Blinkit Grocery Sales Analysis

SQL Portfolio Project

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Blinkit Grocery Data Analysis

This project analyzes Blinkit grocery sales data using **SQL** in SSMS. It includes data cleaning, aggregation, and insights into sales, ratings, outlet performance, and item visibility. The queries demonstrate practical SQL skills for real-world business analysis.

Below is a clear explanation for each SQL query from your project.

1).Select all the data

```
SELECT * FROM blinkit_data;
```

Retrieves every column and row from the table blinkit_data for exploration.

Data Cleaning

2).Clean inconsistent labels in Item Fat Content

Cleaning the Item_Fat_Content field ensures consistency and accuracy in the data. Variations like "LF", "low fat", and "Low Fat" can lead to misleading results during analysis. Standardizing these values improves data quality, simplifies filtering and grouping, and ensures reliable insights.

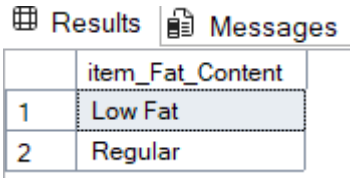
```
UPDATE blinkit_data
SET item_Fat_Content =
CASE
WHEN item_Fat_Content IN ('LF','low fat') THEN 'Low Fat'
WHEN item_Fat_Content = 'reg' THEN 'Regular'
ELSE item_Fat_Content
END;
```

Standardizes inconsistent labels in the item_Fat_Content column for accurate grouping and analysis.

3).Check whether the data has been cleaned

```
SELECT DISTINCT (item_Fat_Content)
FROM blinkit_data;
```

Lists unique fat content types to confirm successful standardization.



Results | Messages

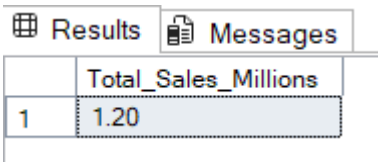
	item_Fat_Content
1	Low Fat
2	Regular

KPIs

4).Total Sales

```
SELECT CAST (SUM(Total_Sales)/100000 AS DECIMAL (10,2) ) AS
Total_Sales_Millions
FROM blinkit_data;
```

Shows total sales converted into Millions for readability.



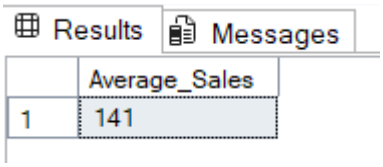
Results | Messages

	Total_Sales_Millions
1	1.20

5).Average Sales

```
SELECT CAST (AVG(Total_Sales)  AS DECIMAL (10,0) Average_Sales
FROM blinkit_data;
```

Calculates the average sales value across all records.



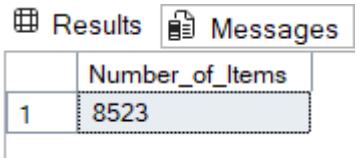
Results | Messages

	Average_Sales
1	141

6).Number of items

```
SELECT COUNT(*) AS Number_of_Items
FROM blinkit_data;
```

Returns the total number of records/items in the dataset.



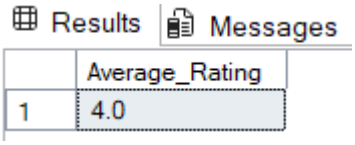
Results Messages

	Number_of_Items
1	8523

7).Average Rating

```
SELECT CAST(AVG(Rating) AS DECIMAL(10,1))AS Average_Rating
FROM blinkit_data;
```

Provides the average item rating with one decimal precision.



Results Messages

	Average_Rating
1	4.0

Sales Insights

8).Total Sales by Fat Content

```
SELECT Item_Fat_Content,
    CAST (SUM(Total_Sales)AS DECIMAL (10,2) )AS Total_Sales
FROM blinkit_data
GROUP BY Item_Fat_Content
ORDER BY Total_Sales DESC;
```

Breaks down total sales by different fat content categories.

Results | Messages

	Item_Fat_Content	Total_Sales
1	Low Fat	776319.68
2	Regular	425361.80

9).Total Sales by Item Type

```
SELECT Item_Type,
    CAST(SUM(Total_Sales) AS DECIMAL (10,2) ) AS Total_Sales
FROM blinkit_data
GROUP BY Item_Type
ORDER BY Total_Sales DESC;
```

Displays how each item type contributes to total sales.

