blinkit

Power BI

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PROJECT ON POWER BI

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ACKNOWLEDGEMENT

I would like to express my heartfelt gratitude to my guide for their invaluable support, guidance, and encouragement throughout the course of this project. I am also thankful to Classroomtech for providing the necessary resources and a conducive environment for learning and analysis. A special thanks to my family for their constant motivation, patience, and emotional support. Lastly, I sincerely appreciate the help and encouragement from my peers and all those who contributed directly or indirectly to the successful completion of this project.

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PROBLEM STATEMENT

The objective of this project is to analyze Blinkit's sales, customer, delivery, product, and marketing data using Power BI. The goal was to transform raw data from 11 tables into meaningful insights through interactive reports and dashboards. This analysis focused on answering key business questions such as customer order patterns, delivery performance, feedback trends, product-wise sales, and marketing effectiveness to support data-driven decisions and operational improvements.

DATASET OVERVIEW

Dataset Source: Kaggle — Blinkit Sales Dataset
https://www.kaggle.com/datasets/akxiit/blinkit-sales-dataset/data

The dataset for this project is the Blinkit Sales Dataset from Kaggle, containing 11 tables covering customer details, orders, deliveries, products, inventory, marketing, and feedback. Key columns like customer ID, order ID, product details, delivery status, and campaign performance were used to analyze sales trends, customer behavior, delivery efficiency, and marketing effectiveness. This dataset provides a complete view of Blinkit's operations for meaningful analysis in Power BI.

TOOLS USED

- **Power BI** 
- **GitHub for repository management** 

METHODOLOGY

- **Data Cleaning Steps :**

During data cleaning, missing values are handled using Power Query. Rows with missing values in key columns such as customer_id, order_id, and product_id are removed to maintain data accuracy. In non-essential columns like email and feedback_category, missing values are replaced with "Not Provided" or "Unknown" to avoid gaps in reports. Outliers in numeric fields such as order_quantity, delivery_time, and spend are identified using boxplots. Unrealistic values, including negative delivery times or unusually large quantities, are either removed or capped to ensure the dataset remains reliable for analysis.

METHODOLOGY

- **Visualization Creation Steps :**

In the visualization stage, Various visualizations are created to extract insights from the dataset. A Bar Chart highlights top customers based on order count, while a Pie Chart shows feedback distribution. Stock trends are tracked using a Column Chart, and key metrics like average order value are displayed with a KPI Card. A Heatmap identifies high-demand regions by pincode, and product-wise sales are compared using a Stacked Bar Chart. Delivery efficiency is analyzed with a Scatter Plot, marketing performance with a Funnel Chart, daily order trends with a Line Chart, and a Map Visualization shows geographic order density.

VISUALIZATION

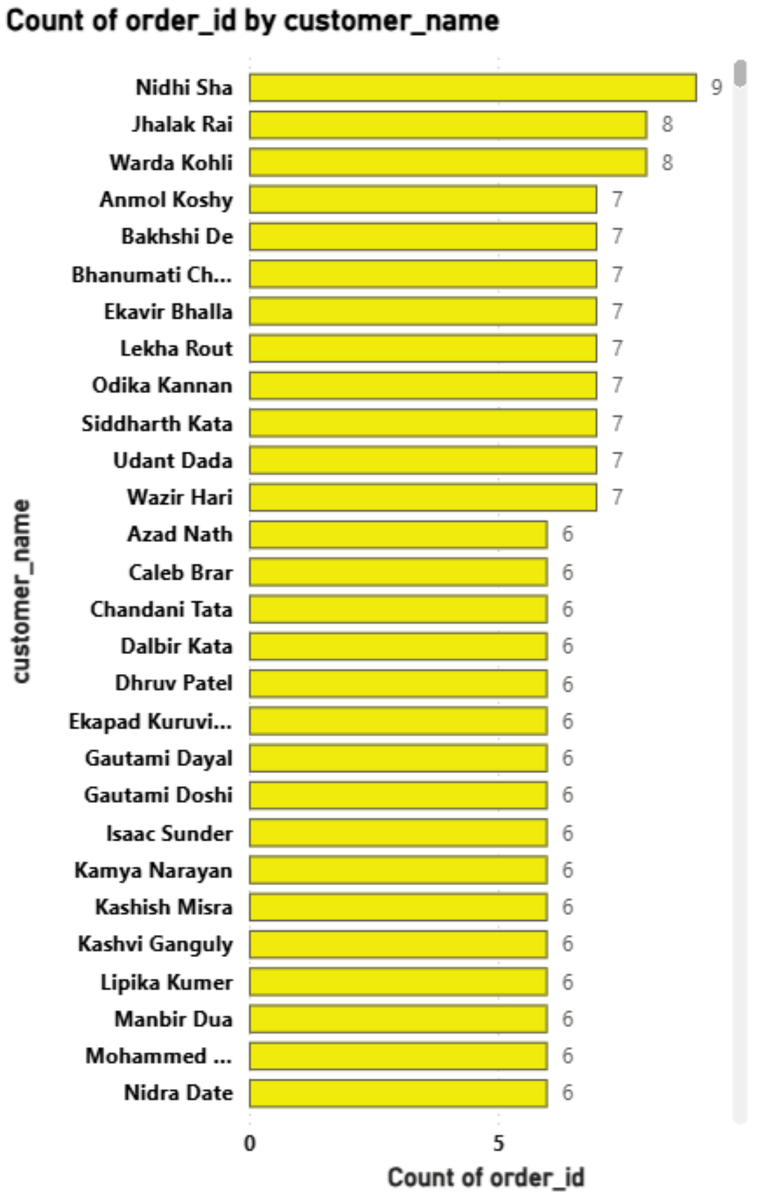
Top Customers by Number of Orders

Purpose: This chart highlights the customers with the highest number of orders. It helps identify the most active and loyal customers based on their order count.

Visual: Bar Chart.

Insights:

- Nidhi Sha is the top customer with 9 orders.
- Jhalak Rai and Warda Kohli follow with 8 orders each.
- Several others, including Anmol Koshy and Bakshi De, have 7 orders, showing a consistent customer base.



VISUALIZATION

Total Orders in a Month

Purpose: This chart shows the total number of orders placed in June 2024. It provides a quick summary of monthly order volume, helping to track business performance for the selected period.

