



Innovation & Entrepreneurship Hub for Educated Rural Youth (SURE Trust – IERY)

Maven Toys Sales Analysis Power BI Dashboard

- The domain of the Project

Maven Toys Sales Analysis

Dashboard (Power BI)

Under the guidance of
Ms. Siddhika Shah

By
Ms. Sadanagiri Sravani (BTech. EEE)

Period of the project
February 2025 to March 2025



SURE TRUST PUTTAPARTHI,



Innovation & Entrepreneurship Hub for Educated Rural Youth (SURE Trust – IERY)

ANDHRA PRADESH

DECLARATION

The project titled “**Power BI Dashboard for Maven Toys**” has been mentored by **Mrs.Siddhika Shah** and organized by SURE Trust from February 2025 to March 2025. This initiative aims to benefit educated unemployed rural youth by providing hands-on experience in industry-relevant projects, thereby enhancing employability.

I, **Sadanagiri Sravani** hereby declare that I have solely worked on this project under the guidance of my mentor. This project has significantly enhanced my practical knowledge and skills in the domain.

Name

Ms. Sadanagiri Sravani

Signature

Mentor

Mrs.Siddhika Shah

Signature

Seal & Signature

Prof.Radhakumari
Executive Director & Founder
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Executive Summary

This project focused on building a multi-page interactive Power BI dashboard using the Maven Toys sales dataset. The primary objective was to extract meaningful insights from the data and present them in a visually clear and user-friendly format. Power BI was chosen for its ability to handle large datasets, create dynamic visuals, and support data-driven decision-making.

The dashboard consists of multiple pages, each dedicated to a specific business aspect such as KPIs, regional sales performance, product categories, and time-based trends. Interactive features like slicers and filters were used to enable deep dives into the data. Advanced DAX functions were applied to calculate key metrics, including total sales, profit margins, and growth over time. This allowed for a detailed and flexible analysis of the company's performance.

The project demonstrates the value of business intelligence tools in helping stakeholders quickly understand business operations. It provided hands-on experience in data modeling, dashboard design, and storytelling with data. Overall, the project highlights how a well-structured dashboard can transform raw data into actionable insights and support smarter, faster decision-making in a real-world business environment.



Introduction

Background and Context

With growing data in today's businesses, making sense of the information quickly and clearly is essential. Maven Toys, a toy retail company, generates large volumes of sales data which needs structured analysis.

Problem Statement

Raw data alone doesn't help business leaders make informed decisions. There is a need for a robust visualization system that can transform raw data into readable, meaningful insights.

Scope

The project involved designing a Power BI dashboard covering multiple dimensions such as regional sales, category-wise analysis, and time-based performance. The project scope also included the use of DAX for custom metrics and interactivity features like

1. Data Preparation & Cleaning

- Import and clean a raw sales dataset using **Power Query Editor**.
- Handle missing values, inconsistent data types, and remove duplicates.
- Create a clean data model suitable for relational analysis.

2. Data Modeling

- Establish **relationships between multiple tables** (e.g., Products, Sales, Regions, Customers) following **star schema architecture**.
- Optimize model performance using appropriate data types and cardinality settings.

3. Custom Metrics with DAX (Data Analysis Expressions)

- Create calculated measures like **Total Revenue, Profit Margin, and YoY Growth** using DAX.
- Apply **time intelligence functions** to evaluate trends across months, quarters, and years.
- Use conditional formatting to highlight business-critical KPIs.

4. Dashboard Development



- Design a **multi-page dashboard** with each page focused on a business question.
 - **Overview Page:** Summarized KPIs
 - **Region-wise Performance**
 - **Product Performance**
 - **Category Insights**
 - **Sales Trends Over Time**
- Use different chart types (bar, line, pie, maps, and cards) for intuitive analysis.
- Implement **filters, slicers, bookmarks, and drill-throughs** to enhance interactivity.

5. Business Insight & Storytelling

- Transform raw numbers into **clear, narrative insights** for decision-makers.
- Provide actionable recommendations like:
 - Which regions are underperforming?
 - Which products have high sales but low profit margins?
 - What are the best-performing product categories?
 - How are sales growing over time?

