

ELECTRO HUB – SALES & PROFIT ANALYTICS

Internship Project Report

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Tools: Microsoft Power BI Desktop

Data: Electro Hub transactional data

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Business Questions & Mapping to Pages

- 1 Top/Bottom 5 products by Sales/Profit/Quantity Sold — *Top & Bottom 5 page*
- 2 Compare sales/profit/quantity between two periods — *Comparison page with dual date slicers*
- 3 Total number of orders — *KPI card on KPI page*
- 4 How do sales trends vary over time? — *Overview — Sales Trends by Period*
- 5 Show relationship between sales & profit — *Overview — Profit vs Net Sales (scatter)*
- 6 Average discount offered in each promotion category — *Overview — Average Discount by Promotion*
- 7 Sales by different cities — *Overview — Sales by City map*
- 8 Order-level Sales/Profit/Discount table with filters — *Table Visual page*

Data Cleaning & Transformation

- Imported raw sales, product, customer, and promotion datasets from Electro Hub's Transactional data set in Excel into Power Query Editor.
- Applied essential data cleaning steps:
 - Removed null and duplicate rows.
 - Standardized column headers (consistent naming).
 - Ensured proper data types (e.g., dates as *Date*, IDs as *Text/Whole Number*, amounts as *Decimal*).
 - Removed unnecessary columns to reduce model complexity.
- Created calculated columns for Net Sales (Sales – Discounts) and verified consistency of values.
- Ensured uniform formatting across all tables for seamless modelling.

Data Modelling

- Star schema layout — Fact table at centre; dimensions: *DimCustomer*, *DimProduct*, *DimPromotion*, plus Date tables.
- Create relationships — One-to-many (Dimension → Fact) on matching keys: `CustomerID`, `ProductID`, `PromotionID`. Keep cross-filter direction Single (Dimension → Fact).
- Data type consistency — Verified relationship keys have identical data types across tables (Text↔Text, Date↔Date).

Key DAX Measures

Total Sales Measure:

- $\text{TotalSales} = [\text{UnitsSold}] * [\text{PricePerUnit}]$

Custom Columns:

- $\text{DiscountValue} = ([\text{TotalSales}] * [\text{Discount\%}]) / 100$
- $\text{NetSales} = [\text{TotalSales}] - [\text{DiscountValue}]$

Basic measures:

- $\text{Total Sales} = \text{SUM}(\text{FactSales}[\text{Total Sales}])$
- $\text{Net Sales} = \text{SUM}(\text{FactSales}[\text{Net Sales}])$
- $\text{Total Profit} = \text{SUM}(\text{FactSales}[\text{Profit}])$
- $\text{Orders Count} = \text{DISTINCTCOUNT}(\text{FactSales}[\text{Order ID}])$
- $\text{Avg Discount \%} = \text{AVERAGE}(\text{FactSales}[\text{Discount Percentage}])$

Two-period comparison measures

- $\text{Sales_Period2} = \text{CALCULATE}(\text{SUM}(\text{Fact}[\text{NetSales}]), \text{ALL}('DateTable1'), \text{USERELATIONSHIP}('DateTable2'[\text{Date}], \text{Fact}[\text{Date}]))$