Visual: Slicer(Months) , Card(Total Orders)

Insights:

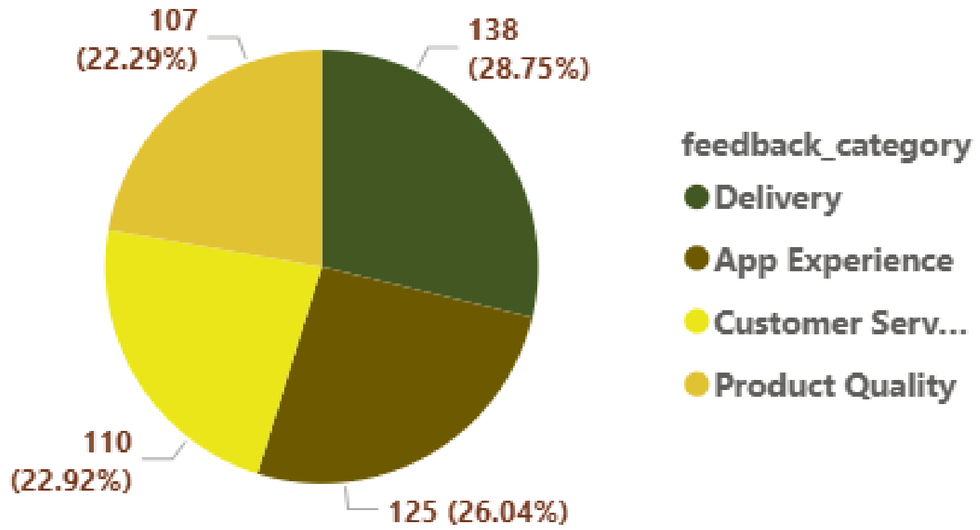
- A total of 248 orders are placed in June 2024.
- This number provides a clear snapshot of monthly order volume.
- It helps track and compare business performance with other months.

VISUALIZATION

Distribution of Feedback Categories

Purpose: This chart shows how customer feedback is distributed across different categories. It provides a clear overview of which areas — Delivery, Customer Service, Product Quality, and App Experience — receive the most attention from customers. This helps identify focus areas for improvement.

Visual: Pie Chart



Insights:

- Delivery and Customer Service categories have the highest feedback count with around 1.27K responses each.
- Product Quality follows closely with 1.25K feedback responses.
- App Experience has slightly fewer responses at 1.21K, but overall, all categories have fairly similar distribution, indicating balanced customer feedback across areas.

VISUALIZATION

Customer Details Table:

Purpose: This table displays the customer IDs, names, and email addresses of all customers. It provides a quick reference to customer details, making it easier to identify, contact, or analyze individual customers.

Visualization: Table

Insights:

- The table provides a clear list of customers along with their IDs and email addresses.
- It helps easily identify individual customers for communication or further analysis.
- Sorting by customer_id allows quick reference for tracking or filtering specific customers.

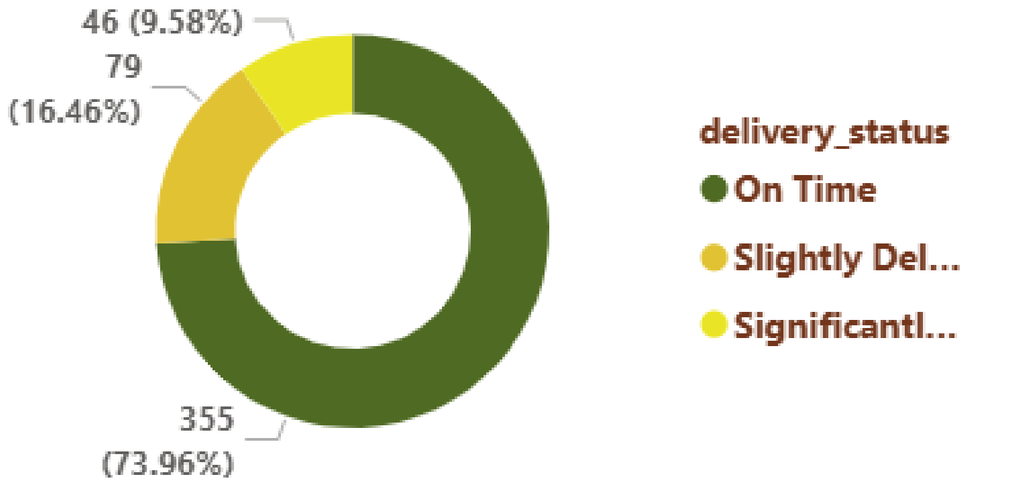
customer_id	customer_name	email
45383958	Aachal Mangat	yasti56@example.org
14161586	Aachal Nazareth	aadhya71@example.org
15487049	Aadhya Cherian	rushil71@example.com
87222820	Aadhya Padmanabhan	nkala@example.org
65618148	Aadhya Palla	forumshan@example.org
35885052	Aadhya Ravi	urmibedi@example.org
79206969	Aadi Bains	girindra18@example.net
10608845	Aadi Gole	vbalan@example.com
65692224	Aahana Buch	zayyan92@example.com
44426129	Aahana Gopal	tdave@example.org
75913572	Aahana Menon	guhadalaja@example.com
33998721	Aahana Naik	rakshabahri@example.org
44928499	Aarav Andra	sonikabir@example.org
47275378	Aarav Dar	amruta30@example.net

VISUALIZATION

Order Distribution by Delivery Status

Purpose: This chart shows how orders are distributed based on their delivery status. It provides a quick overview of the percentage of orders delivered on time, slightly delayed, and significantly delayed, helping to assess overall delivery performance.

Visual: Donut Chart



Insights:

- 69.4% of orders are delivered on time, indicating good delivery performance.
- 20.7% of orders are slightly delayed, showing minor delays in some deliveries.
- 9.86% of orders are significantly delayed, highlighting an area that needs attention.

VISUALIZATION

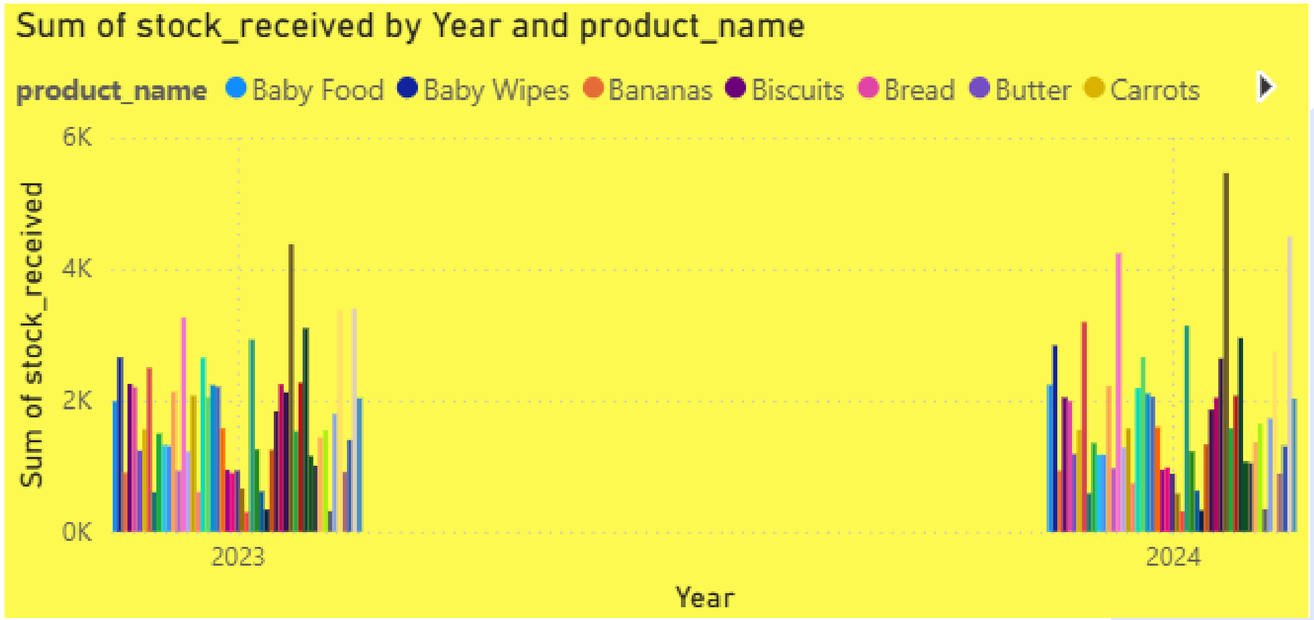
Stock Received Over Time by Product

Purpose: To analyze how much stock was received for different products over time.

