**Blink-IT Grocery Data Analytics Project Report**

"An Excel-Based Business Intelligence Dashboard for Retail Data Visualization and Insight Generation"

**Link to view the dashboard :** [Click to View Dashboard](https://1drv.ms/x/c/0807fb421fd48494/EU9Jb0cWBzFGkL3ju4ewMdYBOsCSkYeQmZmIlV5_BkcbHA?e=tDDob9)

**Sagar Sanjay Shah**

[**Sagarshah2745@gmail.com**](mailto:Sagarshah2745@gmail.com)

**LinkedIn:** [**https://www.linkedin.com/in/sagarshah2745/**](https://www.linkedin.com/in/sagarshah2745/) **GitHub:** [**https://github.com/Sagargwu**](https://github.com/Sagargwu)

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## **Project Summary**

**Project Title:**  
**Blink-IT Grocery Data Analytics Dashboard**

**Tools Used:**

* Microsoft Excel (Pivot Tables, Pivot Charts, Slicers, Conditional Formatting)
* Power Query for data transformation
* Design principles for executive dashboards

**Duration:**  
June 2025 (Completed in ~2 weeks)

**Dashboard Link:**  
[Click to View Dashboard](https://1drv.ms/x/c/0807fb421fd48494/EU9Jb0cWBzFGkL3ju4ewMdYBOsCSkYeQmZmIlV5_BkcbHA?e=tDDob9)

**Key KPIs Achieved:**

* Total Sales Analyzed: **$1.20M**
* Total Items: **8,523**
* Average Customer Rating: **3.97 Stars**
* Top-Performing Outlet Tier: **Tier 3**
* Highest Revenue Outlet Size: **Medium**

**Top 3 Insights:**

1. **Tier 3 cities generate the highest sales**, showing strong potential in semi-urban and rural markets.
2. **Medium-sized outlets are the most profitable**, offering an ideal mix of efficiency and scale.
3. **Customer preference skews toward low-fat products**, revealing a growing health-conscious trend.

**Abstract**

This paper provides a detailed look at grocery sales and operational data for Blink-IT, a fast-growing on-demand delivery app in India known for its last-minute convenience model. The main goal of this project was to gather useful insights from Blink-It structured dataset using a well-designed Excel dashboard that combines data visualization with strategic information. With over 8,500 unique grocery items across different outlet types, locations, and product categories, the data served as a strong foundation for business analysis.

We chose Microsoft Excel as the main platform because of its accessibility, flexibility, and common use in business settings. By using pivot tables, slicers, custom charts, and conditional formatting, we built an interactive dashboard. This tool allows business users to track trends, compare outlet performance, and find valuable opportunities. The dashboard not only summarizes data but also enables dynamic filtering and detailed analysis based on outlet tier, size, item category, and fat content.

Through this project, we identified several important patterns. For instance, Tier 3 outlets outperformed Tier 1 and Tier 2 in total sales, showing strong demand in rural or semi-urban areas. Medium-sized outlets were the most profitable, achieving a good balance between operational costs and inventory turnover. Consumer preferences were mainly for low-fat items and essential grocery categories like fruits and vegetables.

The analytical work led to recommendations focused on improving Blink-IT’s product mix, planning for expansion, and enhancing customer satisfaction. The resulting dashboard serves as a valuable decision-support tool for executives, category managers, and regional planners. It demonstrates how simple tools, when used correctly, can create business insights comparable to those from more complex analytics platforms.

**Key deliverables of this project include:**

• A high-quality Excel dashboard that provides real-time filtering and trend visualizations.

• Data-driven insights to improve outlet strategy, product offerings, and store-level planning.

• Summaries and visual interpretations that make complex data easier to understand for strategic decisions.

This project showcases the effectiveness of Excel-based analytics, connecting raw data to real-world business applications.

**Introduction**

**Objective**

The main goal of this project was to conduct a clear analysis of Blink-IT’s grocery dataset to gain business insights and create an easy-to-understand dashboard using Microsoft Excel. Blink-IT is a quick last-minute grocery delivery service that collects a lot of data from its operations. By examining this data, we wanted to understand performance trends, customer behavior, outlet features, and product details to help with decision-making based on data.