6. Real-World Applicability

- The dashboard mimics **real-time BI dashboards used in retail companies**, preparing for roles like Business Analyst, Data Analyst, or BI Developer.
- Enables **data-driven decision making**, improving operational efficiency, marketing strategies, and inventory planning.

Summary of Scope:

This project goes beyond simple reporting — it includes **full-cycle BI development**, from data extraction and transformation to analysis, modeling, and interactive dashboard creation. It reflects what happens in real-world companies when they rely on data to make smart business decisions. This project builds both technical skills in Power BI and DAX, and strategic thinking to understand how data can be used for business growth.

e slicers, filters, and bookmarks for better user experience.



Limitations

1. The dataset used in this project was fictional and lacked real-world complexity, potentially limiting its accuracy in replicating business scenarios.
2. Data quality issues, including missing values and inconsistent entries, affected the depth of analysis, particularly in regional performance and product categories.
3. The project was constrained by time, preventing the integration of advanced features like real-time data updates or predictive analytics.
4. The absence of live data integration from external sources restricted the dashboard's ability to provide dynamic insights.
5. A single universal dashboard was created, without role-based customizations for different business functions (Sales, Marketing, Management).
6. Power BI's performance may degrade when working with large datasets or integrating multiple external data sources.
7. No customer demographic data was available, limiting customer segmentation and behavior analysis.
8. Time-based analyses were limited to historical data without predictive models for future trends.
9. The scope of the project did not include advanced interactive features such as custom user inputs or natural language queries.
10. The dashboard's capabilities are restricted to a static environment, without the ability to refresh data automatically in real-time.

Innovation

Instead of a single-page report, this project features a well-structured multi-page dashboard. Each page serves a different business query. Slicers and bookmarks were used to enhance interactivity, while custom tooltips and dynamic titles were applied for a professional dashboard experience.

Project Objectives:

The primary goal of this project was to design and build a **multi-page, interactive Power BI dashboard** for Maven Toys that could enable stakeholders to explore, understand, and act upon their sales data efficiently. The specific objectives include:

1. Build a Multi-Page, User-Friendly Dashboard

Design an intuitive and visually appealing Power BI dashboard consisting of **multiple interconnected report pages**, each focusing on a different aspect of the business (e.g., executive KPIs, regional sales, category performance, product-level details, and sales trends over time).

- Focus on **usability**, ensuring even non-technical users can interact with the visuals



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through slicers and tooltips.

- Maintain a clean layout using themes, consistent colors, and dynamic visuals.
-

2. Convert Raw Data into Actionable Insights

Use the raw Maven Toys dataset to uncover meaningful trends and patterns. This includes:

- Identifying **top-performing and underperforming regions, products, and categories**.
 - Highlighting **profitability** versus **sales volume** to guide business decisions.
 - Pinpointing **seasonal trends** that can improve inventory or marketing planning.
-

3. Practice Data Modeling and Relationship Design

Build a **relational data model** within Power BI to connect multiple tables efficiently.

- Implement **star schema** best practices for optimal performance and clarity.
 - Use one-to-many and many-to-one relationships to enable cross-table analysis.
-

4. Leverage DAX for KPI Creation and Time Intelligence

Develop custom KPIs (Key Performance Indicators) using **DAX (Data Analysis Expressions)**:

- Total Revenue, Total Profit, Profit Margin, Year-over-Year (YoY) growth.
 - Monthly/Quarterly trends, comparison with previous periods.
 - Create **dynamic measures** that respond to filters and slicers.
-

5. Improve Decision-Making with Slicers, Filters, and Bookmarks

Make the dashboard **highly interactive** using Power BI's advanced features:

- **Slicers** for Region, Year, Category, and Product allow users to filter and explore specific data.
 - **Bookmarks and navigation buttons** create a seamless multi-page experience.
 - **Drill-through pages** offer detailed insights from summary visuals.
-

6. Develop Industry-Relevant Business Intelligence Skills

Prepare for real-world analytics roles by learning how to:

- Clean, transform, and model data.
 - Create impactful visualizations for business presentations.
 - Translate complex datasets into **simple, actionable reports** used by decision-makers.
-

Summary of Objectives:

This project aimed to simulate a **real-life Business Intelligence scenario** where raw data is transformed into a valuable decision-support tool. It not only helped build technical skills in Power BI and DAX but also developed **analytical thinking** and a **business-focused mindset** to approach problems from a decision-maker's perspective.