Visual: Clustered Column Chart

Insights:

- Stock was consistently received for most products across 2023 and 2024.
- Some products (like Bread or Butter) had noticeably higher restocks.
- There’s a clear seasonal or monthly variation in stock intake.



VISUALIZATION

Damaged Stock Percentage Calculation

Purpose: This chart helps identify which products have the highest percentage of damaged stock. It highlights the products that contribute most to stock damage, allowing the company to focus on quality control and investigate potential issues in the supply chain.

Visual: Table

Insights:

- Some products show damaged stock percentages exceeding 100%, indicating possible data errors.
- Product IDs 709916, 448752, and 767398 have the highest damage rates.
- The overall average damaged stock percentage is 54.41%, showing major stock quality concerns.

product_id	Damaged Stock Percentage
709916	109.83
448752	102.74
767398	102.42
897083	95.54
739534	93.71
739448	92.71
473647	92.49
133542	90.52
9436	88.82
894539	86.88
700048	85.97
365133	85.96
968887	83.24
Total	**54.41**

VISUALIZATION

Campaign-Wise Spend and Revenue Calculation

Purpose: This table visualization provides a clear comparison of different marketing campaigns based on their total spend and the revenue they generated. It helps identify which campaigns are delivering better returns.

Visual: Table

Insights:

- Referral Program generated the highest revenue of ₹36.91 lakh.
- Revenue varies across campaigns despite similar spending.
- Total spend is ₹1.63 crore; revenue is ₹3.22 crore, showing positive returns.

campaign_name	Sum of spend	Sum of campaign_id	Sum of revenue_generated
App Push Notification	17,88,989.20	298313610	35,54,370.00
Category Promotion	18,50,583.00	300943298	35,82,455.37
Email Campaign	18,10,729.67	299052581	36,01,785.22
Festival Offer	17,96,687.14	310812770	35,07,063.91
Flash Sale	18,31,687.82	291379422	35,56,087.02
Membership Drive	17,90,069.80	310982280	35,24,951.25
New User Discount	18,33,454.81	302168513	36,03,860.17
Referral Program	18,18,025.51	311426765	36,91,382.60
Weekend Special	17,99,611.29	282022944	35,71,451.83
Total	**1,63,19,838.24**	**2707102183**	**3,21,93,407.37**

VISUALIZATION

Average Order Value

Purpose: This chart compares actual AOV with a set target (400) to see if customer spending meets expectations.

Visual: Card

Insights:

- The actual Average Order Value (AOV) is below the target of 400, indicating potential for revenue improvement.
- Most customers are placing lower-value orders, which may require re-engagement strategies (e.g., bundle offers, upselling).
- Tracking AOV over time can help assess the impact of promotions or changes in pricing strategy.

VISUALIZATION

Total Revenue from All Campaigns

Purpose: This card visualization shows the total revenue generated from all marketing campaigns combined. It provides a quick overview of overall campaign performance and helps assess the effectiveness of marketing efforts.

Visual: Card

Insights:

- The total revenue generated is ₹32.19 million.
- It indicates that the campaigns have contributed significantly to the overall revenue.
- Quick visual format helps stakeholders track revenue at a glance.

VISUALIZATION

Total Sales Revenue Calculation

Purpose: This table visualization displays the total sales revenue generated by each product. It helps compare product-wise revenue and identify top-performing items.

Visual: Table

Insights:

- Product 34186 generated the highest sales revenue of ₹56,464.65.
- Some products, like 11422 and 9436, have relatively low sales revenue.
- The total sales revenue across all products is ₹49,72,415.43.

Total Sales Revenue	product_id
6,625.32	4452
8,041.34	6405
3,890.92	9436
3,433.32	11422
25,233.60	14145
18,523.20	15314
46,509.12	18035
14,060.54	26060
7,993.08	33797
6,326.72	33955
56,464.65	34186
14,071.20	34200
19,088.64	36412
37,874.40	39154
29,134.08	41853
49,72,415.43	

VISUALIZATION

Total Delivery Time Calculation

Purpose: This card visualization shows the total delivery time deviation for all orders combined. It provides a quick overview of delivery performance and helps assess whether deliveries are happening on time.

visual: Card

Insights:

- The total delivery time deviation is 22K units, which needs to be monitored.
- Higher values may indicate frequent delivery delays.
- Quick, simple format helps track delivery efficiency at a glance.

VISUALIZATION

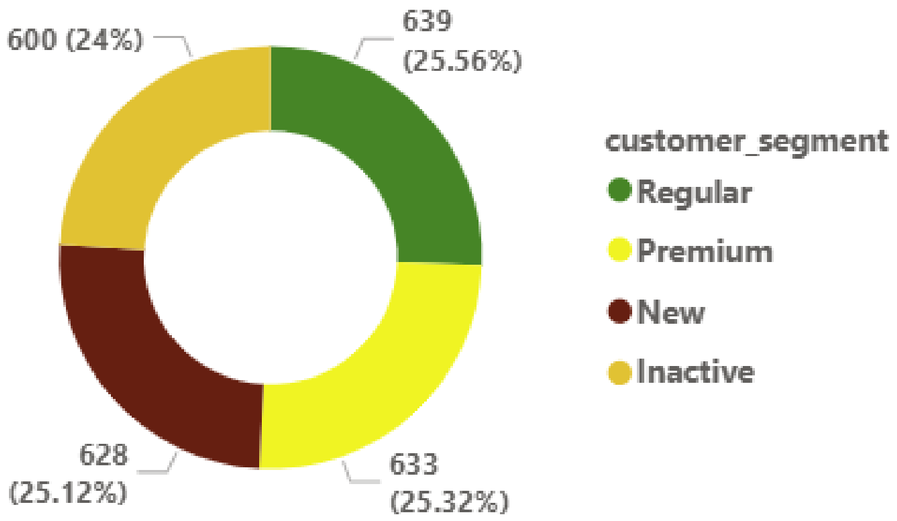
Customer Segment Distribution

Purpose: This pie chart visualizes the distribution of customers by segment, helping to understand the composition of the customer base and identify target groups for marketing.

