

# PRODUCT AND RETAILER INSIGHTS: ANALYZING SALES, DISCOUNTS, AND BRAND PERFORMANCE

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# 1. Introduction

## Objective:

This report aims to provide insights into product performance, retailer strategies, and client-type contributions to overall sales, discounts, and volume distribution.

It seeks to uncover trends and provide actionable recommendations for retailers, brands, and supply chain stakeholders.

## Significance:

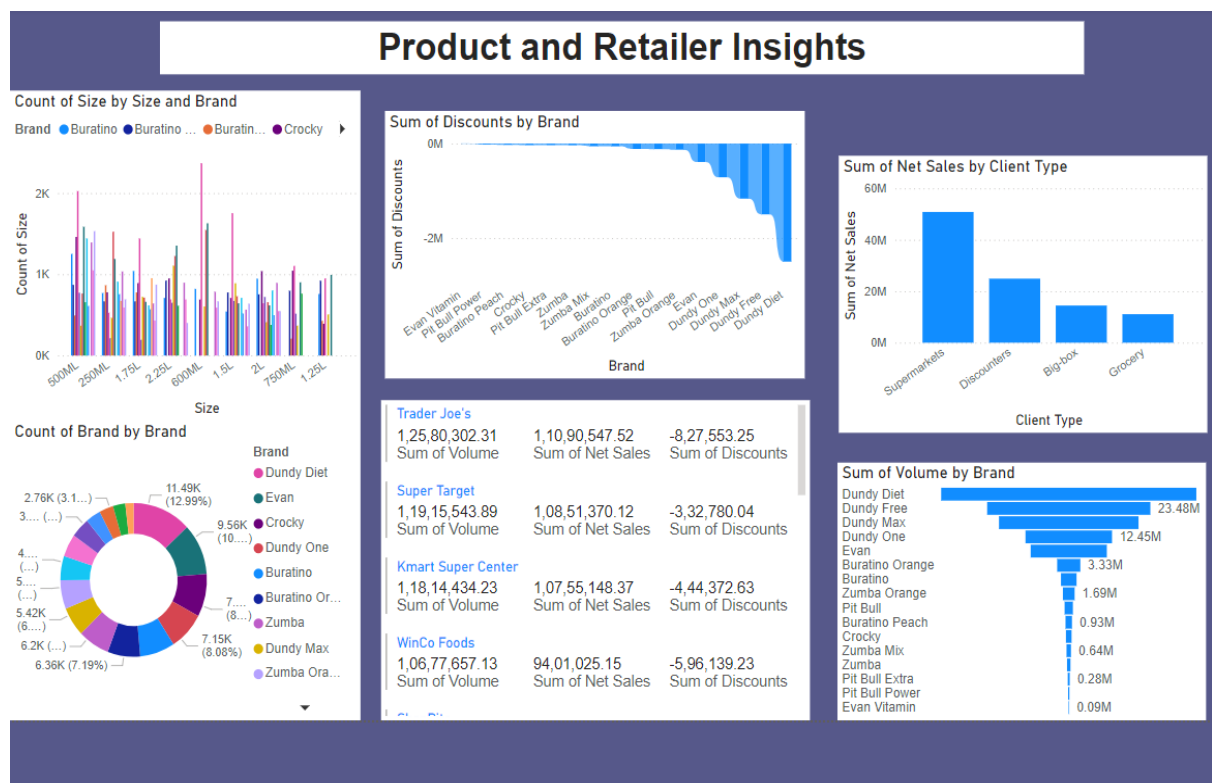
Understanding product sizes, brand popularity, and retailer-specific performance metrics is crucial for optimizing inventory and marketing strategies.

Data-driven insights enable businesses to tailor promotional strategies and improve customer satisfaction.

## Scope:

Analysis includes product size distribution, brand-wise sales volumes, retailer performance in terms of net sales and discounts, and client-type contributions to sales. The focus is on identifying patterns and correlations that drive retailer and brand success in competitive markets.

# 2. Power BI Dashboard



## Overview

The Power BI dashboard serves as an advanced, interactive analytical tool designed to visualize and interpret complex retail and product performance data. By providing a consolidated view of key metrics like product size, brand performance, sales volumes, and discount trends, it empowers stakeholders, such as retailers, brand managers, and analysts, to make informed decisions backed by data. This tool bridges the gap between raw data and actionable insights by presenting key findings in an intuitive visual format, enabling users to uncover trends and relationships in sales, brand performance, and client type contributions with ease.