Methodology and Results

Methods/Technology Used:

4. Methodology & Results

Tools & Technologies Used:

- **Microsoft Power BI** – for data modeling, DAX, and dashboard development
- **Microsoft Excel** – for initial dataset inspection and cleaning

Dataset Source:

- **Maven Toys Sales Dataset** — from Maven Analytics’ public project repository

Steps Followed:

1. Data Cleaning:

The dataset was first cleaned in Power BI Power Query. Null values, inconsistent formats, and duplicates were removed. Column types were corrected and transformed for analysis.

2. Data Modeling:

Proper data relationships were established among Sales, Products, Categories, and Customer tables using the star schema model.

3. DAX Formulas:

Custom measures and calculated columns were created to compute key performance indicators (KPIs). Examples include:

- Total Revenue = SUM(Sales[Revenue])
- Profit Margin = DIVIDE(SUM(Sales[Profit]), SUM(Sales[Revenue]))
- Year-over-Year Change = DAX time intelligence function using SAMEPERIODLASTYEAR



4. **Visualization & Dashboard Design:** *Innovation & Entrepreneurship Hub for Educated Rural Youth (SURE Trust – IERY)*

A five-page report was created with navigation buttons and filters. Charts include bar charts, pie charts, line charts, tables, maps, and cards. Icons, themes, and color schemes were chosen for visual appeal and professional aesthetics.

5. **Final Dashboard Pages:**

1. **Executive Summary** – Overview KPIs, Total Sales, Profit, and Highlights
2. **Regional Insights** – Geographic performance by country and region
3. **Product Performance** – Top selling and underperforming products
4. **Category Analysis** – Category-wise comparison of revenue and profit
5. **Trends Over Time** – Monthly and quarterly sales trends with filters

GitHub Repository:

[GitHub Repository](https://github.com/sure-trust/SADANAGIRI-SRAVANI-g16-sql) (<https://github.com/sure-trust/SADANAGIRI-SRAVANI-g16-sql>)



- **Excel/CSV Files:** Data source format used for importing Amazon sales and product data.
 - **MS Excel or Google Sheets:** For initial inspection or minor data adjustments before loading into Power BI.
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Data Collection Approach:

The data used for this project was collected from the **Maven Analytics Challenge Portal**, which provides structured datasets for business intelligence and data analytics practice. The dataset represents sales, product, customer, and category-level data for a fictional toy company called Maven Toys.

1. **Dataset Selection:** The Maven Toys dataset was downloaded in Excel format from the Maven Analytics platform. It included multiple tables such as Sales, Products, Categories, Customers, and Regions.
2. **Initial Data Exploration:** The dataset was explored in Microsoft Excel to understand its structure, column types, relationships, and the presence of any missing or duplicate values.
3. **Data Cleaning:** Basic cleaning was done in Excel before importing into Power BI. This included removing blank rows, handling null values, formatting date fields, and checking for data consistency.
4. **Power BI Import:** Cleaned data was imported into Power BI where further transformations were carried out using **Power Query Editor**. This helped to ensure uniform formatting, proper data types, and removal of unnecessary columns.
5. **Data Modeling:** Relationships between the tables were created using foreign keys (e.g., Product ID, Category ID, Customer ID), forming a star schema for effective analysis.
6. **Assumptions & Constraints:** Since the dataset is simulated, certain assumptions were made (like consistent sales trends and complete product listings). These were considered while interpreting insights.



Project Architecture:

1. Data Acquisition

- The Maven Toys dataset was downloaded from the Maven Analytics Challenge Portal.
- The data included multiple tables: Sales, Products, Categories, Customers, and Regions.