Visual: Donut Chart

Insights:

- The Regular segment is the largest, representing 25.56% of customers.
- All four segments (Regular, Premium, New, Inactive) are almost equally distributed.
- The Inactive segment forms 24%, indicating a scope to improve customer engagement.



VISUALIZATION

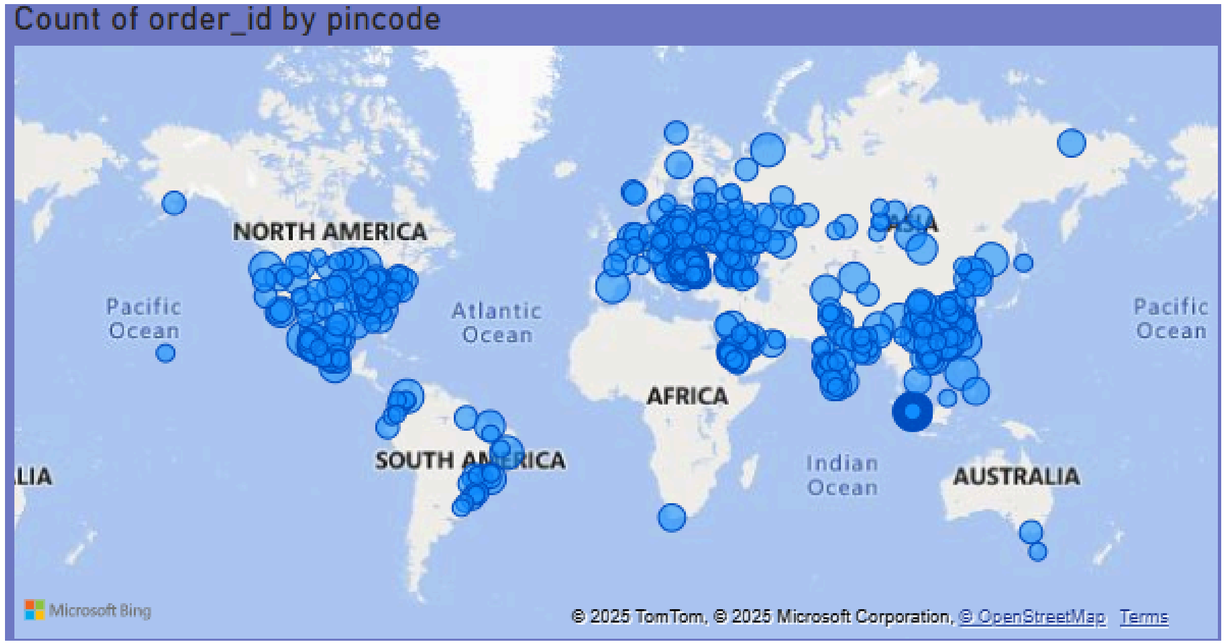
Order Frequency by Pincode

Purpose: To visualize which locations (based on pincode) receive the most customer orders.

Visualization: Map

Insights:

- Most orders are concentrated in India, as expected from the business focus.
- Some points outside India may be due to inaccurate or unrecognized pincode formats.
- High-frequency areas can guide decisions for logistics, marketing, or new store placement.



VISUALIZATION

Total Delivery Time and Delay Analysis

Purpose : This table visual shows the actual delivery time compared to the promised delivery time for each order. It helps analyze how long deliveries took and whether they were delayed or delivered early.

Visual: Table

Insights:

- Most deliveries are made close to or slightly after the promised time.
- Total delivery time across all orders is 97,172 minutes, while delays account for 22,215 minutes.
- A few orders show early delivery (negative delay values), indicating operational efficiency in some cases.

order_id	customer_id	order_date	promised_delivery_time	actual_delivery_time	Sum of Delivery_Delay_Minutes	Sum of Total_Delivery_Time_Minutes
60465	15808945	23-10-2024 05:23:29	23-10-2024 05:34:29	23-10-2024 05:39:29	5	16
2237858	48281892	02-04-2023 03:45:11	02-04-2023 04:00:11	02-04-2023 04:03:11	3	18
3101265	89617089	23-05-2024 03:21:47	23-05-2024 03:37:47	23-05-2024 03:40:47	3	19
5120698	44174426	09-06-2023 12:10:20	09-06-2023 12:25:20	09-06-2023 12:40:20	15	30
5512907	51476157	30-04-2023 20:52:21	30-04-2023 21:11:21	30-04-2023 21:26:21	15	34
7550508	93127511	20-10-2023 10:54:27	20-10-2023 11:07:27	20-10-2023 11:06:27	-1	12
8701796	14479168	19-08-2024 19:01:44	19-08-2024 19:14:44	19-08-2024 19:23:44	9	22
9408428	31456752	30-08-2023 13:34:14	30-08-2023 13:54:14	30-08-2023 13:50:14	-4	16
10161194	63238941	24-12-2023 23:10:35	24-12-2023 23:28:35	24-12-2023 23:31:35	3	21
10448052	90021871	05-08-2023 10:01:05	05-08-2023 10:21:05	05-08-2023 10:26:05	5	25
11467999	78267238	23-04-2023 18:37:26	23-04-2023 18:57:26	23-04-2023 19:11:26	14	34
Total					22215	97172

VISUALIZATION

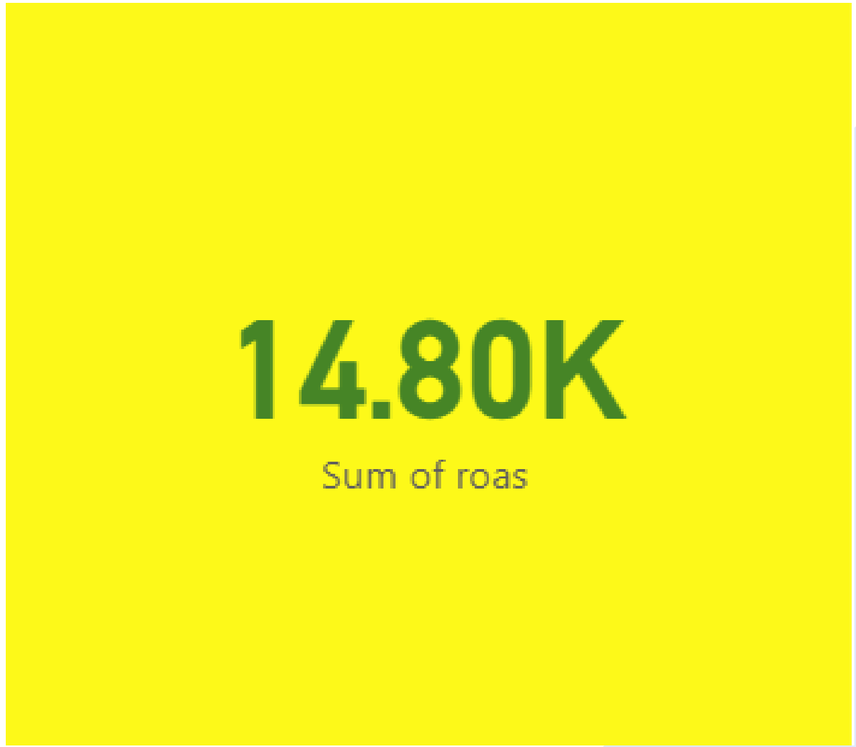
Total Return on Ad Spend (ROAS)

Purpose: This card visualization displays the total ROAS, providing a quick summary of how effectively marketing spend is converting into revenue.