Results | Messages

	Item_Type	Total_Sales
1	Fruits and Vegetables	178124.08
2	Snack Foods	175433.92
3	Household	135976.53
4	Frozen Foods	118558.88
5	Dairy	101276.46
6	Canned	90706.73
7	Baking Goods	81894.74
8	Health and Hygiene	68025.84
9	Meat	59449.86
10	Soft Drinks	58514.16
11	Breads	35379.12
12	Hard Drinks	29334.68
13	Others	22451.89
14	Starchy Foods	21880.03
15	Breakfast	15596.70
16	Seafood	9077.87

10).Fat Content by Outlet Location Type for Total Sales

```
SELECT Outlet_Location_Type,
   CAST(SUM(CASE WHEN Item_Fat_Content = 'Low Fat' THEN Total_Sales
   ELSE 0 END)AS DECIMAL (10,2)) AS Low_Fat_Sales,
```

```
    CAST(SUM(CASE WHEN Item_Fat_Content = 'Regular' THEN Total_Sales
    ELSE 0 END)AS DECIMAL (10,2))AS Regular_Sales
FROM blinkit_data
GROUP BY Outlet_Location_Type
ORDER BY Outlet_Location_Type;
```

Compares sales for low-fat and regular-fat products across different outlet locations.

Results | Messages

	Outlet_Location_Type	Low_Fat_Sales	Regular_Sales
1	Tier 1	215047.91	121349.90
2	Tier 2	254464.77	138685.87
3	Tier 3	306806.99	165326.03

Query Explanation:

Query Line	Description
Outlet_Location_Type	Groups data by each location type (e.g., Tier 1, Tier 2, Tier 3).
CASE WHEN ... THEN ... END	Separately sums sales for "Low Fat" and "Regular" items using conditional logic.
CAST(... AS DECIMAL(10,2))	Formats the total sales to two decimal places.
GROUP BY	Ensures totals are calculated for each outlet location type.
ORDER BY	Sorts the results alphabetically by location type.

11).Percentage of Sales by Outlet size

```
SELECT
    Outlet_Size,
    CAST (SUM(Total_Sales) AS DECIMAL (10,2)) AS Total_Sales,
```

```
    ROUND(
        (SUM(Total_Sales) * 100.0) /
        (SELECT SUM(Total_Sales) FROM blinkit_data), 2
    ) AS Sales_Percentage
FROM blinkit_data
GROUP BY Outlet_Size
ORDER BY Sales_Percentage DESC;
```

Shows sales contribution by outlet size in percentage terms.

Results | Messages

	Outlet_Size	Total_Sales	Sales_Percentage
1	Medium	507895.73	42.27
2	Small	444794.17	37.01
3	High	248991.58	20.72

Query Explanation:

Query Line	Description
Outlet_Size	Groups the results by outlet size (e.g., Small, Medium, High).
SUM(Total_Sales)	Calculates total sales for each outlet size.
CAST(... AS DECIMAL(10,2))	Formats the total sales to two decimal places.
ROUND(..., 2)	Computes the percentage of overall sales for each outlet size, rounded to two decimals.
ORDER BY Sales_Percentage DESC	Sorts outlet sizes from highest to lowest percentage contribution.

12).Sales by Outlet Location

```
SELECT Outlet_Location_Type,
CAST(SUM(Total_Sales) AS DECIMAL(10,2)) AS Total_Sales
```

```
FROM blinkit_data
GROUP BY Outlet_Location_Type
ORDER BY Total_Sales DESC;
```

Compares total sales by outlet location tiers.

Results | Messages

	Outlet_Location_Type	Total_Sales
1	Tier 3	472133.03
2	Tier 2	393150.64
3	Tier 1	336397.81

13).Highest Rated Item

```
SELECT *
FROM blinkit_data
WHERE Rating = (SELECT MAX(Rating) FROM blinkit_data);
```

Shows all the items with the highest rating in the dataset.