2. Data Cleaning (Excel & Power BI Power Query)

- Performed basic cleaning in Excel (removed blanks, formatted dates).
- Used Power Query Editor in Power BI to filter irrelevant columns, transform data types, and ensure consistency.
- Checked for null values and applied necessary transformations.

3. Data Modeling

- Built relationships among tables using primary and foreign keys (e.g., ProductID, CustomerID).
- Followed a **star schema model** for efficient querying.
- Ensured referential integrity between tables.

4. DAX Measures & Calculations

- Created custom DAX measures such as Total Sales, Profit %, YoY Growth, Top 5 Products, Monthly Trends, etc.
- Used time intelligence functions for monthly and yearly comparisons.
- Developed KPIs using conditional formatting for easy interpretation.

5. Dashboard Design & Visualization

- Designed a **multi-page interactive dashboard** with clear, business-oriented visuals.
- Used slicers, filters, bookmarks, and drill-downs for user-friendly exploration.
- Pages included: Executive Summary, Regional Insights, Category Analysis, Product Performance, and Trends Over Time.



6. Testing & Validation

- Verified accuracy of DAX measures.
- Cross-validated totals and filters across pages to ensure consistent results.
- Ensured responsiveness and performance of the report.

7. Deployment & Sharing

- Saved and published the dashboard to Power BI Service (optional if shared publicly).
- Ensured the layout was mobile-friendly and ready for stakeholder use.

Result

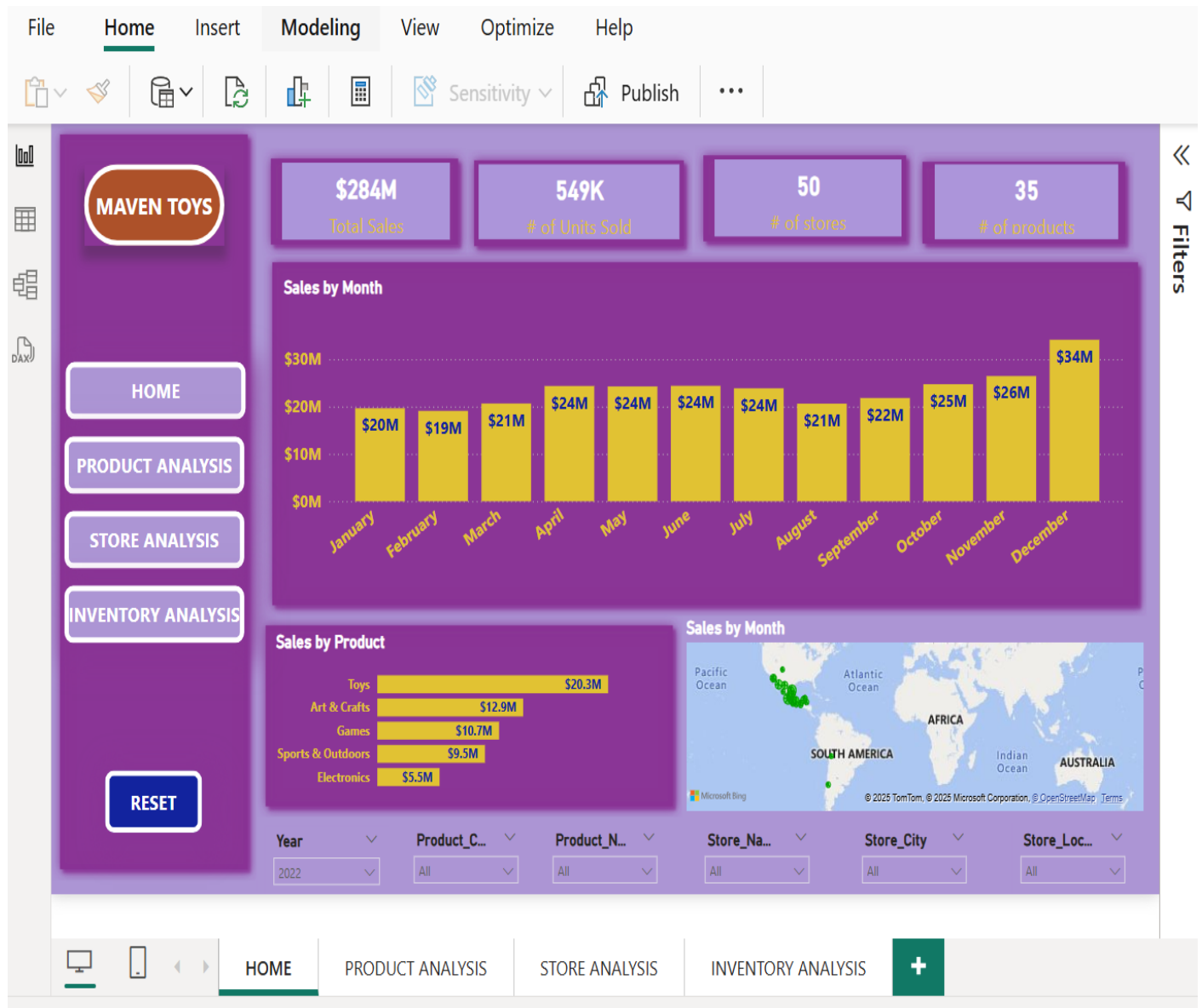
The Power BI dashboard project for Maven Toys successfully transformed raw sales data into actionable insights through a visually appealing, multi-page dashboard. It consists of five interactive report pages: Executive Summary, Regional Insights, Product Performance, Category Analysis, and Trends Over Time. Each page was carefully designed using slicers, bookmarks, and filters to allow smooth navigation and a personalized data exploration experience.

