M each)
  - *Lowest Sales*: Seafood, Breakfast, Starchy Foods (< \$0.02M)
  - Insight: Inventory and promotions should prioritize high-performing categories, while low-performers may need better visibility or re-evaluation.

### 2. Fat Content Preference Analysis

#### i. Introduction

This section explores customer preference based on fat content — Regular vs. Low Fat — and their contribution to total sales.

#### ii. Specific Requirements, Functions & Formulas

- DAX Measure: Total Sales by Fat = `CALCULATE([Total Sales], FILTER('Data', 'Data'[FatContent] = "Regular"))`
- Visual: Pie chart for proportion comparison.

#### iii. Analysis Results

- Regular Fat Products: \$776.32K
- Low Fat Products: \$425.36K
- Insight: Regular-fat items are clearly more popular. Marketing "Low Fat" products could improve balance and cater to health-conscious segments.
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### 3. Outlet Type Performance

#### i. Introduction

Analyzes how different outlet types (e.g., Grocery Store, Supermarket Type 1/2/3) perform in terms of sales, visibility, and customer ratings.

#### ii. Specific Requirements, Functions & Formulas

- DAX Measures:
  - Average Rating = `AVERAGE('Data'[Rating])`
  - Item Visibility = `AVERAGE('Data'[Visibility])`
- Visuals: Table with conditional formatting, bar charts.

#### iii. Analysis Results



- *Highest Sales:* Supermarket Type 1 (\$787.55K)
- *Highest Visibility:* Grocery Store (0.10)
- *Avg Rating:* Consistently ~4 across all outlet types
- *Insight:* Supermarket Type 1 is most profitable; however, Grocery Stores offer more visibility and can be leveraged for promoting new items.

#### 4. Sales by Outlet Size

##### i. Introduction

This analysis identifies the relationship between outlet size (Small, Medium, High) and total sales.

##### ii. Specific Requirements, Functions & Formulas

- Measure: Sales by Size = CALCULATE([Total Sales], GROUPBY('Data', [OutletSize]))
- Visual: Column chart by outlet size

##### iii. Analysis Results

- Medium Size: \$507.9K
- High Size: \$444.79K
- Small Size: \$248.99K
- *Insight:* Medium-sized outlets perform the best. They offer an optimal balance of space and inventory without the overhead of larger stores.

#### 5. Outlet Location Type vs Sales

##### i. Introduction

This analysis studies how different geographic tiers (Tier 1, 2, 3) impact sales performance.

##### ii. Specific Requirements, Functions & Formulas

- DAX Measure: Sales by Tier = CALCULATE([Total Sales], 'Data'[LocationTier])
- Visuals: Clustered column chart by tier

##### iii. Analysis Results

- Tier 3: \$472.13K
- Tier 2: \$393.15K
- Tier 1: \$336.40K
- *Insight:* Tier 3 locations drive the highest sales, possibly due to higher demand or fewer competitors. More investment can yield better ROI here.

#### 6. Time Series Analysis of Outlet Establishment

##### i. Introduction

This section reviews how sales varied over time as new outlets were established.

##### ii. Specific Requirements, Functions & Formulas

- Date Hierarchy: Year > Quarter > Month
- Visual: Line chart
- Measure: Yearly Sales = CALCULATE([Total Sales], YEAR('Data'[Year]))

##### iii. Analysis Results

- 2018: Peak at \$205K
- 2020: Drop to \$129K

- 2022: Stabilized at \$131K
- Insight: The drop in 2020 aligns with COVID-19. The recovery in 2022 suggests resilience. 2018's peak strategies should be analyzed for reuse.

## **7. Multivariate Analysis: Outlet Type vs All Key Metrics**

### i. Introduction

This combines multiple variables (sales, items, rating) to benchmark outlet types.