Measure to enable slicer cross-interaction

- $\text{SumDim} = \text{SUM}(\text{Fact}[\text{NetSales}])$

KPI Overview – Sales, Profit, Orders, Average Discount

Electro Hub Sales & Profit Dashboard



Prepared by-
Laya Meghana

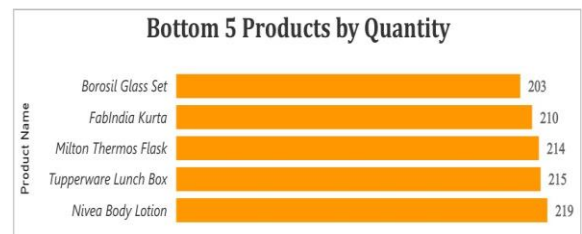
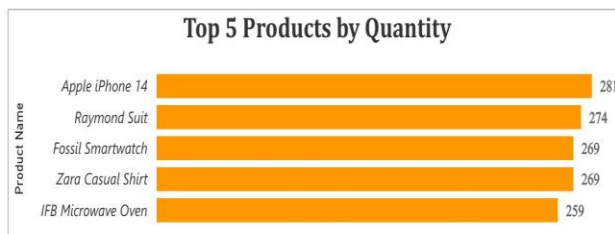
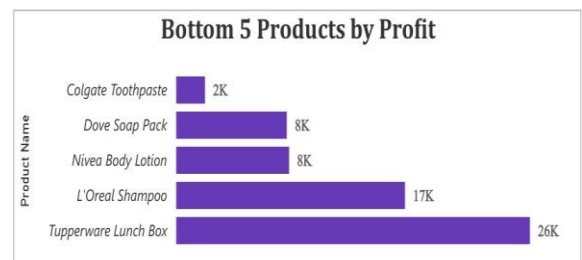
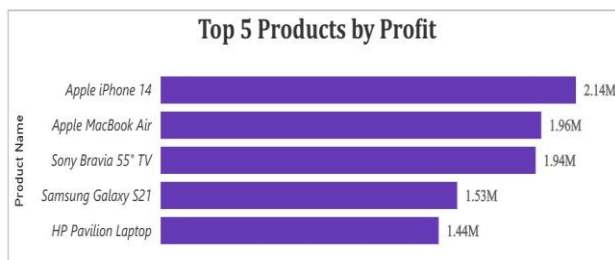
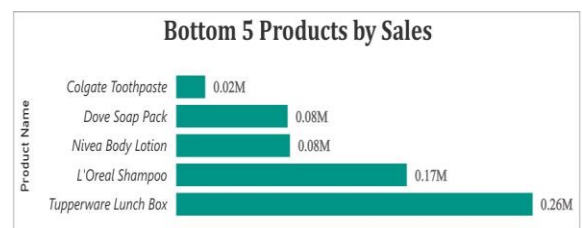
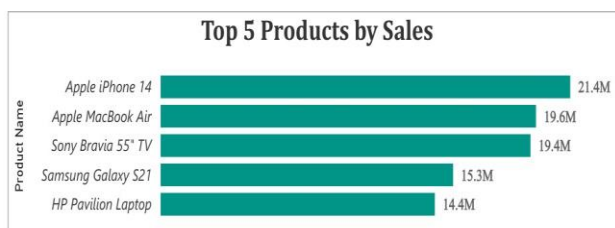
KPI card page summarizing company-wide performance.

- 122.31M Total Sales and 12.23M Total Profit over the period.
- 3,510 Total Orders placed.
- Average Discount % provided as a governance metric.

Top & Bottom 5 Products by Sales, Profit and Quantity

- Created a new Profit column in Power Query.
- Built bar charts with Product Name on Y-axis and measures (Net Sales, Unit Sold, Profit) on X-axis.
- Applied Top N filters (Top 5 and Bottom 5) for each metric.
- Added data labels, custom titles, borders, and colors for clarity.
- Used visual-level filters to ensure results are isolated to each chart.

Top & Bottom 5 Products by Sales, Profit and quantity



- High-end electronics like iPhone 14 and MacBook generate the **highest sales and profits**.
- Everyday items like soap and shampoo contribute less, suggesting scope for **promotions or bundling strategies**.
- Quantity sold is highest for **fast-moving items**, but profit margins vary, highlighting a **need for pricing optimization**.
- Bottom 5 products show minimal revenue and profit contribution, suggesting targeted promotions or phase-out decisions.

Ranking visuals highlight best and worst performers across three metrics.

- High-end electronics like iPhone 14 and MacBook generate the highest sales and profits.
- Everyday items like soap and shampoo contribute less, suggesting scope for promotions or bundling strategies.
- Quantity sold is highest for fast-moving items, but profit margins vary, highlighting a need for pricing optimization.
- Bottom 5 products show minimal revenue and profit contribution, suggesting targeted promotions or phase-out decisions.

Period Comparison – Sales vs Profit vs Quantity

- Added two Date tables (Date Table 1 and Date Table 2) using the CALENDAR AUTO function.
- Created relationships with the Fact Table:
 - Date Table 1 → Fact Table as an active relationship.
 - Date Table 2 → Fact Table as an inactive relationship (used later via DAX).
- Placed two Date slicers on the page (Date Filter 1 & Date Filter 2) to allow user selection of periods.
- Built measures with CALCULATE, ALL, and USERELATIONSHIP to activate Date Table 2 dynamically:
 - Total Sales (Sales 1 & Sales 2)
 - Total Profit (Profit 1 & Profit 2)
 - Total Quantity Sold (Quantity 1 & Quantity 2)
- Designed three clustered column charts to display side-by-side comparisons of the two selected periods.
- Applied formatting (titles, colors, borders, and legends) to clearly distinguish values for each period.

Comparison of Sales, Profit, Quantity Between Two Periods



Dual date slicers enable head-to-head comparisons between any two ranges.