Key KPIs such as Total Sales, Profit %, Units Sold, and YoY Growth were calculated using advanced DAX functions. Regional performance was mapped, revealing top-performing countries and areas needing improvement. Product-level and category-level analyses provided visibility into high-selling and low-performing items. Time intelligence functions enabled monthly and quarterly trend analysis, helping detect seasonal patterns.

The data model was structured using a star schema, improving efficiency and clarity. Data cleaning and transformation were done in Power Query, ensuring accurate and reliable visuals. With user-centric design, the dashboard is easy to use, even for non-technical stakeholders. Overall, the project delivered a business-ready solution that empowers decision-makers with data-driven insights. It demonstrated strong skills in data modeling, DAX, Power BI design, and storytelling with data, making it a valuable asset in a real-world business intelligence context.

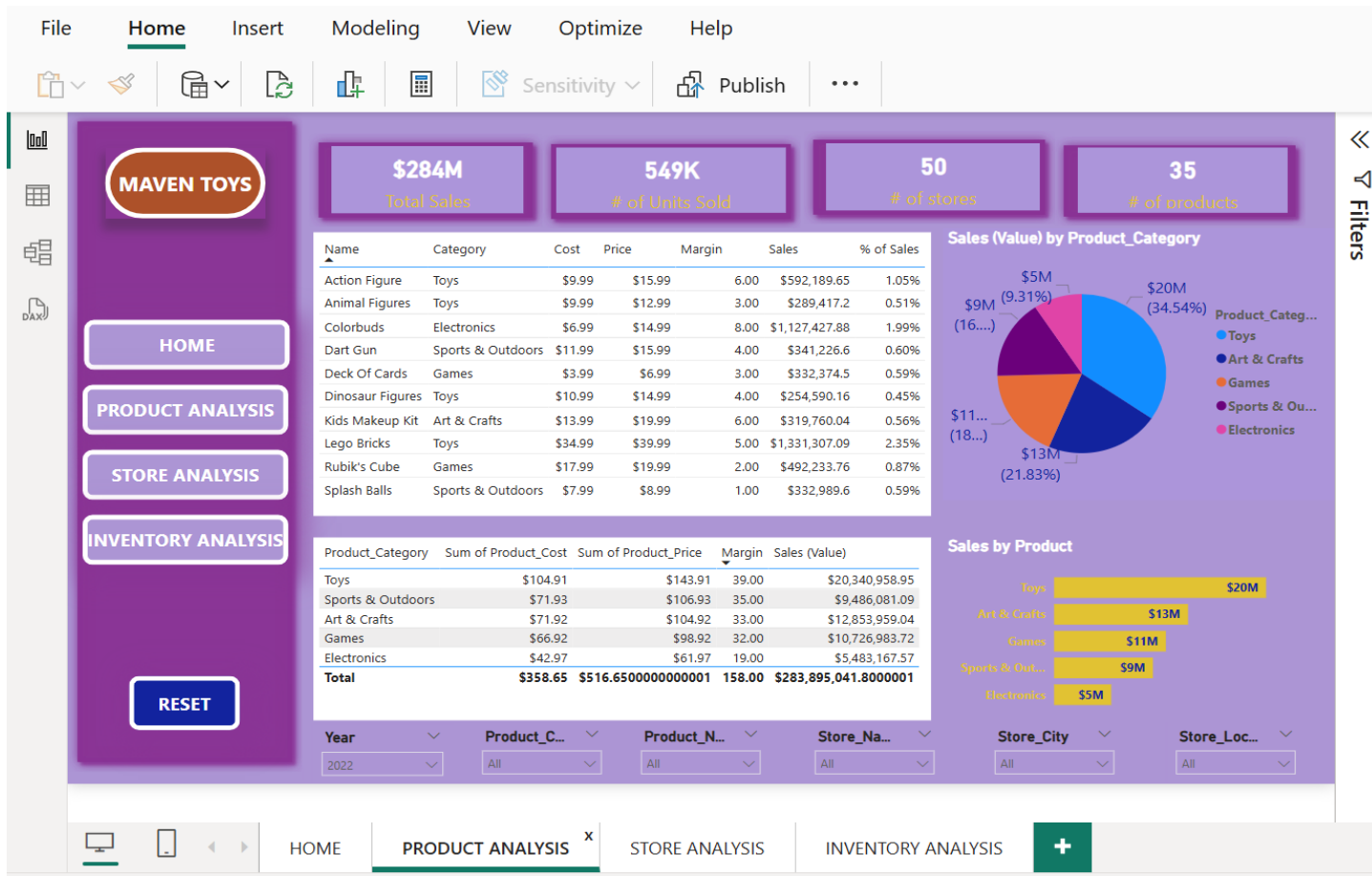


Final Project Working Screenshot





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GitHub Link

<https://github.com/sure-trust/SADANAGIRI-SRAVANI-g16-sql>



Learning and Reflection

Learning and Reflection

This project provided a strong foundation in practical data analytics and business intelligence using Microsoft Power BI. Through hands-on experience, I learned how to clean, model, and visualize large datasets to generate actionable insights. Working with the Maven Toys dataset challenged me to think critically and understand the importance of storytelling with data.