### ii. Specific Requirements, Functions & Formulas

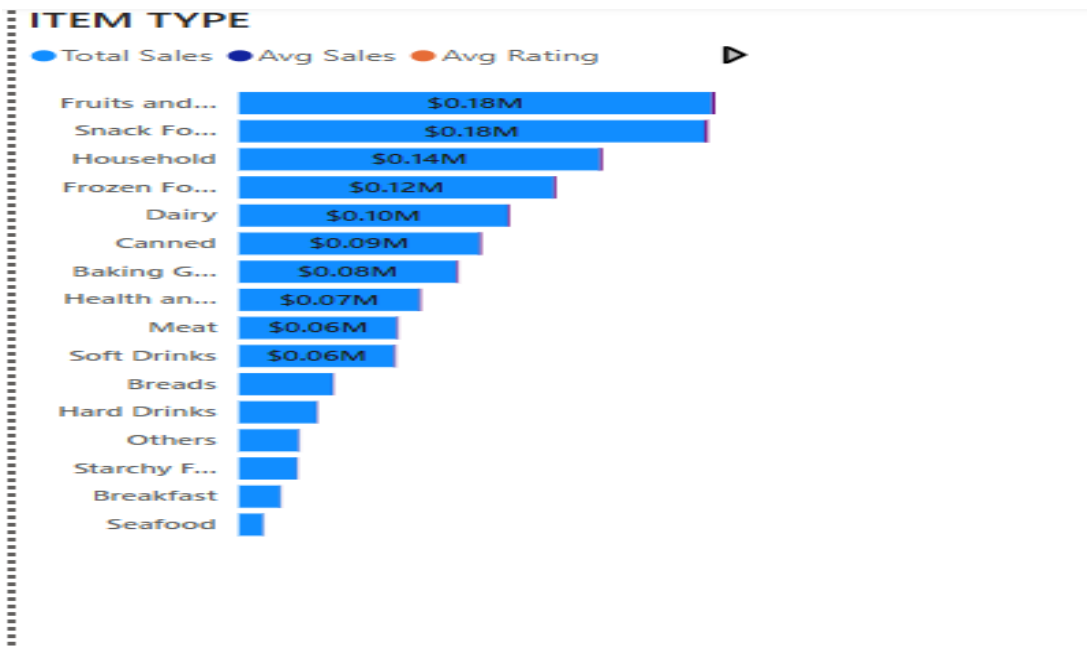
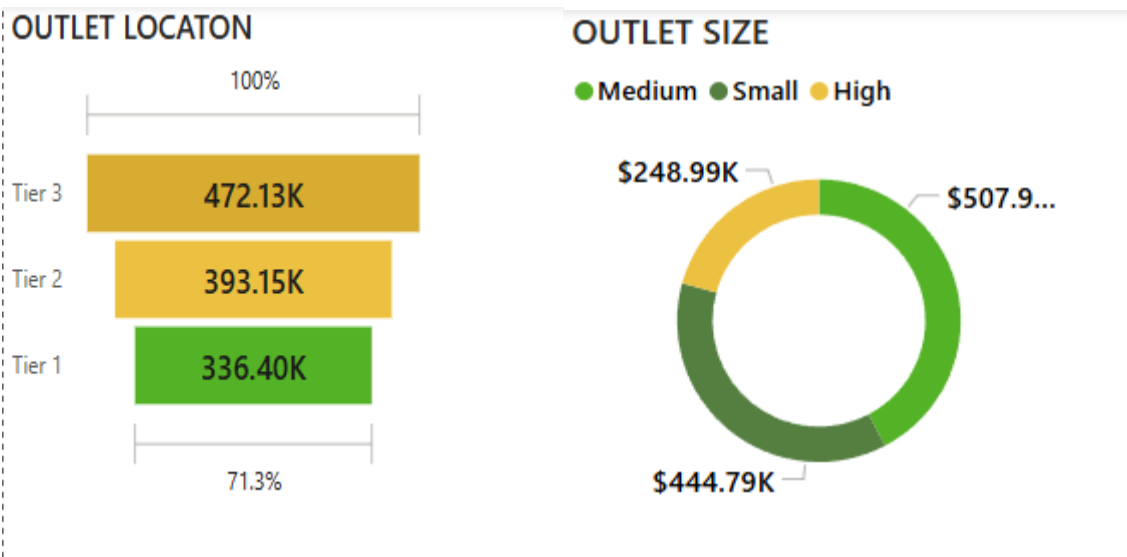
- Measures:
  - Average Sales, Total Items, Rating
- Visual: Multi-row card and bar chart per outlet type