- Use the top slicers to pick Period 1 and Period 2. Bars display the aggregated totals per period.
- Works for seasonality checks (e.g., festival months vs baseline) and campaign measurement.

Overview – Trends, Profit vs Sales, City & Discounts

Relationship between Sales & Profit

- Created a scatter plot with Profit on X-axis and Sales on Y-axis.
- Changed aggregation to “Don’t Summarize” to show each data point.
- Formatted axes, gridlines, and markers for clarity.

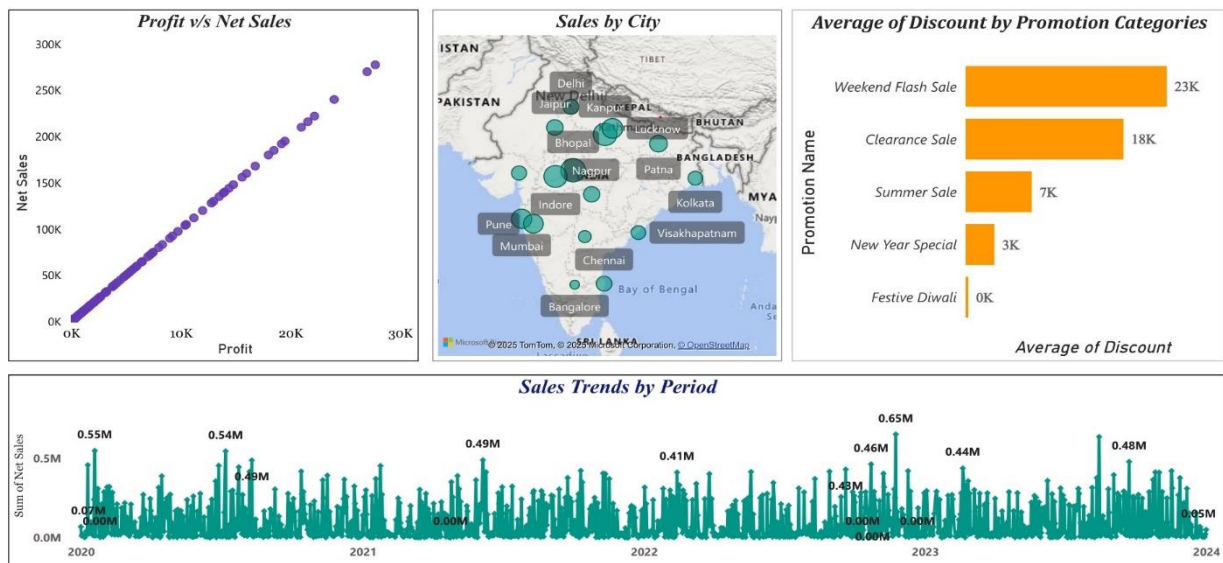
Average Discount by Promotion Category

- Designed a bar chart showing average discount across promotion categories.
- Removed “blank” category caused by orders without promotions.
- Applied consistent formatting for visual alignment.

Sales by City

- Implemented a map visual with bubbles sized by Net Sales.
- Set City column as geographic data for correct mapping.
- Larger bubbles highlight cities with higher sales.
- Formatted titles and labels for readability.

Profit, Sales, Discounts & City Trends Overview



All-in-one page for trend monitoring and geographic & promotion insights.

- Daily Sales Trend shows spikes and seasonality across 2020–2023.
- Scatter plot confirms a strong positive relationship between Net Sales and Profit.
- Average Discount by promotion type quantifies markdown intensity for each campaign.

Order-Level Table – Sales, Profit, Discounts

- Added a new report page with a table visual to display complete order-level details from the Fact Table, including:
 - Customer ID, Order ID, Date
 - Product ID, Promotion ID
 - Discount, Discount %
 - Net Sales, Total Sales, Profit, Units Sold, Price per Unit
- Reformatted the table for better readability:
 - Adjusted column order (e.g., Order ID after Customer ID, Product/Promotion IDs grouped together).
 - Changed aggregation settings from “Sum” to Don’t Summarize for numeric fields.
 - Applied styling (borders, alternating rows).
- Added interactive slicers from dimension tables to filter the table:
 - **Date** (Date Table)
 - **Customer Name** (Customer Dimension)
 - **Product Name** (Product Dimension)
 - **Promotion Name/Category** (Promotion Dimension)
- Demonstrated filtering:
 - Selecting a customer shows only their orders.
 - Selecting a product or promotion filters order details accordingly.
 - Blank promotion indicates no discount offered.