This dashboard is particularly useful in comparing brand performance, retailer efficiency, and client type contributions. It highlights sales trends, discount patterns, and product preferences, allowing stakeholders to identify opportunities for growth and evaluate the effectiveness of promotional strategies. Its flexibility and interactivity make it a powerful resource for addressing specific challenges in product distribution and retailer collaborations.

## Key Visualizations

The purpose of this analysis is to provide insights into product and retailer performance metrics for informed decision-making. The dashboard integrates various types of visualizations, each tailored to highlight specific aspects of the dataset:

### 1. Summary Metrics:

- **Net Sales and Volume:** Displays aggregate net sales and volume metrics across different retailers and brands, offering a snapshot of overall market performance.
- **Discounts:** Highlights total discounts applied, revealing the economic impact of promotional strategies.

### 2. Bar Chart - Size and Brand Distribution:

- Visualizes the count of product sizes (e.g., 500ml, 1L) across various brands.
- Provides a comprehensive view of which product sizes and brands dominate the market.

### 3. Pie Chart - Brand Distribution:

- Reflects the proportional representation of brands in the dataset (e.g., Dundy Diet, Evan, Crocky).
- Helps stakeholders identify the most popular brands contributing to overall sales.

### 4. Bar Chart - Client Type Analysis:

- Highlights net sales contribution by client types such as Supermarkets, Discounters, Big-box stores, and Grocery stores.
- Offers insights into the distribution of sales channels.

### 5. Retailer Metrics:

- Displays detailed metrics for top retailers (e.g., Trader Joe's, Super Target) including net sales, volume, and discounts.
- Enables comparative analysis of retailer performance.

### 6. Brand Volume and Discounts:

- Horizontal bar charts reveal brand performance in terms of sales volume and discounts.
- Helps assess the effectiveness of promotional strategies and brand popularity.

By integrating these visualizations, the dashboard offers a user-friendly interface to explore key trends, challenges, and strategies, aiding in data-driven decision-making for healthcare facilities and stakeholders.

## **Advantages**

The Power BI dashboard offers several benefits, particularly for retail and product analysis:

### **1. Simplification of Complex Data:**

- Converts large, intricate datasets into concise visualizations, making it easy to interpret product performance, sales, discounts, and brand volume across multiple retailers.
- Reduces cognitive load by summarizing essential metrics like net sales, volume, and discounting patterns, providing clarity on retail trends.

### **2. Actionable Insights:**

- Facilitates the identification of high-performing brands, product categories, and retailers, helping businesses target areas that need attention or optimization.
- Empowers stakeholders to develop strategies to improve sales, reduce discounts, and capitalize on brand strengths across diverse retail environments.

### **3. Dynamic Data Exploration:**

- The interactive nature of the dashboard allows users to explore detailed data by filtering and drilling down into specific segments like retailer performance (e.g., Trader Joe's, Super Target) and brand analysis (e.g., Dundy Diet, Zumba).
- Offers flexibility for tailoring insights to meet the needs of different stakeholders, such as brand managers or retail analysts, ensuring a custom approach for each user.

### **4. Improved Stakeholder Engagement:**

- Intuitive visuals and interactive elements make it easier for non-technical stakeholders to engage with data and understand key metrics like sales volume and discounts.
- Enables data-driven discussions and collaborative decision-making, allowing stakeholders to focus on actionable insights derived from the dashboard.

### **5. Comprehensive Analysis:**

- By integrating data on sales, discounts, and volume, the dashboard offers a holistic view of the retail environment, uncovering correlations between product discounts, sales volume, and brand performance.
- Supports in-depth analysis of brand and product trends to develop long-term strategies for inventory management, sales maximization, and promotional planning.

### **6. Retailer and Brand Comparisons:**

- Facilitates comparisons across retailers (e.g., Trader Joe's, WinCo Foods) to identify best practices, strengths, and areas for improvement in sales and discounting strategies.
- Provides insights into consumer behaviour based on client types (Supermarkets, Discounters, Big-box) to optimize product placement and retail promotions.

### **7. Real-Time Decision Support:**

- While the dashboard in its current form uses static data, Power BI's support for real-time data integration makes it invaluable for dynamic decision-making, particularly for seasonal sales, promotions, and inventory adjustments.

## Conclusion

The Power BI dashboard is a transformative tool for retail and product analysis. By summarizing critical metrics like net sales, volume, and discounts across brands and retailers, it provides stakeholders with actionable insights to optimize sales strategies and enhance product performance. The ability to explore data dynamically through filters and interactive visuals makes it adaptable to the diverse needs of retailers and product managers. It supports informed decision-making, fosters collaboration, and drives strategies that can significantly impact sales and retail outcomes.