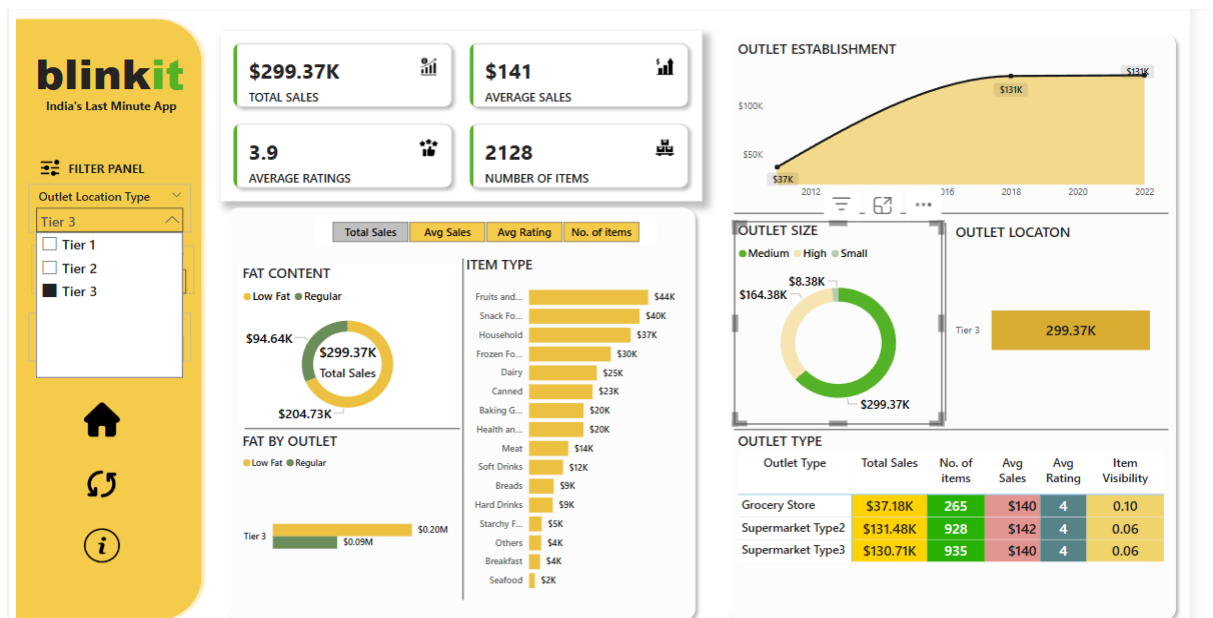
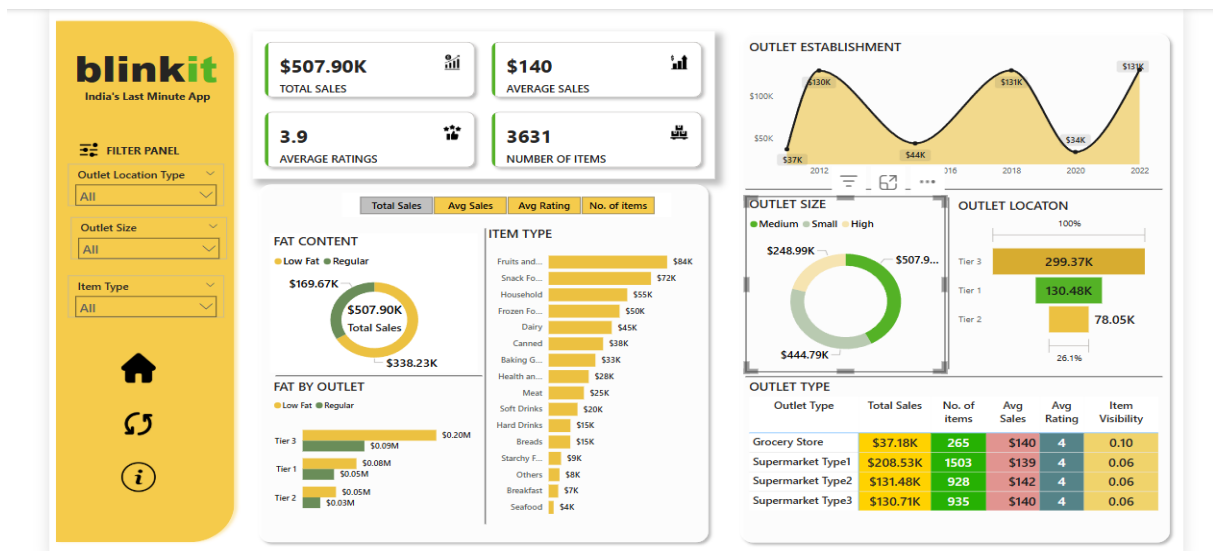