From a **technical perspective**, I mastered the use of Power Query for data transformation, and DAX for building dynamic KPIs such as Profit %, Year-over-Year (YoY) growth, and Top Product rankings. I also gained skills in creating relationships between multiple tables and designing dashboards using slicers, filters, and bookmarks to enable interactivity and seamless navigation between report pages.

Beyond technical skills, this project helped me develop **problem-solving, decision-making, and design thinking abilities**. It improved my understanding of how real-world businesses use dashboards for quick decision-making. I learned the importance of clarity, simplicity, and user experience in dashboard design.

Overall, this project increased my confidence in working independently and showed me how data analytics can drive impactful business outcomes. It also reinforced the value of self-learning and continuous improvement in the ever-evolving field of data and business intelligence.



Conclusion and Future Scope

Conclusion:

This Power BI project achieved its core objective — to convert complex sales data into simple, insightful, and interactive dashboards. The results enabled a deep dive into revenue performance, top products, regional insights, and trend analysis. The project successfully bridged academic learning with practical business intelligence solutions.

Future Scope:

- Connect Power BI to **real-time data sources** using APIs or SQL
- Add **advanced forecasting and predictive analytics** using Python or R integration
- Design **role-based dashboards** (e.g., for sales teams, executives, and inventory managers)
- Implement **mobile-responsive views** for Power BI dashboards
- Explore **data security and row-level security (RLS)** for user-specific access control.