## 3. Business Problem (Need)

### Detailed Challenges

#### 1. Product and Brand Performance Variations Across Retailers:

- The dashboard highlights significant differences in product sales, discounts, and volume across various retailers such as Trader Joe's, Super Target, and WinCo Foods. These variations often arise due to differences in retailer strategies, target customer segments, and regional factors.
- Retailers with higher sales volumes, such as Trader Joe's and Super Target, may have better economies of scale and more robust customer bases, leading to higher discounts and sales. On the other hand, smaller or discount retailers may struggle with maintaining high net sales and product volumes.

#### 2. Inefficient Discounting Strategies:

- The dashboard shows a high sum of discounts across brands like Dundy Diet, Zumba, and Buratino. This points to a potential issue where heavy discounting could be eroding profit margins, especially for brands that are not experiencing proportionate increases in sales volumes.
- Retailers may be relying too heavily on discounts as a sales tactic, which can undermine long-term profitability. Additionally, ineffective discount strategies may lead to price wars, damaging brand perception and customer loyalty.

#### 3. Brand-Specific Sales and Volume Discrepancies:

- Brands like Dundy Diet and Dundy Free appear to have significantly higher volumes compared to others like Pit Bull or Evan Vitamin, raising concerns about brand loyalty and product diversification.
- Retailers must assess why certain brands dominate the market in terms of volume and sales. There may be opportunities for underperforming brands to receive more targeted marketing or promotional efforts to increase their market share.

#### 4. Challenges in Understanding Customer Segments:

- The dashboard shows net sales by client types (e.g., Supermarkets, Discounters, Big-box). This suggests that understanding customer preferences across these segments is crucial for strategic decision-making.
- Retailers may struggle to identify which client types are most profitable, and which require more targeted offerings. There may also be underutilized market segments that could benefit from customized products or services.

## **Stakeholder Implications**

### **1. Inefficient Resource Allocation:**

- Retailers may face challenges in allocating resources effectively due to insufficient insights into customer behaviour, product performance, and sales trends. The absence of comprehensive data could lead to overspending on underperforming brands while neglecting more promising ones.
- For example, without insights into discount effectiveness, a retailer may continue offering high discounts on low-volume products, which could waste valuable marketing resources.

### **2. Missed Opportunities for Growth:**

- Without detailed and actionable insights, brands may miss opportunities for expanding their reach, improving product offerings, or targeting new customer segments. For instance, the high volume of Dundy Diet and Dundy Free suggests that similar products could be developed to capture the attention of consumers.
- Similarly, specific retailers may be missing out on customizing product offerings based on sales data trends, thus limiting their growth potential.

### **3. Sales Performance Management:**

- Retailers and product brands may struggle to manage their sales performance effectively without a clear understanding of key drivers such as discounts, brand popularity, and customer type preferences. The lack of real-time data could hinder decision-making, leading to missed sales targets or unoptimized product assortments.

## **Call to Action**

### **1. Optimize Discount Strategies:**

- Retailers should revisit their discounting strategies based on insights from the dashboard. Instead of blanket discounts, targeted promotions for underperforming brands or specific customer segments could improve profitability and brand perception.
- A more data-driven approach to discounting, including personalized offers, can help maintain margin health while driving sales.

### **2. Enhance Product and Brand Differentiation:**

- Retailers should focus on the brands with higher sales volumes, like Dundy Diet, and explore ways to replicate their success with other brands that are struggling. This could involve tailoring marketing campaigns, improving

product offerings, or increasing brand visibility in certain regions or client types.

- Developing a broader product mix with complementary brands can also help capture more market share.

### **3. Leveraging Client Segment Insights:**

- Understanding the specific needs of different client types (e.g., Supermarkets, Discounters, Big-box stores) can help retailers tailor their product assortments and marketing strategies. Retailers should also explore opportunities to cross-promote products across these client types based on performance insights from the dashboard.
- Retailers should use this data to improve customer retention and expand into high-value segments.

### **4. Data-Driven Resource Allocation:**

- Stakeholders should use the insights provided by the dashboard to better allocate marketing, sales, and operational resources. This can include adjusting inventory levels based on product performance and focusing efforts on the most profitable customer segments.
- Dynamic resource allocation, based on real-time data, ensures a more responsive and efficient business operation.

### **5. Aligning Strategies with Market Trends:**

- Retailers should continuously monitor sales data to ensure alignment with market trends and consumer demands. The dashboard's data on volume, sales, and discounts can provide early warnings about changes in customer preferences or product demand.
- By staying ahead of these trends, retailers can proactively adjust strategies, enhancing both customer satisfaction and profitability.

By leveraging the insights from this dashboard, stakeholders can make data-driven decisions to optimize product performance, improve profitability, and strategically allocate resources to align with market demands.