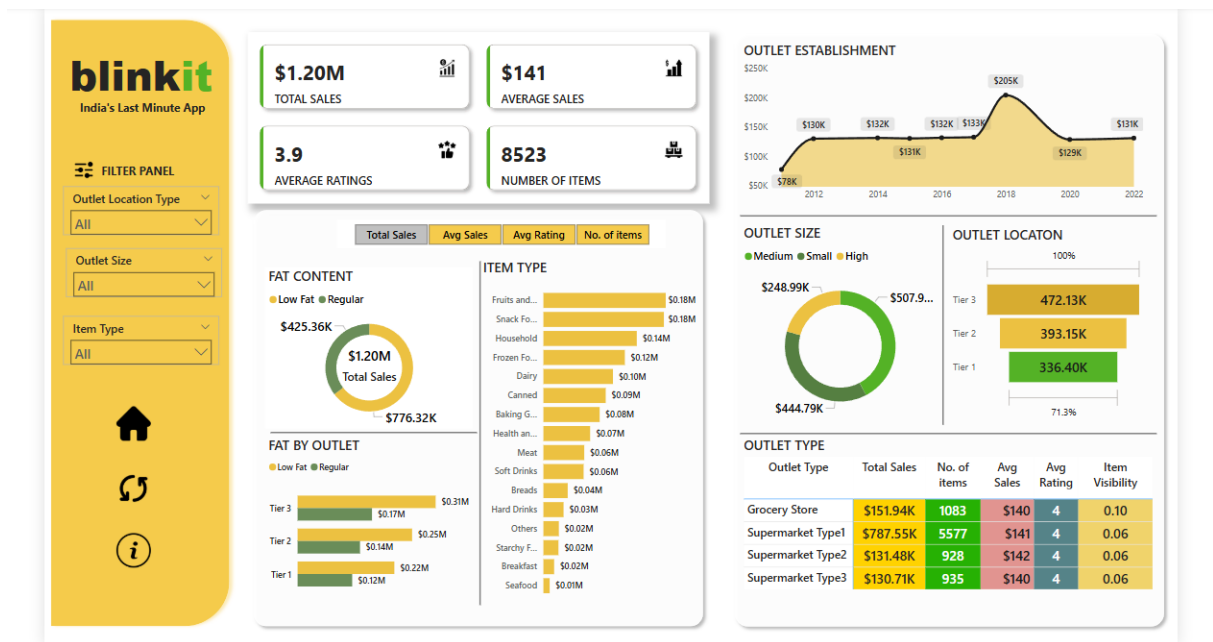
### iii. Analysis Results