14).Top 3 Best-Selling Item Types by Total Sales

```
SELECT TOP 3 Item_Type,
    CAST (SUM(Total_Sales)AS DECIMAL(10,2)) AS Total_Sales
FROM blinkit_data
GROUP BY Item_Type
ORDER BY Total_Sales DESC;
```

Identifies the top 3 item categories by total sales

Results | Messages

	Item_Type	Total_Sales
1	Fruits and Vegetables	178124.08
2	Snack Foods	175433.92
3	Household	135976.53

15).Top Item in Each Outlet Type

```
SELECT Outlet_Type, Item_Type, Total_Sales
FROM (
   SELECT Outlet_Type,
         Item_Type,
         CAST(SUM(Total_Sales)AS DECIMAL(10,2) )AS Total_Sales,
         ROW_NUMBER() OVER (PARTITION BY Outlet_Type ORDER BY SUM(Total_Sales) DESC) AS rn
   FROM blinkit_data
   GROUP BY Outlet_Type, Item_Type
) ranked
WHERE rn = 1;
```

Uses window function to get the highest-selling item type for each outlet type.

Results | Messages

	Outlet_Type	Item_Type	Total_Sales
1	Grocery Store	Fruits and Vegetables	21423.41
2	Supermarket Type1	Fruits and Vegetables	117431.99
3	Supermarket Type2	Snack Foods	20003.24
4	Supermarket Type3	Fruits and Vegetables	20301.39

Query Explanation:

Query Line	Description
SELECT Outlet_Type, Item_Type, Total_Sales	Selects the final result: top item by outlet type.
CAST(SUM(Total_Sales) AS DECIMAL(10,2))	Calculates total sales per item in each outlet, formatted to two decimals.

ROW_NUMBER()	A window function that assigns a sequential number (1, 2, 3…) to rows within each group.
OVER (...)	Defines the window (i.e., how the data is grouped and sorted before assigning the row number).
PARTITION BY Outlet_Type	Groups the data by each outlet_type, so numbering starts over for each outlet type.
ORDER BY SUM(Total_Sales) DESC	Within each outlet group, items are sorted by total sales, from highest to lowest.
WHERE rn = 1	Filters to show only the top-selling item (rank 1) for each outlet type.

16).Analyze sales growth over years by outlet establishment year

```
SELECT Outlet_Establishment_Year,
CAST(SUM(Total_Sales) AS DECIMAL (10,2)) AS Yearly_Sales
FROM blinkit_data
GROUP BY Outlet_Establishment_Year
ORDER BY Outlet_Establishment_Year;
```

Tracks sales performance across the years of outlet establishment.

Results | Messages

	Outlet_Establishment_Year	Yearly_Sales
1	1998	204522.26
2	2000	131809.02
3	2010	132113.37
4	2011	78131.56
5	2012	130476.86
6	2015	130942.78
7	2017	133103.91
8	2020	129103.96
9	2022	131477.77

17).Average Sales and Rating by Outlet Size

```
WITH Outlet_Summary AS (
   SELECT Outlet_Size,
      CAST(AVG(Total_Sales)AS DECIMAL (10,2))AS Average_Sales,
      CAST(AVG(Rating) AS DECIMAL(10,2)) AS Avg_Rating
   FROM blinkit_data
   GROUP BY Outlet_Size
)
SELECT * FROM Outlet_Summary
ORDER BY Average_Sales DESC;
```

Summarizes average sales and ratings by outlet size using a common table expression (CTE).

Results | Messages

	Outlet_Size	Average_Sales	Avg_Rating
1	High	142.04	3.95
2	Small	141.70	3.96
3	Medium	139.88	3.98

Query Explanation:

Query Line	Description
WITH Outlet_Summary AS (...)	Defines a CTE, like a temporary named result set, called Outlet_Summary.
CAST(AVG(Total_Sales) AS DECIMAL(10,2)) AS Average_Sales	Calculates and formats average sales per outlet size.
CAST(AVG(Rating) AS DECIMAL(10,2)) AS Avg_Rating	Calculates and formats average customer rating per outlet size.
GROUP BY Outlet_Size	Groups the results by outlet size (e.g., small, medium, high).
SELECT * FROM Outlet_Summary	Retrieves the summarized results from the CTE.
ORDER BY Average_Sales DESC	Sorts the outlet sizes from highest to lowest average sales.