Visual: Card

Insights:

- The total ROAS is 14.80K, indicating good overall returns from ad spend.
- Higher ROAS reflects efficient campaign performance.
- Quick card format allows easy monitoring of marketing efficiency.



VISUALIZATION

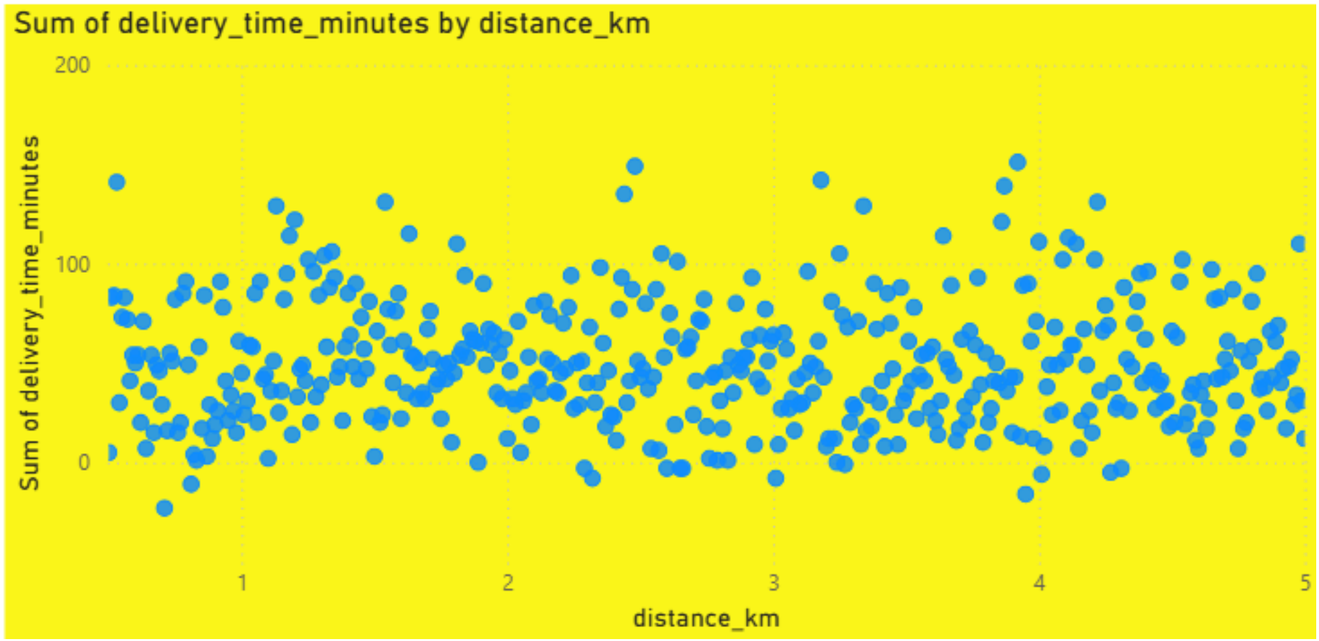
Distance vs. Delivery Time

Purpose: This scatter plot aims to analyze the relationship between delivery distance (in km) and total delivery time (in minutes) to evaluate delivery efficiency. It helps identify whether longer distances consistently result in longer delivery times.

Visual: Scatter Plot

Insights:

- There is a general upward trend—as distance increases, delivery time also tends to increase slightly.
- Delivery times are widely scattered, even for short distances, indicating possible external factors (traffic, order prep time, etc.).
- Most deliveries are under 5 km and 100 minutes, showing a concentration of fast, short-distance deliveries.



VISUALIZATION

Customer Retention Rate

Purpose: This card visualization shows the overall customer retention rate, helping to assess how effectively the business retains its customers over time.

Visual: Card

Insights:

- The retention rate is 0.94, meaning 94% of customers have placed repeat orders.
- High retention suggests strong customer satisfaction and loyalty.
- It reflects a positive customer experience and effective engagement strategies.

VISUALIZATION

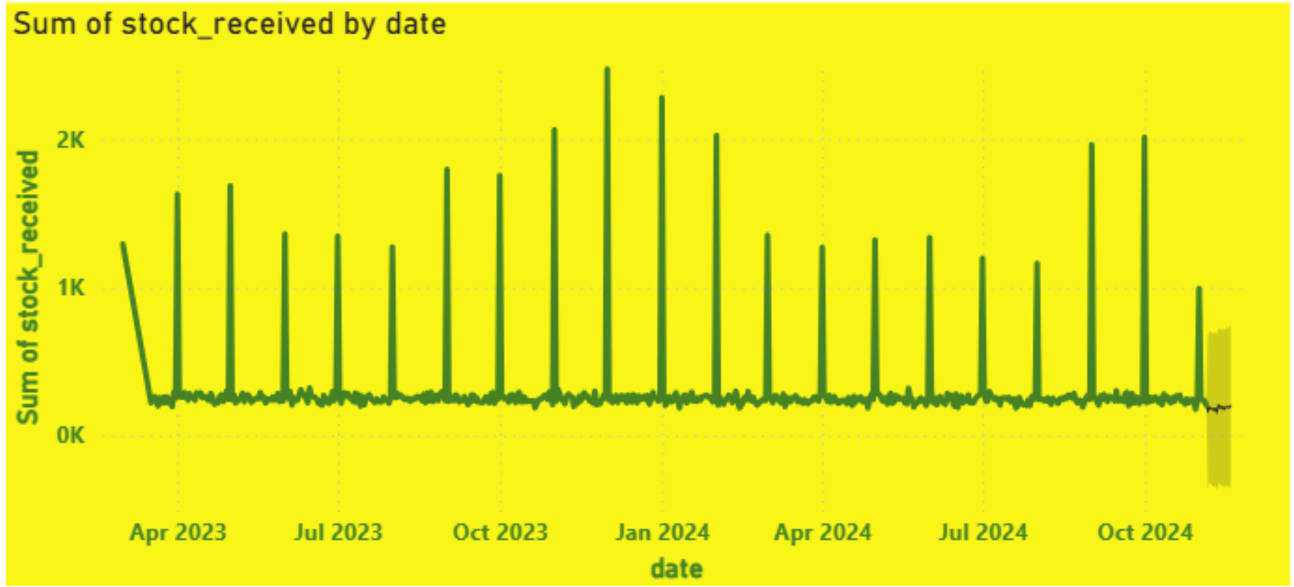
Forecast of Stock Received Over Time

Purpose : This line chart visualizes the historical trend and future forecast of stock received over time. It helps understand whether the supply chain is maintaining a steady flow and anticipates how stock levels will trend in the near future.