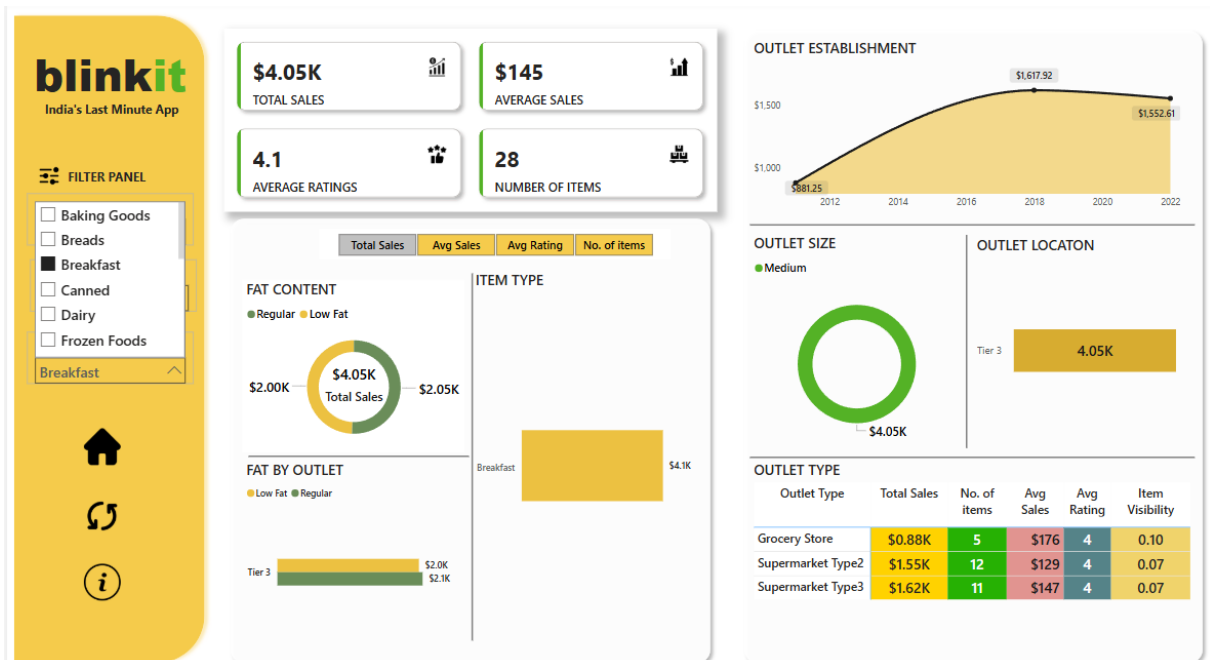
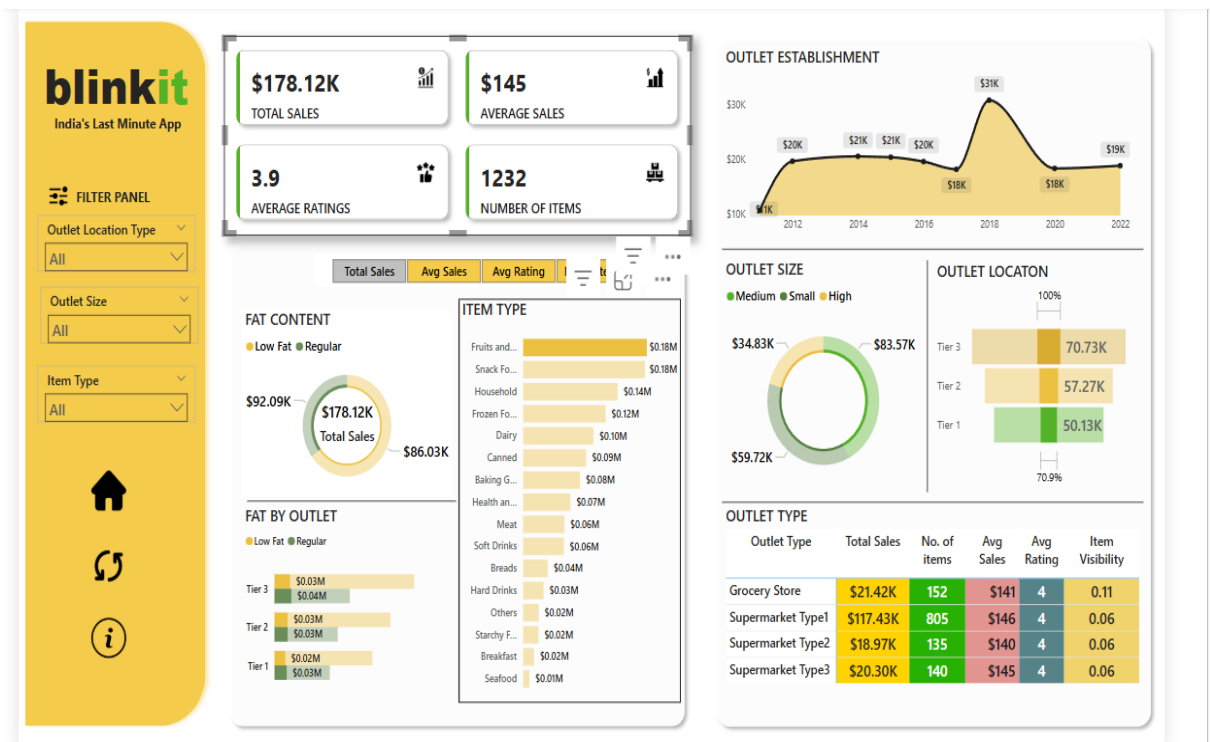
- *Top Performer: Supermarket Type 1*
  - Total Sales: \$787.55K
  - Items: 5,577
  - Avg Sales: \$141
  - Avg Rating: 4
- Insight: Supermarket Type 1 excels across all performance indicators and should be a model for future expansion.