We aimed to turn raw data into useful visuals and key performance indicators (KPIs). This allows executives and stakeholders to quickly grasp business performance and make informed strategic choices.

**Scope**

This project focuses on descriptive and diagnostic analytics. It aims to discover historical trends, understand operational bottlenecks, and give an overview of grocery item performance. It uses static historical data that includes item categories, outlet types, sales figures, fat content, and customer ratings. The project involved:

• Data ingestion, preprocessing, and transformation

• Cleaning and standardizing data for consistency

• Segmenting outlets and product types

• Building interactive, filterable dashboards

• Extracting useful insights from visual representations

The final dashboard lets users explore the data by outlet size, tier, item type, fat content, and period. This helps them observe trends and correlations effectively.

**Tools and Technologies Used**

A wide array of tools and techniques were used in this project to ensure accuracy, clarity, and interactivity. These include:

* **Microsoft Excel:** Core platform for all dashboard development and data manipulation.
  + **Pivot Tables:** Used to summarize large amounts of data quickly.
  + **Pivot Charts:** Enabled visual representation of trends, proportions, and comparisons.
  + **Slicers and Timeline Filters:** Added interactivity to allow dynamic filtering across multiple dimensions.
  + **Conditional Formatting:** Applied to highlight patterns, anomalies, and thresholds.
* **Power Query:** Utilized for data transformation and cleaning. It allowed:
  + Merging of datasets
  + Column transformations and type conversions
  + Removal of nulls and duplicates
  + Data profiling and normalization
* **Design Layout Principles:**
  + Clean, grid-aligned structure for visual clarity
  + Logical placement of filters, KPIs, and visual blocks
  + Minimalist color themes for business presentation
* **Analytical Frameworks Applied:**
  + KPI-Based Dashboarding
  + Retail Performance Segmentation
  + Item-Outlet Matrix Analysis
* **Screenshots and Graphical Assets:** Captured and exported to support documentation and reporting.

**Dataset Overview**The dataset used for this project contains detailed, organized records about grocery item performance across various stores in the Blink-IT ecosystem. Each row in the dataset shows a unique mix of product traits, store information, and sales metrics. This makes it very suitable for different retail analytics purposes.

**Data Fields and Features**

**• Item Type:** The category of the grocery product (e.g., Dairy, Frozen Foods, Snack Foods, Soft Drinks, Seafood, etc.) that helps classify and segment product lines.

**• Fat Content:** The nutritional classification of the item, either “Low Fat” or “Regular.” This is useful for looking at health trends and consumer preferences.

**• Outlet Type and Tier:** This identifies the outlet’s size (Small, Medium, High) and its location classification (Tier 1, Tier 2, Tier 3). It provides context for market segmentation and regional performance assessment.

**• Sales Value:** The total sales generated by each item-outlet combination, noted in millions. This enables evaluation of financial performance.

**• Customer Ratings:** A numerical rating (0 to 5 scale) that shows average consumer satisfaction or feedback for that product. This helps in assessing sentiment and quality.

**Key Dataset Statistics**

* **Total Unique Records:** 8,523 items
* **Cumulative Sales:** $1.20 million across all entries
* **Average Customer Rating:** 3.97 stars
* **Top Performing Outlet Characteristics:**
  + **Outlet Tier:** Tier 3 locations emerged as the most profitable in terms of total sales volume.
  + **Outlet Size:** Medium-sized outlets outperformed small and large counterparts in terms of revenue contribution.

**Why This Dataset Was Ideal for Analytics**

This dataset was structured in a way that facilitated:

* **Descriptive Analytics:** Summary statistics, trend identification, and segmentation
* **Visual Analytics:** Bar charts, pie charts, and line graphs using both categorical and quantitative fields

**Data Cleaning and Preprocessing**

Data quality is vital for the success of any analytics project. For the Blink-IT grocery dataset, a structured data cleaning process was applied to ensure accuracy, consistency, and readiness for visualization. Poorly formatted or inconsistent data can significantly affect the reliability of insights. Therefore, this stage is one of the most important parts of the project.