## **4. Data Requirement**

### **Data Types**

The Power BI dashboard utilizes various data types to offer a comprehensive view of retail performance, focusing on product sales, discounts, and brand impact across different retailers and client types. The data types featured in the dashboard are as follows:

#### **1. Sales Data by Brand and Retailer:**

- This data includes the sales volume and net sales for different products and brands (e.g., Dundy Diet, Buratino, Zumba) across various retailers (e.g., Trader Joe's, Super Target, Kmart Super Center).
- It serves as a key indicator of each product's market performance, helping identify bestsellers and underperforming items.
- Comparing sales data across brands and retailers reveals trends and patterns in consumer behavior, allowing stakeholders to adjust strategies accordingly.



## **2. Discount and Promotional Data:**

- This data highlights the sum of discounts provided by each retailer and brand.
- It is crucial for understanding the impact of discounts on product sales and profitability.
- Analyzing discounts helps determine which brands or retailers offer the most attractive pricing strategies, and the effectiveness of these discounts in driving sales volume.

## **3. Retailer and Client Type Data:**

- The data is segmented by client types, such as Supermarkets, Discounters, Big-box, and Grocery stores.
- It provides insights into how different client types perform in terms of sales and volume, helping retailers and brands tailor their strategies to the most profitable customer segments.

## **4. Volume Data by Brand:**

- This data tracks the total volume of each product sold by brand, providing insight into the popularity of specific brands and products.
- Volume data helps assess market penetration and customer demand for various products.

## **Relevance**

The data collected and displayed on the Power BI dashboard is highly relevant for addressing key challenges and optimizing product and retail strategies:

### **1. Analyzing Product and Brand Performance:**

- By analyzing sales data and discounts, retailers can prioritize top-performing products while adjusting strategies for underperforming items.
- This allows for efficient resource allocation, inventory management, and targeted marketing campaigns to boost sales.

### **2. Understanding Discount Impact:**

- The discount data helps evaluate the effectiveness of promotional strategies and pricing decisions. Retailers can identify which discounts drive the most sales and profitability, optimizing future discounting strategies.

### **3. Segmenting Retailer Performance:**

- Breaking down sales and volume by retailer and client type helps identify which retailers and customer segments are most lucrative.
- This data allows brands to focus efforts on high-performing client types, maximizing their return on investment in those channels.

### **4. Improving Sales Strategies:**

- Integrating data on volume and sales performance by brand enables brands to refine their sales strategies.
- Identifying high-volume products allows brands to focus marketing efforts on key products that are driving growth, while lower-volume products may need increased promotion or reevaluation.

### **5. Facilitating Data-Driven Decision Making:**

- The integration of sales, volume, discount, and client data provides a holistic view of the retail landscape, enabling evidence-based decision-making for stakeholders.
- Retailers and brands can use these insights to improve product placements, pricing, and promotional strategies.

#### 6. **Maximizing Retailer Collaboration:**

- The dashboard's insights can also be used to foster better collaboration between brands and retailers, ensuring that both are aligned in their sales and marketing efforts.
- Analyzing performance data at the retailer level allows both parties to adapt strategies for mutual benefit.

In summary, the Power BI dashboard's integration of diverse data types provides a detailed understanding of product sales, discount strategies, and retailer performance. This comprehensive data analysis enables stakeholders to make informed, data-driven decisions that optimize sales strategies, improve profitability, and foster stronger retailer relationships.

## 5. Data Collection and Data Understanding

### Data Sources

The dashboard uses a variety of reliable data sources to deliver accurate and actionable insights about product performance, retailer sales, and brand metrics. Below is a detailed description of the sources:

#### 1. **Retailer Sales Data**

- **Retailer Data:** Data on sales volume, net sales, and discounts is sourced from major retailers such as Trader Joe's, Super Target, Kmart Super Center, and WinCo Foods. These include proprietary sales records and performance metrics provided by the retailers.
- **Significance:** This ensures that the dashboard reflects up-to-date retail data, offering reliable insights into market trends and product performance across multiple brands and retailer types.

#### 2. **Brand and Product Performance Data**

- **Brand Data:** Information about individual product performance, including volumes sold and discount amounts, is gathered from product sales records across brands like Dundy Diet, Buratino, Zumba, and others.
- **Significance:** These sources allow for in-depth analysis of brand-specific sales and discount patterns, highlighting trends in customer behavior and product demand.

#### 3. **Client and Product Type Insights**

- **Client Type Data:** Data on different client types, including Supermarkets, Discounters, Big-box retailers, and Grocery stores, is included to compare performance across diverse retail sectors.