Visual: Line Chart

Insights:

- There are periodic spikes in stock received, likely corresponding to bulk restocking or specific demand cycles.
- The forecast section (in yellow shaded area) predicts a slightly fluctuating but consistent trend in stock received, showing stability.
- Very few anomalies or drops are observed outside the general pattern, suggesting reliable inventory planning.



VISUALIZATION

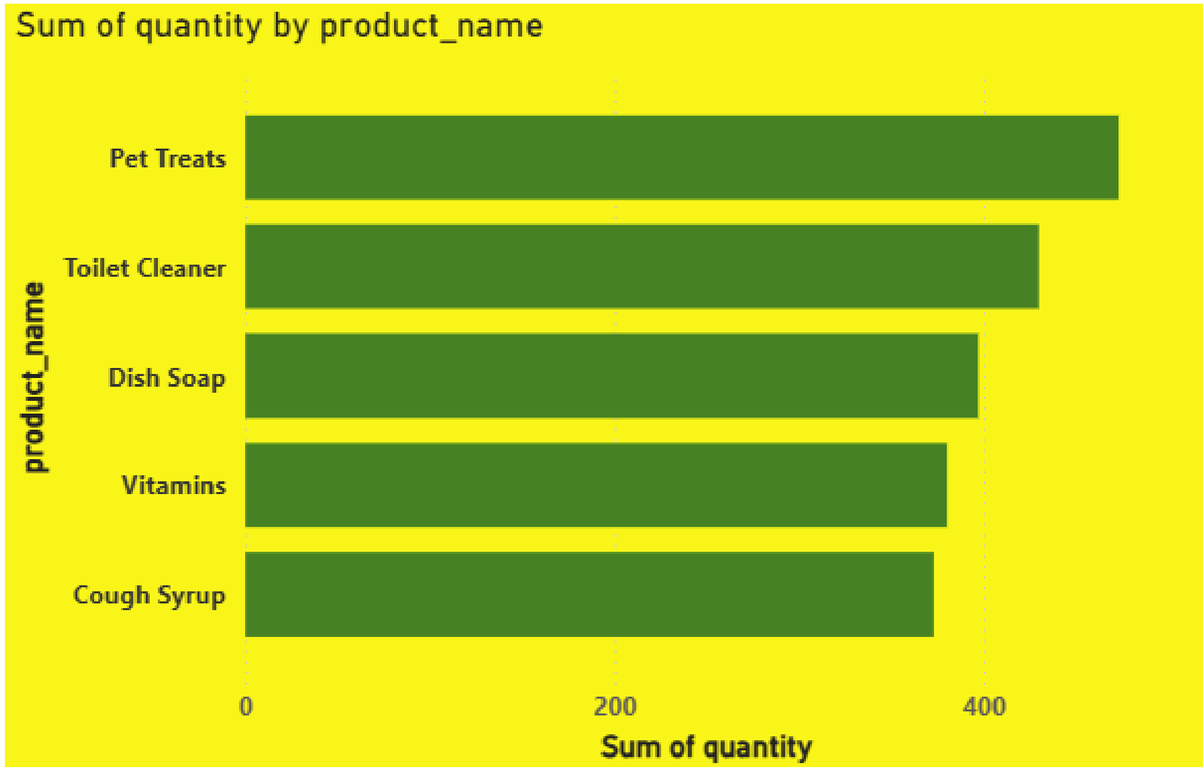
Top 5 Best-Selling Products by Quantity

Purpose: This bar chart highlights the top 5 products with the highest quantity ordered, helping identify which products drive the most sales and demand.

Visual: Clustered Bar Chart

Insights:

- Pet Treats is the best-selling product based on quantity ordered.
- Cleaning and healthcare products like Toilet Cleaner and Cough Syrup are also among the top sellers.
- The chart helps businesses focus on high-demand products for better inventory management and promotions.



VISUALIZATION

Gross Profit

Purpose: This card visualization shows the total gross profit based on margin percentage, providing a quick snapshot of overall business profitability.

Visual: Card

Insights:

- The total gross profit is 1.36 Million, reflecting strong financial performance.
- A high gross profit indicates effective cost and pricing strategies.
- The simple card format allows for quick and easy profit tracking.

VISUALIZATION

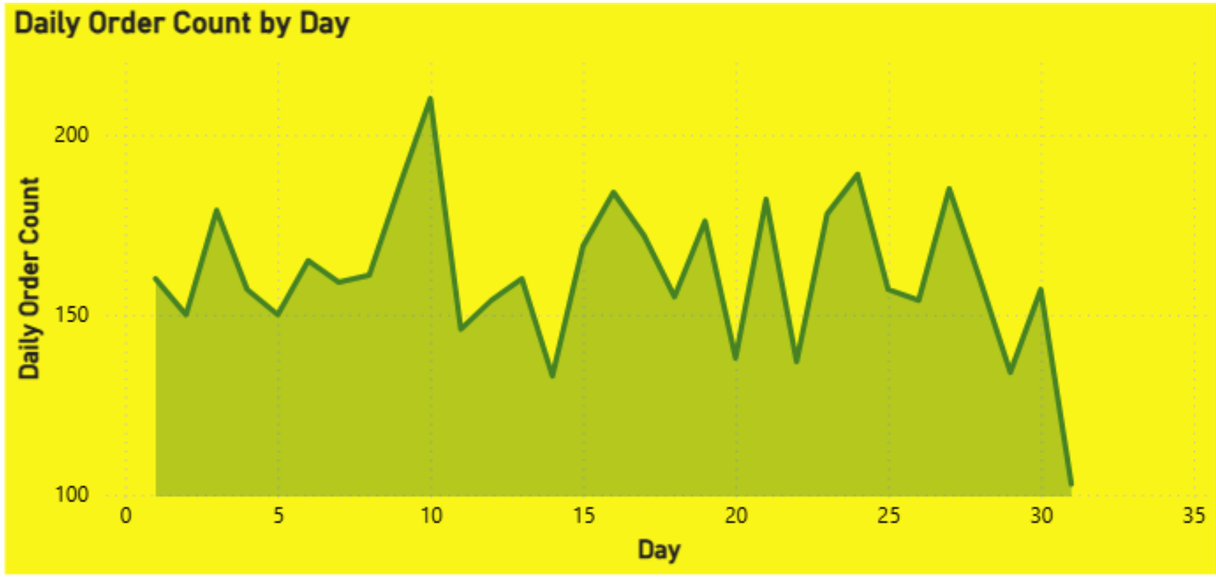
Daily Order Count by Day

Purpose: This chart is used to analyze the trend of daily order counts over a one-month period, based on the order date . It helps us understand how customer demand changes from day to day, and highlights any significant fluctuations in order activity throughout the month.

Visual: Area Chart

Insights:

- Daily order volumes fluctuate significantly.
- Peak orders around Day 10; lowest on the last day.
- Demand is inconsistent, likely due to varying customer behavior or external factors.



VISUALIZATION

Most Frequently Ordered Product

Purpouse: This visualization identifies the product with the highest number of orders based on historical sales data. It helps stakeholders understand customer purchasing trends and which items are most in demand.