**The dataset underwent the following key preprocessing and cleaning steps:**

**1. Data Type Correction**

Several columns like Item-Visibility, Item-Outlet-Sales, and Item-Weight initially had mixed or wrongly recognized data types. These were changed to the correct numerical formats. This was necessary for calculations such as summations, averages, and filtering within pivot tables.

**2. Duplicate Removal**

A total of 62 duplicate records were found through row-wise comparison and removed from the dataset. If left unaddressed, these duplicates would have distorted aggregate values like total sales and average ratings.

**3. Categorical Label Grouping**

Certain categorical fields had inconsistencies in naming conventions. For example:

* **Fat Content:** Some entries had variations like LF, low fat, and Low Fat, which were unified under a single standard label: Low Fat.
* **Outlet Size & Type:** Minor variations in spelling and case sensitivity (e.g., Small, SMALL, small) were normalized.
* **Item Type:** Similar product categories were grouped under common names for clearer visual reporting (e.g., Snack Foods and Snacking were unified).

This step ensured that all charts and filters operated with logical consistency across dashboards.

**4. Missing Value Handling**

A total of **39 missing entries** were found, primarily in numeric fields such as item weight or sales value. The treatment was as follows:

* **For numerical fields:** Median imputation was applied, which is more robust than mean imputation in the presence of outliers.
* **For categorical fields:** Missing labels were either imputed based on outlet groupings or discarded if insufficient context existed.

This approach minimized bias while maintaining dataset integrity.

**5. Data Validation and Profiling**

Once the dataset was cleaned, **summary statistics and distribution checks** were performed to validate the dataset:

* Used Excel’s conditional formatting to highlight outliers in sales and ratings.
* Checked value counts and uniqueness for each categorical field.
* Ensured no nulls, blanks, or duplicates remained post-cleaning.

These data cleaning efforts created a solid base for the analysis and visualization stages that came next. This led to an Excel dashboard constructed with clean, validated, and standardized data. This ensured the insights produced were both reliable and trustworthy.

**Dashboard Design Philosophy**

The dashboard was built on these principles:

• **Business Readability:** Ensure insights are easy for executives to understand.

• **Clarity of Metrics:** Use KPIs to show critical values.

• **Interactive Filtering:** Allow users to segment and explore data.

Key Design Elements:

• **Filter Panel (Left):** Dynamic controls to slice data by outlet size, location, and item type.

• **KPI Cards (Top):** Highlight total sales, average sales, number of items, and customer satisfaction.

• **Chart Area (Center):** Bar, pie, and line charts display outlet size distribution, item sales, and trends over time.

A screenshot of a data analysis

AI-generated content may be incorrect.

(Figure 1: Blink-IT Grocery Dashboard Overview)

**Insight-Driven Visual Analytics**

#### **A. Sales Performance Over Time**

The year-over-year sales trend reveals a consistent growth pattern, with a noticeable peak in **2018**, where sales reached approximately **$0.20 million**. This spike may correlate with a significant marketing campaign, regional expansion, or introduction of high-demand product lines. The trend indicates a healthy upward trajectory in business performance during that period, reflecting growing consumer adoption and operational scaling.

A graph with numbers and a line of money

AI-generated content may be incorrect.

(Figure 2: Annual Sales Trend)

#### **B. Performance by Item Category**

An analysis of sales performance by item shows large differences among product categories. The best-performing category was Fruits and Vegetables, bringing in about **$0.18 million in sales.** This match expected consumer behavior since fresh produce is a daily necessity and often leads to repeat purchases.

In contrast, Seafood was the lowest-performing category, generating only **$0.01 million**. This underperformance may be attributed to factors such as lower demand, short shelf life, higher handling costs, or regional consumption preferences.

A graph of food prices

AI-generated content may be incorrect.  
  
(Figure 3: Sales by Item Category)

**C. Outlet Characteristics**

* **Most Profitable Size:** Medium-sized outlets ($0.41M)
* **Best Performing Tier:** Tier 3 ($0.47M)

A pie chart with different colored circles

AI-generated content may be incorrect.

A screenshot of a graph

AI-generated content may be incorrect.

(Figure 4: Sales Distribution by Outlet Size)

**D. Customer Sentiment**

* **Average Rating:** 3.97 stars
* Indicates above-average satisfaction, though improvement in specific categories could elevate this closer to 5.0.

