Instacart Customer & Product Analytics — Detailed Report

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Dataset: Instacart Market Basket Analysis (Kaggle)

Executive Summary

This report summarizes the Tableau analysis performed on the Instacart Market Basket dataset (3M+ orders). The analysis contains three interactive dashboards built in Tableau Desktop: Sales Overview, Customer Behavior, and Product Performance & Market Basket Analysis. Key objectives were to identify high-value customers, measure reorder behavior, surface top products, and find cross-sell opportunities via co-occurrence analysis.

Methodology & Data Model

Data files used: orders.csv, order_products__prior.csv, order_products__train.csv, products.csv, aisles.csv, departments.csv. Joins: orders -> order_products -> products -> aisles -> departments. Data model aggregates at order and user levels and uses Level of Detail (LOD) calculations for customer-level metrics. Key calculated fields used in Tableau: - Orders per Customer: { FIXED [user_id] : COUNTD([order_id]) } - Reorder Flag: IF [reordered] = 1 THEN 'Reorder' ELSE 'First Time' END - Order Type: IF [order_number] = 1 THEN 'New Customer' ELSE 'Returning Customer' END - Time of Day bucket: Morning/Afternoon/Evening by order_hour_of_day - Products per Order (LOD): { FIXED [order_id] : COUNT([product_id]) }

Sales Overview Dashboard image not found at /mnt/data/instacart_sales.png

Customer Behavior Dashboard

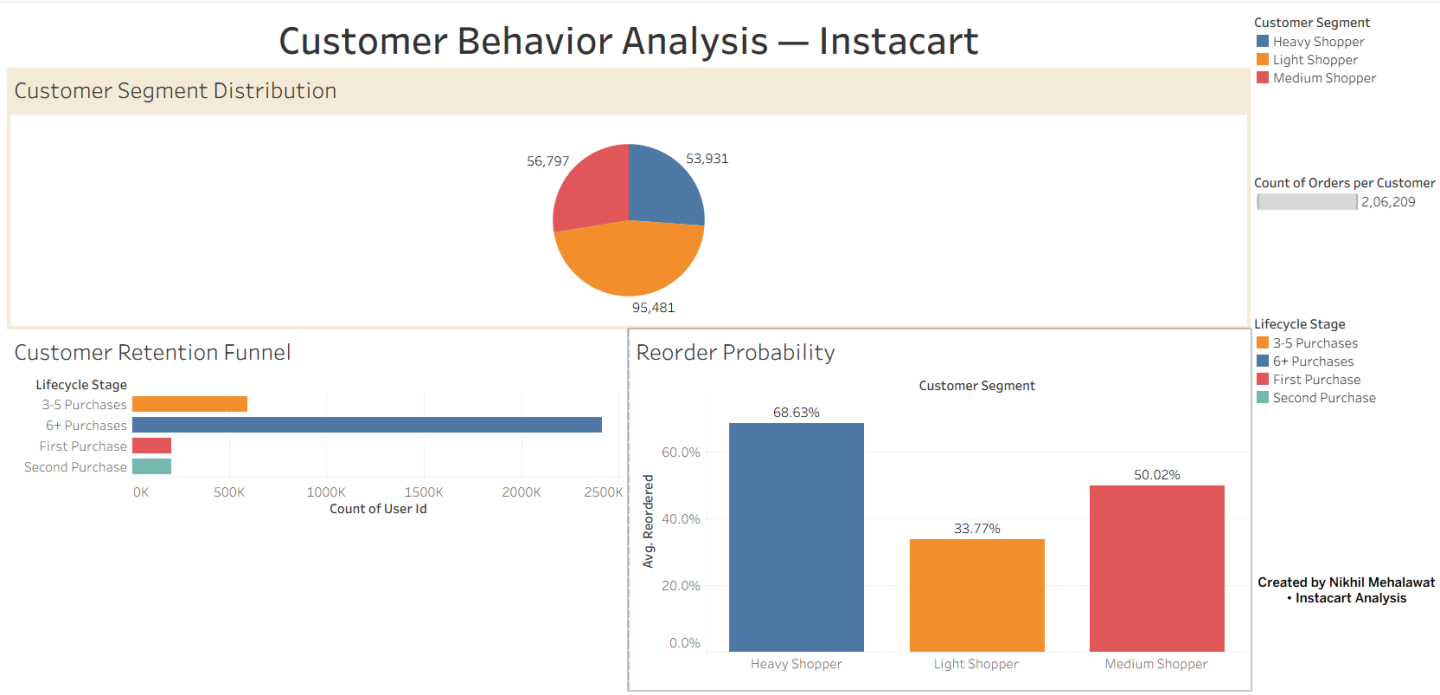

Figure: Customer Behavior Dashboard — interactive dashboards built in Tableau showing KPIs, segmentations and heatmaps.