Screenshot

OUTLET TYPE					
Outlet Type	Total Sales	No. of items	Avg Sales	Avg Rating	Item Visibility
Grocery Store	\$151.94K	1083	\$140	4	0.10
Supermarket Type1	\$787.55K	5577	\$141	4	0.06
Supermarket Type2	\$131.48K	928	\$142	4	0.06
Supermarket Type3	\$130.71K	935	\$140	4	0.06







## Conclusion

The Blinkit dataset analysis using Power BI has provided valuable insights into sales patterns, product preferences, outlet performance, and customer behavior. Through comprehensive Exploratory Data Analysis (EDA), we identified key drivers of revenue such as item type, fat content, outlet size, and geographical tier. Notably:

- Fruits & Vegetables and Snack Foods emerged as the top-selling categories.
- Regular fat content items generated significantly higher sales than low-fat options.
- Supermarket Type 1 outperformed all other outlet types in terms of total sales, item count, and average customer ratings.
- Medium-sized outlets were the most efficient in driving sales.
- Tier 3 locations led in revenue contribution, indicating strong demand from those regions.
- Time series analysis revealed key trends, including a peak in sales during 2018 and a dip in 2020 likely due to the COVID-19 pandemic.

These insights offer actionable intelligence for Blinkit's marketing, inventory, and expansion strategies. Optimizing outlet types, enhancing product visibility, and targeting the right demographics can lead to better performance and customer satisfaction.

## **Future Scope**

While this analysis provides a strong foundation, there are multiple opportunities to expand and enhance the scope of insights:

### **1. Predictive Analytics**

- Implement machine learning models to forecast future sales, demand trends, and customer preferences.

### **2. Customer Segmentation**

- Use clustering algorithms to group customers based on behavior, demographics, or purchase patterns for personalized marketing.

### **3. Real-Time Dashboards**

- Integrate real-time data streams for dynamic monitoring of sales, inventory levels, and performance KPIs.

### **4. Geospatial Analysis**

- Use map visuals to pinpoint high-performing regions, delivery hotspots, and underserved locations.

### **5. Product Affinity Analysis**

- Discover product bundling opportunities by analyzing which items are often bought together.

### **6. Sentiment Analysis**

- Integrate customer reviews and feedback to analyze sentiment trends related to products or outlets.

### **7. Mobile-Friendly Dashboards**

- Enhance accessibility by designing dashboards optimized for mobile and tablet views.

By adopting these future enhancements, Blinkit can strengthen its data-driven decision-making, improve operational efficiency, and deliver a superior customer experience in an increasingly competitive market.

## References

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2. **Microsoft Power BI Documentation**  
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<https://learn.microsoft.com/en-us/power-bi/>
3. **Data Visualization Best Practices**  
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<https://stephanieevergreen.com/>

## Profiles

- **GitHub:** <https://github.com/akp03112000/blinkit-powerbi-dashboard>
- **LinkedIn:** <https://www.linkedin.com/posts/akp03112000>