- **Significance:** This segmentation helps identify which retail segments are performing better, enabling tailored strategies for improving product placement and sales in various market types.

## Insights

The analysed data uncovers valuable insights that are crucial for understanding retail and brand dynamics:

### 1. Brand Distribution and Sales Patterns

- **Observation:** The pie chart on brand distribution illustrates that Dundy Diet, Dundy Free, and Dundy Max brands dominate in volume sales, while others like Buratino and Zumba show lower figures.
- **Interpretation:** The market is heavily driven by a few key brands, which suggests a concentration of demand in these products.
- **Actionable Insight:** Retailers should focus on maintaining stock for these high-demand brands while exploring opportunities to increase sales for underperforming brands through targeted promotions or bundling.

### 2. Discount Trends Across Brands

- **Observation:** The bar chart for "Sum of Discounts by Brand" shows that discounts on brands like Dundy One and Buratino have a significant impact on sales, with some brands offering substantial discounts to attract customers.
- **Interpretation:** The discounting strategy is an important lever for driving sales, particularly for certain brands that rely on price reduction to boost volume.
- **Actionable Insight:** Retailers should evaluate the effectiveness of their discount strategies, ensuring they are used strategically to boost sales without compromising profitability.

### 3. Volume vs. Sales Performance

- **Observation:** The "Sum of Volume by Brand" data shows that Dundy Diet has the highest volume sales (23.48M), followed by Dundy Free and Dundy Max, while others like Pit Bull and Zumba have much lower volumes.
- **Interpretation:** There is a significant disparity in product volumes, with a few key products dominating the sales landscape.
- **Actionable Insight:** Retailers should capitalize on the top-performing products by increasing visibility and marketing efforts for these high-volume items, while considering strategies to boost lower-volume products through cross-promotion or targeted offers.

### 4. Retailer Sales Performance and Discounts

- **Observation:** The "Sum of Net Sales" and "Sum of Discounts" by retailer reveal that Trader Joe's and Super Target have higher net sales, with Kmart and WinCo Foods showing lower figures. However, some retailers like Kmart offer higher discounts.

- **Interpretation:** Discount strategies and overall sales performance vary widely across retailers. While higher discounts may drive volume, they may not always result in higher net sales.
- **Actionable Insight:** Retailers should carefully assess the relationship between discounts and net sales, ensuring that discounting strategies are optimized for profitability.
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By leveraging these data sources and uncovering actionable insights, the dashboard allows retailers and brand managers to make informed decisions that optimize product sales, enhance marketing strategies, and better align with customer needs and preferences.

## 6. Data Validation (Bias/Transparency/Reliability)

The integrity of the data used in the Power BI dashboard is critical to ensuring the validity and usefulness of the insights derived from it. Below, we explore how three key factors—bias, transparency, and reliability—are addressed in the data collection and analysis process for the product and retailer insights dashboard.

### Bias

Bias in retail and product sales data can arise in various ways, particularly when certain products, brands, or retailers are overrepresented or underrepresented. It is essential to identify and address these potential biases to ensure that the analysis presents an accurate and fair view of the sales, discounts, and product volumes.

#### Underrepresentation of Certain Products or Brands:

- **Challenge:** Some products or brands may not have enough data in the sales database. For instance, niche or emerging brands may have limited sales data compared to established brands, leading to skewed insights.
- **Impact:** This underrepresentation can distort the conclusions drawn from the dashboard, such as overestimating the performance of popular brands while underestimating the potential of newer or less recognized ones.
- **Mitigation:**
  - **Expanding Data Sources:** By integrating data from multiple retailers and platforms (e.g., Super Target, Trader Joe's), the dashboard attempts to include a broad range of products and brands.
  - **Cross-validation:** Data is cross-checked with external sales reports and market surveys to minimize gaps in coverage.

#### Underrepresentation of Certain Retailers or Client Types:

- **Challenge:** Certain client types, such as grocery stores or big-box retailers, may be overrepresented or underrepresented in the dataset, depending on the source.
- **Impact:** If the data does not fully capture the performance across all client types (e.g., supermarkets, discount stores), policies or strategies derived from the analysis may not reflect the true market landscape.
- **Mitigation:**

- **Inclusive Data Collection:** Efforts are made to collect data from a wide variety of retailers across all client types to reflect a balanced view of the market.
- **Disaggregated Data:** The dashboard includes breakdowns by retailer and client type (e.g., Supermarkets, Discounters), ensuring that the insights reflect the nuances in sales and discounts across these segments.

## Transparency

Transparency is key to ensuring that users of the dashboard can trust the insights and make data-driven decisions. It is essential to clearly document data sources and the methodology used in the analysis.