Visual: Card

Insights:

- Baby Food is the most frequently ordered product.
- This indicates high demand in the baby care category, suggesting consistent customer need.
- It may help guide inventory planning, marketing focus, and promotional offers toward high-demand products.

VISUALIZATION

Total Quantity Ordered per Product Category

Purpose: This matrix chart shows the total quantity of items ordered across different product categories, based on data . It helps identify which categories have the highest and lowest demand, giving insight into customer purchasing preferences.

Visual: Table

Insights:

- Dairy & Breakfast has the highest order quantity (1,114), followed by Household Care and Pharmacy.
- Baby Care has the lowest order volume among all categories.
- Most product categories show relatively balanced demand, with only a few standing out significantly.

category	Total Quantity Ordered
Baby Care	655
Cold Drinks & Juices	758
Dairy & Breakfast	1114
Fruits & Vegetables	966
Grocery & Staples	895
Household Care	1078
Instant & Frozen Food	742
Personal Care	887
Pet Care	1003
Pharmacy	973
Snacks & Munchies	963
Total	**10034**

VISUALIZATION

Customer Lifetime Value

Purpose: This chart shows the Customer Lifetime Value (CLV) using data . It shows how much revenue a customer is expected to generate over time. CLV is calculated by multiplying the average order value by the total number of orders.

Visual: Card

Insights:

- The total Customer Lifetime Value is 29.03 million, indicating strong overall customer contribution.
- A higher CLV suggests loyal and frequent purchasing behavior from the customer base.
- This metric is key for evaluating long-term profitability and guiding marketing or retention strategies.

VISUALIZATION

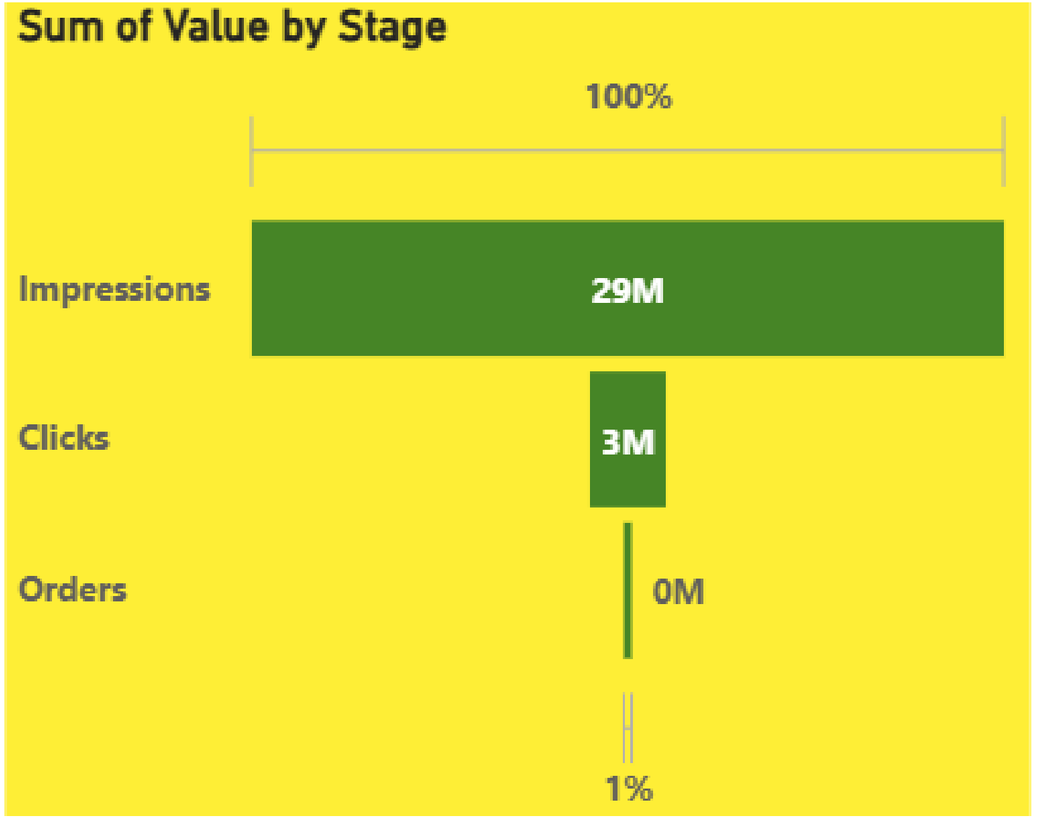
Campaign Conversion Funnel

Purpose: This funnel chart shows the campaign conversion flow using data . It tracks drop-offs from impressions to clicks and orders, helping identify where potential customers exit and where marketing can improve.

Visual: Card

Insights:

- 29M impressions led to only 3M clicks (~10% CTR).
- Almost no conversions from clicks to orders.
- Highlights a need to improve the landing or checkout process



VISUALIZATION

Dynamic Slicer for Delivery Status

Purpose: This chart answers the question: Which product is most frequently ordered under different delivery status categories (e.g., On Time, Slightly Delayed, Significantly Delayed)? It allows users to dynamically explore top-performing products based on delivery performance.

Visual: Dynamic Slicer and Card

Insights:

- Users can filter by delivery status to explore order patterns.
- Ice Cream is the top product in significantly delayed orders.
- High-demand or sensitive items like Ice Cream may face more delivery delays.

VISUALIZATION

Unified Stock Report

Purpose: This chart helps track the amount of stock received and damaged over time, broken down by year, quarter, month, and day. It allows the team to identify product-wise stock performance and delivery trends, ensuring better inventory planning and damage control.

Visual: Table

Insights:

- March 2023 shows consistent stock entries with no damaged stock reported for the listed product IDs.
- The highest stock received on this view is for product ID 26060.
- Overall, the data suggests good stock handling for this time frame.

Sum of stock_received	Sum of damaged_stock	Year	Quarter	Month	Day	product_id
1	0	2023	Qtr 1	March	1	4452
8	0	2023	Qtr 1	March	1	6405
6	0	2023	Qtr 1	March	1	9436
11	0	2023	Qtr 1	March	1	11422
5	0	2023	Qtr 1	March	1	14145
4	0	2023	Qtr 1	March	1	15314
4	0	2023	Qtr 1	March	1	18035
5	0	2023	Qtr 1	March	1	26060
6	0	2023	Qtr 1	March	1	33797
176305	**81377**					

