**Power BI Capstone Project Report: Maven Electronics Retailer Sales Dashboard**

**Executive Summary**

This report presents the findings from a comprehensive Power BI dashboard developed to analyze the sales performance of a global electronics retailer (Maven Electronics), focusing on identifying and addressing the revenue decline observed since 2020. The dashboard, built using Power BI Desktop, leverages five datasets (Sales.csv, Exchange\_Rates.csv, Stores.csv, Products.csv, Customers.xlsx) to create an interactive, data-driven visualization tool. Key performance indicators (KPIs) such as total revenue, profit, quantity sold, and customer count were analysed and presented as a four-page dashboard: Overview, Trends Over Time, Product & Customer Insights, and Store & Regional Performance. The analysis reveals a 3.2% year-over-year (YoY) decline in revenue since 2020, driven by underperforming product categories (e.g., Home Appliances) and regional challenges (e.g., Europe). Recommendations include optimising product offerings, targeting high-value customer segments (older People), and reassessing store strategies in low-performing regions. The report is published to Power BI Service for stakeholder access.

**Introduction**

The Maven Global Electronics Retailer seeks to understand the factors contributing to its revenue decline since 2020 and identify opportunities for growth. The Power BI dashboard addresses this by providing interactive visuals that enable exploration of sales, profit, customer demographics, and regional performance. The star schema data model connects the Sales fact table to dimension tables (Customers, Stores, Products, Exchange\_Rates, Calendar) for robust analysis. This report outlines the design of the dashboard, key findings, and actionable recommendations.

**Methodology**

The dashboard was built using Power BI Desktop (version: September 2025) following these steps:

**1. Data Import and Cleaning**:

* Loaded five datasets (Sales.csv, Exchange\_Rates.csv, Stores.csv, Products.csv, Customers.xlsx) using Power BI’s Get Data feature.
* Cleaned in Power Query: Removed duplicates, standardized data types (e.g., Dates as Date, Currency as Decimal), handled nulls (e.g., Delivery Date blanks), and added calculated columns (e.g., Customer Age, Store Age).
* Created a Currency bridge table (DimCurrency) to resolve many-to-many issues with Exchange\_Rates[Currency].

**2. Data Modelling**: Built a star schema in the Model view. The relationships are:

* Sales[CustomerKey] → Customers[CustomerKey] (many-to-one).
* Sales[StoreKey] → Stores[StoreKey].
* Sales[ProductKey] → Products[ProductKey],
* Sales[Order Date] → Calendar[Date].
* Sales[Currency Code] → DimCurrency[Currency].
* DimCurrency[Currency] → Exchange\_Rates[Currency].

Also created a Calendar table for time intelligence marked as date table for YoY calculations.

**3**. **DAX Measures**:

- Defined KPIs such as total Revenue USD: total Profit USD, Revenue YoY %, and Exchange Rate. This measures support slicing by year, currency, and product.

**4. Dashboard Design**: I designed a four (4) page dashboard:

* Overview (KPIs), Trends (Quarterly analysis), Product & Customer Insights (category/customer breakdowns), and Store & Regional Performance for geographic insights.
* The visuals used were Cards, Line Charts, Treemaps, Doughnut Charts, Bar Charts, Scatter Plots, and Tables, including slicers and filtering.

**5. Publishing**: I exported to Power BI Service (app.powerbi.com) for sharing. Which can cab gotten via the link: <https://app.powerbi.com/links/ErewPY8vIq?ctid=26ae6adf-61be-443f-8dc4-6531b61a9a38&pbi_source=linkShare&bookmarkGuid=429ab33d-e709-450c-b33f-557ae7e5f68e>

**Key Findings**

Analysis of the dashboard reveals critical insights into the retailer’s performance:

**1. Revenue Decline Since 2020:**

Total Revenue USD: $5.2M in 2021, down 3.2% YoY from 2020 ($5.37M).

Profit also declined 4.5% YoY, signalling margin compression.

**Cause**: Drop in high-margin categories (e.g., Audio down 5% and Games and toys) and regional slowdowns in European countries like France, the Netherlands and Italy.

**2. Product Performance**:

**Top Performers**: Cell Phones (30% revenue, $1.6M) and Audio (40%, $2.1M). Smartphones and MP3 Players lead subcategories.

**Underperformers**: Home Appliances (10%, $0.5M) and Accessories (5%, $0.25M) show low margins (e.g., Toasters at 10% vs. Audio’s 25%).

Bottom 10 products (e.g., Contoso Toaster M12) contribute <5% to revenue.

**3. Customer Segments**:

* **Age Groups**: Adults (25-40) drive 50% of revenue ($2.6M), but Young (18-25) is declining faster (-10% YoY).
* **Gender**: Male customers are slightly higher (52% vs. 48%), but females are increasing their purchases of high-value items (e.g., Cell Phones).

**4. Regional Insights**:

* **Strong Markets**: US (40% revenue, $2.08M) and Canada (25%, $1.3M).
* **Weak Markets**: Europe (France, Netherland and Italy) down 15% YoY, possibly due to smaller stores as the scatter plot shows stores with larger size have gave higher revenue.
* Larger stores (>1000 sq meters) correlate with higher profits (e.g., US stores average $500K profit).

**5. Seasonal Trends:**

* Revenue peaks in Q4 and Q1 (holiday season and cold period, approximately 30% of annual sales) but dips in Q2.
* Post-2020, Q3 recovery is slower, impacting annual totals.

**Recommendations**

Based on the insights, the following actions are proposed to reverse the revenue decline and boost profitability:

**1. Optimize Product Portfolio:**

* **Action**: Phase out low-margin products (e.g., Home Appliances, Bottom 10 like Toasters) or bundle with high-margin items (e.g., Smartphones).
* **Rationale**: Appliances contribute only 10% to revenue but drag margins (10% vs. 25% for Audio).
* **Impact**: Potential 5-7% profit margin increase by focusing on Cell Phones/Audio.

**2. Target High-Value Customers**:

* **Action:** Launch campaigns for Young (18-25) customers (e.g., discounts on MP3 Players) to curb their 10% YoY decline.
* **Rationale**: The Young segment is 25% of revenue but is losing share.
* **Impact**: Retain $0.5M in revenue by stabilizing this segment.

**3. Strengthen Regional Strategies:**

* **Action**: Review underperforming European stores (UK, Germany). Consider closing small stores (<500 sq meters) or investing in larger formats.
* **Rationale**: Europe’s 15% YoY drop contrasts with US/Canada strength.
* **Impact**: Reallocating resources could recover $0.3M in lost revenue.

**4. Leverage Seasonal Peaks**:

* **Action**: Increase Q3 marketing (e.g., back-to-school promotions) to mitigate seasonal dips.
* **Rationale**: Q3 weakness exacerbates annual declines.
* **Impact**: 10% uplift in Q3 could add $0.2M annually.

**Conclusion**

The Power BI dashboard successfully visualizes the Maven Global Electronics Retailer’s sales performance, confirming a 3.2% revenue decline since 2020 driven by weak product categories, regional challenges, and seasonal dips. The star schema model ensures accurate, multi-dimensional analysis, while interactive visuals (Treemaps, Line Charts, Tables) empower stakeholders to explore data. Implementing the recommendations, optimizing products, targeting young customers, and strengthening regions could recover $1M+ in revenue and improve margins by 5%. The dashboard is published to Power BI Service for ongoing monitoring.