### Clear Documentation of Data Sources:

- **Challenge:** When using sales, discounts, and volume data across different brands and retailers, it is critical to ensure transparency about the data sources.
- **Impact:** A lack of transparency can lead to skepticism about the integrity of the dashboard, undermining its credibility and usefulness.
- **Mitigation:**
  - **Open Source Referencing:** All datasets used in the dashboard, such as sales and discount data from retailers like Trader Joe's, Super Target, and WinCo Foods, are clearly listed with their corresponding sources.
  - **Methodology Documentation:** The statistical methods used to analyze the data are documented, along with any assumptions made during the analysis, such as how sales or volume metrics are calculated.
  - **Data Access:** The dashboard allows users to drill down into specific data sources for greater transparency and verification.

### Explaining Analytical Approaches:

- The dashboard clearly explains the analytical steps taken to produce visualizations, including the rationale for selecting specific metrics like net sales, volume, and discounts, so users understand how insights were generated.

## Reliability

Reliability refers to the consistency and accuracy of the data used in the dashboard to ensure trustworthy insights. For retail decision-making, having reliable data is essential for deriving actionable strategies.

### Validated Data:

- **Challenge:** Sales, volume, and discount data can sometimes be outdated or inaccurate, especially when data is sourced from different retailers and reporting systems.
- **Impact:** Using invalid or outdated data could lead to misleading conclusions about product performance and discount strategies, affecting business decisions.
- **Mitigation:**

- **Cross-referencing with Trusted Sources:** Sales data from retailers are cross-referenced with industry reports and third-party market research to ensure accuracy.
- **Real-Time Data Updates:** Where possible, the dashboard pulls in real-time or regularly updated data to reflect the latest available sales and discount information.
- **Data Auditing:** Regular audits are conducted to detect and correct errors or inconsistencies in the dataset, ensuring that the insights are based on the most accurate and up-to-date information.

#### **Actionable Insights:**

- **Challenge:** Even if the data is reliable, it is crucial that the insights generated are actionable for business decision-making.
- **Impact:** Without actionable insights, stakeholders may struggle to make informed decisions about sales strategies, product offerings, or pricing.
- **Mitigation:**
  - **Continuous Validation of Insights:** The insights generated by the dashboard are continually reviewed and updated based on feedback from business stakeholders, ensuring that they remain relevant and useful.
  - **Scenario Testing:** Various scenarios, such as changes in discount rates or brand performance, are tested to ensure that the recommendations made by the dashboard hold up under different conditions.

## **7. Data Cleaning (Exploratory Data Analysis - EDA)**

#### **Steps Taken:**

- Removal of duplicate or inconsistent entries across product and retailer data.
- Handling missing values for net sales, discounts, and volume.
- Standardization of product categories (e.g., Brand, Size, Client Type).

#### **Insights from EDA:**

- Identification of outliers in net sales, discounts, and product volume across different brands.
- Correlation between sales volume and discounting strategies, particularly highlighting which brands and retailers show a stronger connection.
- Trend analysis of client types (Supermarkets, Discounters, Big-box, and Grocery) to identify patterns in sales performance and discounting behaviour.
- Detection of brand performance anomalies, such as significant discrepancies in sales or discounts for certain brands (e.g., Dundy Diet and Buratino).

## **8. Graphs (Univariate, Bivariate, Multivariate)**

#### **Univariate Analysis**

Univariate analysis examines the distribution and characteristics of individual variables to understand their basic properties. This type of analysis can help uncover insights into individual products, brands, and retailer sales performance.

### 1. Product Sales Distribution by Brand

- **Objective:** To understand the variation in sales across different brands and identify which brands are performing well or poorly.
- **Data:** Net sales by brand, typically represented in dollar value across various retail stores.
- **Visualization:**
  - A bar chart or box plot could be used to visualize the distribution of sales across brands. Each bar represents a specific brand's net sales.
  - This visualization allows for easy comparison between brands, highlighting those with the highest and lowest sales.
- **Insights:**
  - **High Sales Brands:** Brands like **Dundy Diet** and **Zumba Mix** contribute significantly to net sales, indicating strong market presence.
  - **Low Sales Brands:** Brands like **Evan Vitamin** and **Pit Bull Power** show lower sales, suggesting lower consumer demand or limited market reach.
- **Actionable Insight:** This analysis helps identify top-performing brands, suggesting areas to focus marketing efforts and improve underperforming brands.

