Project Report: Retail Sales & Profit Dashboard

Client: Owner of Multiple Retail Stores
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Platform: Excel, Power BI

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Project Objective

The client, a non-technical owner of multiple retail stores across Brazil, was tracking sales data but lacked clear visibility into their business performance. The goal was to provide a visually intuitive, data-driven dashboard that would answer four core business questions:

- Which store is performing better in terms of sales and profit?
- What products are contributing most to the revenue?
- Are customer purchases increasing or decreasing over time?

The dashboard needed to be client-friendly, simple to navigate, and designed in a way that allowed dynamic filtering without overwhelming the user.

Datasets Used

Data was sourced from Olist's e-commerce platform. The files were structured CSVs containing multiple relational datasets:

File Name	Description
olist_orders_dataset.csv	Order lifecycle with timestamps and customer IDs
olist_order_items_dataset.csv	Line-item order details (product ID, price, freight)
olist_products_dataset.csv	Product metadata including categories
product_category_name_translation.csv	PT to English translation for product categories
olist_order_payments_dataset.csv	Payment values and types used per order
olist_order_reviews_dataset.csv	Star ratings and review comments per order
olist_customers_dataset.csv	Customer ID, state, and city info
olist_sellers_dataset.csv	Seller/store IDs and their locations
olist_geolocation_dataset.csv	Coordinates and geographic mappings

These files were loaded into Excel for data cleaning and transformation before being modelled and visualized in Power BI.

Data Cleaning & Transformation Steps

Standardization & Corrections

- **Text Cleaning**: Fixed malformed city names like sÃ£o paulo to sao paulo using Power Query transformations.
- **Column Normalization**: Renamed columns for clarity and consistency across tables.
- **Duplicate Removal**: Removed redundant records based on composite key logic.

Missing or Invalid Data Handling

- Removed 610 rows from olist_products_dataset.csv where product_category_name was null.
- Deleted 3 invalid entries in the payment dataset with payment_type = not_defined.

Derived Features Created

- **Time Features**: Extracted Month and Year from order purchase timestamps.
- **Profit Calculation**: Added Profit = Price - Freight and aggregated accordingly.
- **Discounts**: Derived Total Paid, Discount Amount, and Discount % using:
    - Discount Amount = item_total - payment_value
    - Discount % = Discount Amount / item_total
- **Repeat Customers**: Calculated by checking if customer_unique_id appeared more than once in the orders dataset.

Null Handling in Measures

- Used COALESCE() in all DAX measures to replace blank outputs with 0 in KPI cards for a cleaner dashboard experience.

KPIs and Calculated Measures

KPI Name	Description	DAX Formula
Total Sales	Sum of all item prices	SUM(order_items[price])
Total Profit	Sales minus freight cost	SUM(order_items[price] - order_items[freight_value])
Profit Margin %	Ratio of profit to sales	DIVIDE(Total Profit, Total Sales)
Avg. Order Value	Sales divided by order count	DIVIDE(Total Sales, Total Orders)
Avg. Review Score	Mean of all customer ratings	AVERAGE(order_reviews[review_score])
Repeat Customer %	Returning customers vs total	DIVIDE(Repeat Customers, Total Customers)

All metrics were designed to update dynamically based on slicer selections (Year, State, Seller, City).

Dashboard Design Overview

The dashboard was divided into four pages for clarity and focus:

1. Index Page

- Purpose: Provide an easy navigation menu and orient the user.
- Features:
    - Navigation buttons linked to all sub-pages.
    - Short, clear descriptions of each page's purpose to aid non-technical users.

2. Sales Trends Page

- Objective: Track monthly performance and high-performing areas.
- KPIs: Total Sales, Freight Cost, Total Profit, Profit Margin %
- Visuals:
    - **Monthly Sales Line Chart**
    - **Monthly Profit Bar Chart** (recently updated for better readability)
    - **Top Cities by Sales (Pie Chart)**
    - **Top Product Categories by Sales (Horizontal Bar Chart)** — updated from a funnel chart for better ranking visibility.
- Filters: Year, State

3. Store Performance Page

- Objective: Analyze individual seller performance across multiple metrics.
- KPIs: Total Sales, Total Profit, Avg. Order Value, Avg. Review Score
- Visuals:
    - **Monthly Sales (Bar Chart)**
    - **Top Product Categories by Sales Share (Donut Chart)**
    - **Geographical Sales Distribution (Map)**
- Filters: Seller, City, State, Year

4. Customer Behaviour Page

- Objective: Understand how customers interact with the business.
- KPIs: Total Customers, New Customers, Repeat Customers, Repeat %
- Visuals:
    - **Monthly Average Order Value (Line Chart)**
    - **Customer Review Score Distribution (Bar Chart)**
    - **Payment Methods (Donut Chart)**
    - **Preferred Installments (Pie Chart)**
- Filters: Year, City, State

Key Insights Delivered

- **Sales Concentration**: 60%+ of sales are concentrated in Sao Paulo, suggesting a regional skew in revenue.
- **Category Performance**: Top categories like health_beauty and watches_gifts contribute most to total sales.
- **Profit Spike**: September emerged as the most profitable month, indicating seasonal trends.
- **Low Retention**: Repeat customer rate is low (3.12%), signaling opportunities for loyalty campaigns.
- **Payment Preferences**: Majority (78%) of customers use credit cards; voucher usage is negligible.

Challenges and Solutions

Challenge	Solution
Nulls showing on KPI cards	Replaced with 0 using `COALESCE()` in DAX
Inconsistent city values	Standardized using Power Query transformation and manual cleanup
Missing product categories	Removed null records and used translation mapping for clarity
Complex funnel visuals	Replaced with bar charts for readability
Non-technical client understanding	Added plain-language descriptions and intuitive navigation