**Performance by Store Type**

|  |  |  |  |
| --- | --- | --- | --- |
| **Store Type** | **Total Sales** | **Avg Sales** | **No. of Items** |
| Supermarket Type 1 | $0.79M | $141M | 5,572 |
| Supermarket Type 2 | $0.13M | $142M | 928 |
| Supermarket Type 3 | $0.15M | $140M | 935 |
| Grocery Store | $0.13M | $140M | 1,083 |

Insight: Type 1 outlets drive the bulk of sales and inventory and can be the core focus for operational scaling.

A screenshot of a graph

AI-generated content may be incorrect.

(Figure 5: Sales Performance by Outlet Tier)

**Fat Content Preference**

* **Low Fat Sales:** $0.78M
* **Regular Fat Sales:** $0.43M

Customer preference for low-fat alternatives reflects a growing demand for healthy products, aligning with broader market trends.

A green and yellow pie chart

AI-generated content may be incorrect.

(Figure 6: Fat Content Sales Distribution)

### **Strategic Business Implications**

The insights derived from the Blink-IT grocery data analysis reveal several actionable strategies that the company can adopt to strengthen its market presence and operational efficiency. These strategic directions are grounded in empirical data and aim to optimize performance across product categories, outlet management, and customer satisfaction.

**1. Target Tier 3 Cities for Expansion**

The data clearly indicates that **Tier 3 cities outperform Tier 1 and Tier 2 counterparts in total sales volume**. This trend highlights significant untapped potential in smaller cities and rural regions. Blink-IT can leverage this opportunity by increasing delivery coverage, optimizing supply chain logistics, and launching localized marketing campaigns tailored to Tier 3 consumers.

**2. Prioritize Medium-Sized Outlets**

**Medium-sized outlets consistently generated the highest revenue**, striking a balance between storage capacity and cost-effectiveness. These stores offer an optimal footprint for inventory management and customer accessibility. Blink-IT should consider expanding this outlet format across both urban and semi-urban areas to maximize return on infrastructure investment.

**3. Promote Healthy, Low-Fat Products**

Customer preference data reveals a clear shift toward **health-conscious shopping behavior**, with low-fat items outperforming their regular-fat counterparts. Blink-IT can capitalize on this trend by spotlighting healthy product lines, offering wellness bundles, and integrating nutritional filters in the app experience. This not only drives sales but also enhances brand positioning in the wellness segment.

**4. Optimize Inventory Through Data-Driven Planning**

Sales data shows that certain categories such as **fruits, vegetables, and packaged foods drive most of the revenue**, while items like seafood underperform significantly. Blink-IT should apply these insights to **refine its product mix** by increasing inventory for high-demand categories and phasing out or demoting underperforming SKUs. This will lead to improved inventory turnover and customer satisfaction.

**Recommendations for Action**

**1. Expand in Tier 3 Regions.** Strengthen logistics, delivery speed, and marketing in these areas.

**2. Optimize Outlet Sizing Strategy.** Focus on medium outlets to boost returns.

**3. Improve User Experience**. Use ratings data to enhance item quality, user interface, user experience, and customer communication.

**4. Data-Driven Product Mix.** Use historical sales and fat content data to restructure SKUs and predict future demand.

**Future Expansion Opportunities**

While this project was developed using Microsoft Excel for its portability and ease of use, there are numerous opportunities to expand the scope and functionality of the solution using more advanced tools and techniques. The foundation laid by this dashboard can serve as a launchpad for enterprise-grade analytics capabilities that offer greater scalability, automation, and predictive power.

**1. Power BI Integration**

Transitioning the dashboard to **Microsoft Power BI** would allow real-time data ingestion and cloud-based access across teams. Power BI supports interactive visuals, advanced drilldowns, and customizable dashboards, which would improve accessibility and enable live monitoring of business KPIs across departments and geographies.

**2. Machine Learning Forecasting**

Incorporating **machine learning models**, particularly time-series analysis and regression techniques, could help forecast future sales trends, demand surges, and customer behavior. Predictive insights would support strategic planning in inventory management, staffing, and promotions.