Order-Level Sales, Profit, and Discounts

| | | | | | | | |
|---|--|--|--|---|--|---|--|
| Date ▼ All ▼ | | Customer Name ▼ All ▼ | | Product Name ▼ All ▼ | | Promotion Name ▼ All ▼ | |
|---|--|--|--|---|--|---|--|

| Customer ID | Order ID | Product ID | Promotion ID | Date (dd/mm/yyyy) | Discount | Discount Percentage | Net Sales | Price Per Unit | Profit | Total Sales | Units Sold |
|-------------|----------|------------|--------------|-------------------|-----------|---------------------|-----------|----------------|----------|-------------|------------|
| 1 | 29 | P018 | 0 | 30 January 2020 | 0.00 | 0 | 2,299.00 | 2299 | 229.90 | 2299 | 1 |
| 1 | 59 | P011 | 0 | 11 February 2020 | 0.00 | 0 | 4,497.00 | 1499 | 449.70 | 4497 | 3 |
| 1 | 87 | P010 | 0 | 28 February 2020 | 0.00 | 0 | 4,398.00 | 2199 | 439.80 | 4398 | 2 |
| 1 | 160 | P017 | 0 | 07 March 2020 | 0.00 | 0 | 20,998.00 | 10499 | 2,099.80 | 20998 | 2 |
| 1 | 207 | P012 | 0 | 17 March 2020 | 0.00 | 0 | 5,998.00 | 2999 | 599.80 | 5998 | 2 |
| 1 | 222 | P002 | PR001 | 20 April 2020 | 13,999.80 | 20 | 55,999.20 | 69999 | 5,599.92 | 69999 | 1 |
| 1 | 268 | P010 | PR001 | 30 April 2020 | 879.60 | 20 | 3,518.40 | 2199 | 351.84 | 4398 | 2 |
| 1 | 310 | P020 | PR001 | 02 May 2020 | 5,199.60 | 20 | 20,798.40 | 12999 | 2,079.84 | 25998 | 2 |
| 1 | 424 | P020 | PR001 | 22 May 2020 | 2,599.80 | 20 | 10,399.20 | 12999 | 1,039.92 | 12999 | 1 |
| 1 | 435 | P003 | 0 | 01 June 2020 | 0.00 | 0 | 89,999.00 | 89999 | 8,999.90 | 89999 | 1 |
| 1 | 496 | P013 | 0 | 02 June 2020 | 0.00 | 0 | 47,997.00 | 15999 | 4,799.70 | 47997 | 3 |
| 1 | 506 | P011 | 0 | 15 June 2020 | 0.00 | 0 | 4,497.00 | 1499 | 449.70 | 4497 | 3 |
| 1 | 553 | P011 | 0 | 24 June 2020 | 0.00 | 0 | 4,497.00 | 1499 | 449.70 | 4497 | 3 |
| 1 | 561 | P009 | 0 | 28 June 2020 | 0.00 | 0 | 10,497.00 | 3499 | 1,049.70 | 10497 | 3 |
| 1 | 752 | P030 | PR004 | 18 July 2020 | 199.50 | 50 | 199.50 | 399 | 19.95 | 399 | 1 |
| 1 | 788 | P008 | 0 | 20 July 2020 | 0.00 | 0 | 10,008.00 | 5400 | 1,000.80 | 10008 | 2 |
| Total | | | | | | | | | | | |

Detail page supports drill-down by Date, Customer, Product, and Promotion using slicers.

- Columns include Net Sales, Total Sales, Profit, Units, Discount %, etc.
- Use column sorting and search to isolate transactions for audits or customer service cases.

Enhancing Interactivity and Formatting

- Formatted slicers for consistency:
 - Changed all slicers to dropdown style.
 - Aligned and evenly distributed slicers horizontally for a cleaner layout.
- Enabled dynamic interaction between slicers (cross-filtering):
 - Created a measure (`SumDim = SUM(Fact[Net Sales])`) to use in visual-level filters.
 - Applied condition “Show items when value is not blank” across slicers.
 - This ensured that slicers (Customer, Product, Date, Promotion) dynamically filter each other instead of working independently.

Business Value of the Dashboard

- Enables leaders to identify top- and bottom-performing products for inventory and assortment planning.
- Supports city-level targeting of promotions and optimized logistics planning.
- Helps assess effectiveness of discount campaigns and their impact on profitability.
- Provides transaction-level visibility for operational audits and customer service resolution.
- Facilitates seasonality and trend analysis for proactive business decision-making.