18).RANK Top 3 Item_Types by Sales per Outlet_Type

```
SELECT *
FROM (
   SELECT Outlet_Type,
          Item_Type,
          SUM(Total_Sales) AS Total_Sales,
          RANK() OVER (PARTITION BY Outlet_Type ORDER BY
SUM(Total_Sales) DESC) AS rnk
   FROM blinkit_data
   GROUP BY Outlet_Type, Item_Type
) ranked
WHERE rnk <= 3;
```

Uses ranking function to list the top 3 best-selling items in each outlet type.

Results | Messages

	Outlet_Type	Item_Type	Total_Sales	rnk
1	Grocery Store	Fruits and Vegetables	21423.4145393372	1
2	Grocery Store	Snack Foods	21327.8401908875	2
3	Grocery Store	Household	18082.1093406677	3
4	Supermarket Type1	Fruits and Vegetables	117431.988025665	1
5	Supermarket Type1	Snack Foods	114296.130218506	2
6	Supermarket Type1	Household	89143.4092063904	3
7	Supermarket Type2	Snack Foods	20003.2424430847	1
8	Supermarket Type2	Fruits and Vegetables	18967.2917633057	2
9	Supermarket Type2	Household	14244.6485176086	3
10	Supermarket Type3	Fruits and Vegetables	20301.386592865	1
11	Supermarket Type3	Snack Foods	19806.7075805664	2
12	Supermarket Type3	Household	14506.3581428528	3

19).Total Sales by Item Visibility Range

```
SELECT
   CASE
      WHEN Item_Visibility < 0.05 THEN 'Low Visibility'
      WHEN Item_Visibility < 0.15 THEN 'Medium Visibility'
      ELSE 'High Visibility'
   END AS Visibility_Level,
   COUNT(*) AS Item_Count,
   CAST(SUM(Total_Sales) AS DECIMAL(10,2)) AS Total_Sales,
   CAST(AVG(Total_Sales) AS DECIMAL(10,2)) AS Avg_Sale
FROM blinkit_data
GROUP BY
   CASE
      WHEN Item_Visibility < 0.05 THEN 'Low Visibility'
      WHEN Item_Visibility < 0.15 THEN 'Medium Visibility'
      ELSE 'High Visibility'
   END
ORDER BY Total_Sales DESC;
```

Categorizes items based on visibility and analyzes total and average sales for each group.

Results | Messages

	Visibility_Level	Item_Count	Total_Sales	Avg_Sale
1	Low Visibility	4051	565001.89	139.47
2	Medium Visibility	3822	548217.81	143.44
3	High Visibility	650	88461.78	136.10

Query Explanation:

Query Line	Description
CASE WHEN Item_Visibility < 0.05 THEN 'Low Visibility' ...	Creates custom visibility categories based on numeric visibility values.

COUNT(*) AS Item_COUNT	Counts how many items fall into each visibility category.
SUM(Total_Sales) and AVG(Total_Sales)	Calculates total and average sales for each visibility level.
GROUP BY CASE ... END	Groups the dataset based on the custom visibility_level.
ORDER BY Total_Sales DESC	Displays the groups sorted by total sales, from highest to lowest.

20).All Metrics by Outlet Type

```
SELECT Outlet_Type,
    CAST(SUM(Total_Sales) AS DECIMAL (10,2)) AS Total_Sales,
    CAST(AVG(Total_Sales) AS DECIMAL (10,2)) AS Average_Sales,
    COUNT(*) AS Number_of_Items,
    CAST(AVG(Rating) AS DECIMAL(10,2)) AS Avg_Rating,
    CAST(AVG(Item_Visibility) AS DECIMAL(10,2)) AS Item_Visibility
FROM blinkit_data
GROUP BY Outlet_Type
ORDER BY Total_Sales DESC;
```

Gives a comprehensive summary of performance by outlet type across multiple metrics.

Results Messages

	Outlet_Type	Total_Sales	Average_Sales	Number_of_Items	Avg_Rating	Item_Visibility
1	Supermarket Type1	787549.89	141.21	5577	3.96	0.06
2	Grocery Store	151939.15	140.29	1083	3.99	0.10
3	Supermarket Type2	131477.77	141.68	928	3.97	0.06
4	Supermarket Type3	130714.67	139.80	935	3.95	0.06

Conclusion:

This project demonstrates practical SQL proficiency, including data cleaning, transformation, aggregation, and advanced analytics using SSMS. These insights can help businesses optimize performance across products and store types.