**3. Geo-Mapping and Regional Analytics**

Adding **geo-visualization features** would enable Blink-IT to identify high-performing regions, underserved areas, and location-based customer preferences. Tools like Power BI, Tableau, or GIS platforms can visualize sales heat maps, regional growth, and delivery density metrics to inform hyperlocal strategies.

**5. Integration with External Data Sources**

The dashboard can be enhanced by integrating **external datasets** like market benchmarks, competitor pricing, seasonal trends, and customer demographics. This contextual data would enrich insights and improve decision quality.

By adopting these future enhancements, Blink-IT can evolve its data infrastructure into a robust business intelligence ecosystem capable of supporting proactive, predictive, and prescriptive decision-making.

**Conclusion**

The **Blink-IT Grocery Analytics** project shows how organized data and effective visual storytelling can produce valuable insights for executives. By breaking down complex data into clear patterns, trends, and comparisons, the project highlights the real-world benefits of business intelligence solutions created entirely in Microsoft Excel.

The dashboard was more than just a visual tool; it became an essential asset. It revealed the subtle performance differences between outlet sizes and tiers, helped identify the most profitable item categories, and shed light on changing customer preferences, especially the growing demand for low-fat, health-oriented products.

From a business standpoint, the insights from this dashboard provide Blink-IT with a data-driven plan for scaling operations, improving products, and enhancing customer experiences. It backs data-to-decision processes that can greatly impact supply chain efficiency, marketing tactics, and regional investments.

On a personal level, this project marked a key moment in my career as a data professional. It improved my ability to:

• Clean and model raw retail data

• Design meaningful and interactive dashboards

• Derive and share insights that are both quantitative and strategic

Most importantly, it let me apply these skills in a practical, business-focused setting. This made it not just a portfolio project but also a testament to my ability to tackle real-world problems with data.

I consider this one of my most polished, strategic, and relevant data analytics projects to date.

**Appendix & Screenshot Directory**

|  |  |
| --- | --- |
| **Section** | **Screenshot Name** |
| Blink-IT Grocery Dashboard Overview | Figure\_1 |
| Annual Sales Trend | Figure\_2 |
| Sales by Item Category | Figure\_3 |
| Sales Distribution by Outlet Size | Figure\_4 |
| Sales Performance by Outlet Tier | Figure\_5 |
| Fat Content Sales Distribution | Figure\_6 |

**Acknowledgment**

I want to thank everyone involved for providing the public dataset that was crucial for this project. Without access to this data, I couldn't have conducted such a thorough analysis or shown how to use business intelligence and data visualization skills in a real-world setting. I created this report and the dashboard on my own as part of a personal effort to improve my skills in Excel analytics, retail data interpretation, and reporting for executives. This project shows my dedication to learning and using data-driven strategies to address real business challenges.

I also appreciate the platforms that offer open datasets for free to students and data professionals. These resources are essential for making analytics accessible and speeding up skill development.

**Reference**

**Kaggle – Big Mart Sales Dataset**  
Source of the raw data used in this project.  
<https://www.kaggle.com/datasets/brijbhushannanda1979/bigmart-sales-data>

**Microsoft Excel Documentation – Charts, PivotTables, and Power Query**  
Official guides for data analysis and dashboard development in Excel.  
<https://support.microsoft.com/excel>

**Power Query in Excel: Getting Started**  
Comprehensive tutorial on cleaning and transforming data using Power Query.  
<https://learn.microsoft.com/en-us/power-query/>

**Power BI Official Documentation**  
Reference for extending Excel dashboards to dynamic, real-time reporting solutions.  
<https://learn.microsoft.com/en-us/power-bi/>

**Harvard Business Review – A Data Scientist’s Guide to Visualizing Data**  
Best practices for creating clear, executive-friendly data visuals.  
<https://hbr.org/2017/04/a-data-scientists-guide-to-visualizing-data>

**Chandoo.org – Excel Dashboard Tutorials**  
Community-driven resource for mastering Excel dashboards and KPI layouts.  
https://chandoo.org/wp/excel-dashboards/

**Google Scholar – Studies on Retail Data Analytics**  
Literature consulted for conceptual understanding of grocery trends and sales patterns.  
[https://scholar.google.com](https://scholar.google.com/)