### 2. Product Discount Distribution by Brand (Bar Chart Visualization)

- **Objective:** To examine the distribution of discounts given by different brands and understand how discounts correlate with product performance.
- **Data:** Sum of discounts applied by brand.
- **Visualization:**
  - A bar chart could be used to represent the sum of discounts by brand, where each bar corresponds to a specific brand.
  - This allows comparison between brands in terms of discounts offered.
- **Insights:**
  - **High Discount Brands:** Brands like **Dundy Free** and **Zumba Mix** seem to offer significant discounts, possibly to boost sales.
  - **Low Discount Brands:** **Pit Bull Power** and **Evan Vitamin** show minimal discounts, which might reflect a strategy of premium pricing or limited promotional offers.
- **Actionable Insight:** Understanding the relationship between discounts and sales can help in adjusting pricing and promotional strategies to boost sales.

## Bivariate Analysis

Bivariate analysis looks at the relationship between two variables to identify correlations or dependencies between them, offering insights into how one variable might affect the other.

### 1. Relationship Between Brand Discounts and Net Sales

- **Objective:** To explore whether discounts given by a brand correlate with its net sales.
- **Data:** Net sales and discounts for each brand.
- **Visualization:**

- A scatter plot can be used with discounts on the X-axis and net sales on the Y-axis.
    - Each point represents a brand, with the trend line indicating the correlation between discounts and sales.
  - **Insights:**
    - **Positive Correlation:** Higher discounts often correlate with higher sales, as seen with brands like **Dundy Diet**.
    - **Outliers:** Some brands might deviate from this trend, showing high sales with minimal or no discounts (e.g., **Zumba Mix**).
  - **Actionable Insight:** This analysis suggests that offering strategic discounts could be effective in increasing sales, though it's important to balance discounts with brand positioning.
2. **Retailer Sales Performance by Client Type**
- **Objective:** To compare sales performance across different client types (e.g., Supermarkets, Discounters).
  - **Data:** Net sales data for different client types.
  - **Visualization:**
    - A bar chart could show the sum of net sales by client type.
  - **Insights:**
    - **Supermarkets** dominate net sales, suggesting that large retail chains have a broader consumer base.
    - **Big-box** and **Grocery** categories have lower sales, indicating a need for targeted strategies in these segments.
  - **Actionable Insight:** Retailers could focus efforts on supermarkets, where sales are highest, while also exploring strategies to increase sales in smaller retail formats.

## Multivariate Analysis

Multivariate analysis examines relationships among multiple variables to uncover deeper insights into product and retailer dynamics.

1. **Correlation Between Product Volume, Net Sales, and Discount by Brand**
  - **Objective:** To understand how product volume, net sales, and discounts interact across brands.
  - **Data:** Volume, net sales, and discount data for each brand.
  - **Visualization:**
    - A heatmap or 3D scatter plot could visualize the correlation between volume, net sales, and discounts.
  - **Insights:**
    - **High Volume, High Sales:** Brands like **Dundy Diet** and **Dundy Free** show high sales and volume, possibly due to strong consumer demand and frequent promotional discounts.



- **Low Volume, Low Sales:** Brands like **Evan Vitamin** exhibit low sales and volume, which may suggest limited consumer interest or a niche product.
- **Actionable Insight:** Understanding these correlations can help optimize stock levels and discount strategies, ensuring that high-volume products are adequately stocked while maximizing sales through strategic discounting.

## 9. Dashboard

### Key Visualizations

#### 1. Summary Metrics for Sales, Discounts, and Volume by Brand and Retailer

- **Objective:** To provide a comprehensive overview of the performance metrics across different product brands and retailers, assisting in strategic decision-making.
- **Components:**
  - **Sum of Net Sales:** Represents the total sales generated by each retailer for various brands. This metric helps in evaluating the financial performance of each product and retailer.
  - **Sum of Discounts:** Shows the total discount given by brands across retailers, indicating the discount strategy and its effect on sales.
  - **Sum of Volume:** Displays the volume of products sold for each brand, allowing users to assess demand levels and popular brands.
- **Visualization:**
  - These summary metrics are typically shown in KPI cards or bar charts, offering quick, digestible insights. A color-coded scale may indicate performance levels (e.g., red for low sales or high discounts, green for positive performance).

#### 2. Pie Chart Showing Brand Distribution by Volume

- **Objective:** To visualize the distribution of sales volume among different brands and identify the most popular brands.
- **Data:** Brands such as Dundy Diet, Buratino, and Zumba, and their respective sales volumes.
- **Visualization:**
  - A pie chart is used to represent the relative size of different brands' contributions to the total sales volume. Each slice represents a brand, and the size of each slice corresponds to its sales volume.
  - This visualization provides insights into which brands are driving the most sales and helps in understanding market share dynamics.
- **Insights:**
  - **High-Demand Brands:** Brands like Dundy Diet, which take up a large portion of the pie chart, indicate high consumer demand and potentially higher profitability.
  - **Niche Brands:** Smaller slices can represent emerging or niche brands, highlighting potential areas for growth.