VISUALIZATION

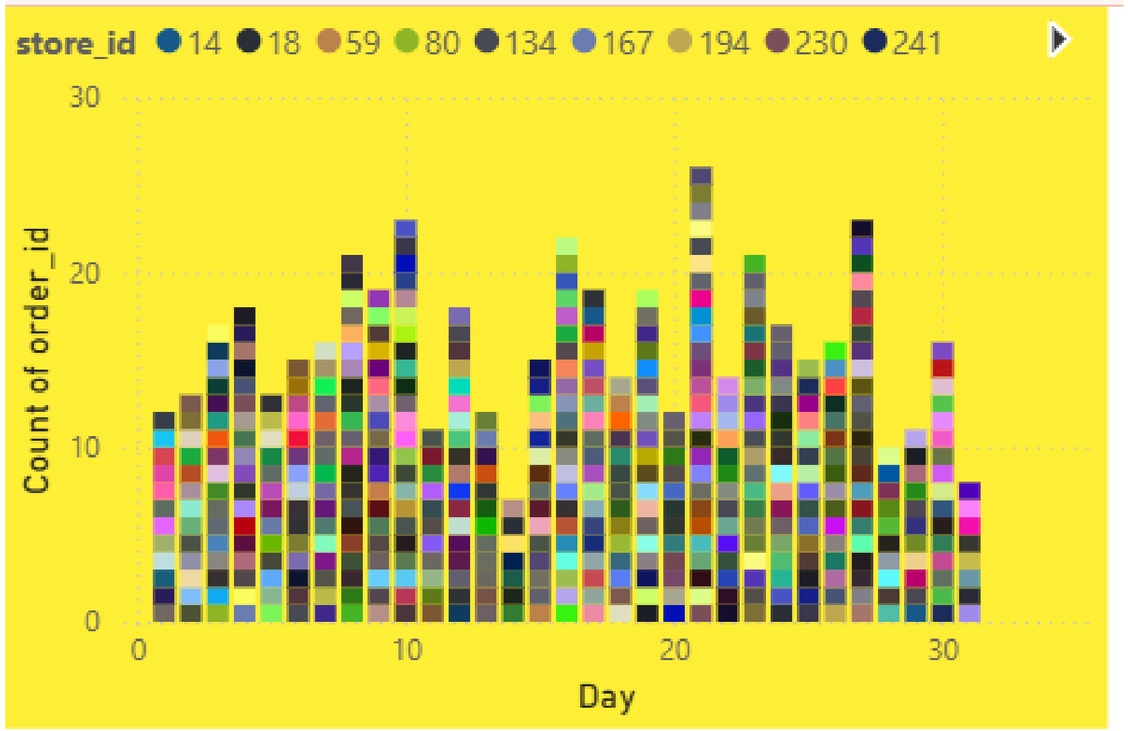
Customer Orders by Store per Day

Purpose: This visualization shows the number of customer orders received by each store (store_id) on a daily basis. It helps track order activity trends and compare store performance over the course of a month. Businesses can identify high-performing stores and understand fluctuations in customer demand.

Visual: Stacked Column chart

Insights :

- Some stores (e.g., store_id 134, 80, 241) consistently receive a high number of orders across multiple days.
- Peak activity appears around the 10th, 20th, and 25th of the month.
- A wide variation in order count suggests differences in store performance or customer preference.



VISUALIZATION

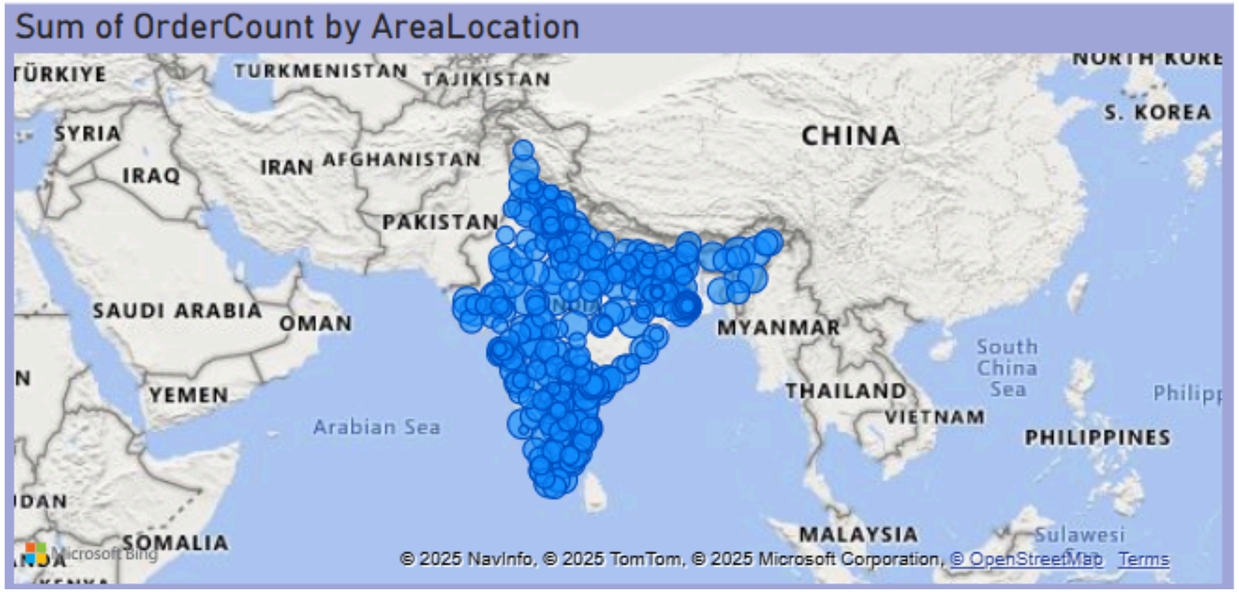
Order Density by Area Location

Purpose: This chart shows which areas in India have higher or lower order volumes, helping identify regional demand patterns.

Visualization: Map

Insights:

- Areas like Orai, Nandyal, and Bathinda have higher order counts.
- Widespread coverage indicates Blinkit operates in diverse regions across India.
- Some cities show clustered high density, useful for targeting marketing or logistics planning.



KEY FINDINGS

- **Volatility in Daily Orders:**

The time-series analysis of daily order counts shows fluctuating demand across the month, with peak orders around Day 10 and a sharp drop on the last day.

- **Campaign Conversion Is Very Low:**

Funnel analysis reveals that only ~10% of impressions convert to clicks, and nearly 0% reach the order stage—highlighting major leakage in the conversion funnel.

- **High Customer Lifetime Value (CLV):**

With a CLV of ₹29.03M, existing customers contribute significantly to revenue, underscoring the value of customer retention strategies.

- **Household & Dairy Lead in Product Demand:**

From the matrix chart, Household Care and Dairy & Breakfast categories show the highest order quantities, indicating top-performing product segments.

- **Delivery Performance Is Strong:**

The delivery status slicer shows that the majority of orders are delivered on time, reflecting efficient logistics operations.

CONCLUSION

Through this analysis, we gained valuable insights into customer behavior, product performance, and campaign efficiency. We identified trends in daily orders, top-selling product categories, and gaps in the marketing funnel that need urgent attention.

This data-driven approach enables smarter decision-making—such as improving ad targeting, optimizing inventory around high-demand categories, and enhancing delivery reliability. Ultimately, it helps align operations, marketing, and customer experience strategies to drive growth and profitability.

GITHUB REPOSITORY LINK

https://github.com/moupriya005/Blinkit-Dataset-Analysis-

REFERENCES

- Kaggle
- YouTube

THANK YOU

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