Product Performance & Market Basket Dashboard

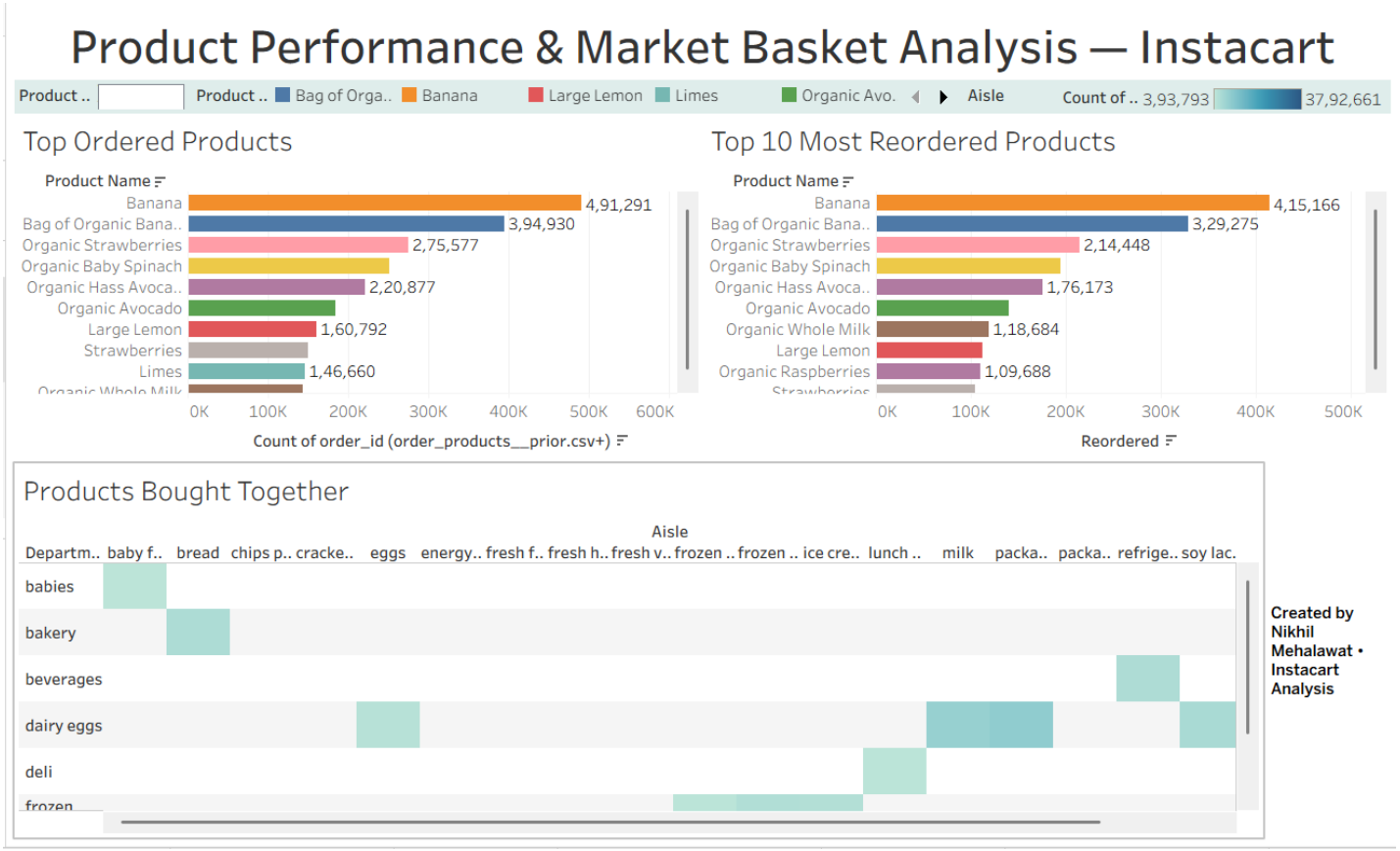

Figure: Product Performance & Market Basket Dashboard — interactive dashboards built in Tableau showing KPIs, segmentations and heatmaps.

Key Findings and Recommendations

Customer Retention: A large portion of users place only 1–2 orders; retention improves notably after a customer makes a second purchase. Recommend targeted onboarding offers after the first purchase to increase conversion to second order.

Reorder Behavior: Heavy shoppers (20+ orders) show the highest reorder probability (~68%+). Recommend loyalty programs targeted at medium shoppers to move them up the funnel.

Product Strategy: Top ordered and top reordered items are dominated by produce and staples (e.g., bananas). Consider dynamic inventory prioritization and smart replenishment for top SKUs.

Cross-sell Opportunities: Heatmap shows strong co-occurrence between Produce and Dairy, Snacks and Beverages. Recommend bundled promotions and targeted recommendations for these pairs.

Operational: Peak order hours and busiest days help staffing and delivery planning; use hour-of-day visualization for workforce scheduling.

Appendix — Calculations & How to Reproduce

To reproduce the project: 1. Download the Kaggle Instacart dataset: https://www.kaggle.com/datasets/yasserh/instacart-online-grocery-basket-analysis-dataset 2. Open Tableau Desktop and connect to the CSV files or create extracts for performance. 3. Build the data model by joining tables: orders -> order_products__prior & order_products__train (union logic) -> products -> aisles -> departments. 4. Create the calculated fields listed in the Methodology section. 5. Build the three dashboards: Sales Overview, Customer Behavior, Product Performance & Market Basket. Use filters (department, order_dow, order_hour_of_day) for interactivity. 6. Export packaged workbook (.twbx) to share the complete project.

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