### 3. Bar Chart Depicting Sales and Discount Performance Across Retailers

- **Objective:** To compare sales and discounts across various retailers and identify areas of improvement.
- **Data:** Retailers like Trader Joe's, Super Target, and Kmart Super Center, showing their net sales, discounts, and volumes.
- **Visualization:**
  - i. A grouped bar chart is used to represent net sales, discounts, and sales volume for each retailer. Each bar is divided into different metrics for easy comparison across retailers.
- **Insights:**
  - **Retailer Performance:** Retailers like Super Target, with high sales but also high discounts, may need a closer look at pricing and promotional strategies.
  - **Discount Impact:** Understanding how discounts affect sales volume can help optimize promotional efforts.

## Interactive Elements

### 1. Filters for Brand and Retailer

- b. **Objective:** To enable users to explore the data interactively by filtering specific brands or retailers, offering more tailored insights.
- c. **Functionality:**
  - i. **Brand Filter:** Users can filter the dashboard by specific brands (e.g., Dundy Diet, Buratino), enabling a focused analysis of brand performance across retailers.
  - ii. **Retailer Filter:** Users can filter by retailers (e.g., Trader Joe's, Super Target) to view detailed sales, volume, and discount metrics.
- d. **Visualization:**
  - i. Filters are presented as dropdown menus or search bars at the top of the dashboard or side panel. Selecting different filters dynamically updates all associated visualizations.
- e. **Benefits:**
  - i. This feature allows stakeholders to narrow down the data and analyze performance at both the brand and retailer levels, helping them uncover trends and make strategic decisions based on their interests.

### 2. Drill-Down Features to Explore Specific Brand or Retailer Metrics

- a. **Objective:** To allow users to "drill down" into detailed data for a more granular analysis, revealing deeper insights not immediately visible in summary views.
- b. **Functionality:**
  - i. **Drill-Down on Brand Performance:** By clicking on a specific brand in the pie chart or bar chart, users can see more detailed metrics like sales, volume, and discounts for that particular brand across various retailers.

- ii. **Drill-Down on Retailer Performance:** Clicking on a specific retailer in the sales chart allows users to view detailed sales, discounts, and volume breakdowns for each retailer.
- c. **Visualization:**

Drill-down features are enabled through interactive elements like tooltips, expandable charts, or clickable sections that reveal more detailed data.

  - **Benefits:**

This interactivity allows users to examine trends at a deeper level, uncovering outliers and understanding the nuances of brand and retailer performance. It supports more informed, data-driven decision-making.

## 10. Storytelling (Business Impact)

- **Insights:**
  - **Product Performance:** Certain brands, such as Dundy Diet and Dundy Free, show a higher volume of sales, indicating strong market demand.
  - **Discount Trends:** Some brands, like Buratino and Pit Bull, are offering significant discounts, which may influence customer purchasing behaviour and need strategic review.
  - **Retailer Sales Distribution:** Supermarkets show the highest net sales, which may suggest opportunities for targeting other client types, such as Discounters or Big-box retailers, with tailored offers.
  - **Brand Competition:** Brands like Dundy Diet and Evan have strong market shares, while others like Pit Bull Power and Evan Vitamin have lower visibility, highlighting potential gaps or opportunities for growth.
- **Recommendations:**
  - **Target High-Demand Brands:** Increase investment and stock availability for high-performing brands, such as Dundy Diet and Dundy Free, to capitalize on their market strength.
  - **Optimize Discount Strategies:** Reevaluate discount strategies for brands like Buratino and Pit Bull to ensure profitability while maintaining customer interest.
  - **Expand Retailer Partnerships:** Focus on building stronger relationships with high-performing retailers like Super Target and Trader Joe's to drive more sales through these channels.
  - **Market Penetration for Lesser-Known Brands:** Develop promotional strategies for brands like Pit Bull Power and Evan Vitamin to boost their market share and increase customer engagement.

## 11. Conclusion

- **Summary:**

- This analysis underscores the importance of data-driven strategies to optimize retail performance and improve brand visibility.
- The findings provide actionable insights for enhancing sales, reducing discount inefficiencies, and identifying opportunities for targeted marketing and distribution.

- **Future Directions:**

- Integrate real-time data for dynamic decision-making, enabling faster responses to market trends and consumer behaviour.
- Expand the dataset to include more retailers, additional product categories, and regional segmentation to gain a deeper understanding of market dynamics.