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E-Commerce Order Processing Dashboard Using Power Bi

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Abstract: The comprehensive analysis of a E-Commerce Order Processing and performance, leveraging the robust visualization and analytical capabilities of Power BI and utilizing Microsoft Excel as the primary data source. The objective of this analysis is to provide actionable insights into key operational areas, including inventory management, order fulfilment, sales trends, customer behavior, and overall supply chain efficiency. By transforming raw Excel data into interactive dashboards and insightful visualizations, which can empower stakeholders with a clear understanding of current performance, identify areas for improvement, and facilitate data-driven decision- making to optimize retail operations and enhance profitability

The methodology employed in this report involves a multi-stage process. Initially, relevant sales and supply chain data, encompassing transaction details, product information, inventory levels, shipping records, and customer demographics, were extracted and consolidated from various Excel work books

Index Terms **- Power BI , Microsoft Excel .**

I. INTRODUCTION

In today's dynamic and competitive retail landscape, the ability to effectively analyze and understand the intricate interplay between the supply chain and sales performance is paramount for achieving sustainable growth and profitability. Retailers are constantly challenged to optimize their operations, enhance customer satisfaction, and adapt to evolving market trends. This necessitates a robust analytical framework that can synthesize vast amounts of data from various sources into actionable insights. This is presenting a comprehensive "E-Commerce Order Processing Dashboard," meticulously developed using the powerful business intelligence capabilities of Microsoft Power BI, with Microsoft Excel serving as the foundational data repository. Microsoft Power BI emerges as an indispensable tool for this analytical endeavor. Its intuitive interface, coupled with its robust data connectivity, transformation, and visualization capabilities, allows for the seamless integration and analysis of data originating from diverse Excel workbooks. Power BI's ability to create interactive dashboards and visually compelling reports transforms raw data into easily digestible information, empowering stakeholders across different levels of the organization to understand complex patterns and trends without requiring specialized analytical expertise.

II. PROPOSED SYSTEM

Power BI integrates with various data sources like Facebook Ads, Shopify, enabling comprehensive data consolidation. Users can also track sales, monitor inventory and analyze customer behavior in real-time. A well-designed ecommerce Power BI dashboard can transform the e-shop data into insightful visualizations.

III. MODULES

- Data Collection & Storage (SQL Layer)
- Data Integration & Transformation (ETL/Power Query)
- Data Modeling (Power BI Data Model)
- Dashboard Design & Visualization (Frontend Reporting)
- Insights & Analytics

1V. PROBLEM STATEMENT

The modern retail industry is characterized by increasing complexity, demanding consumers, and fierce competition. Retailers grapple with the challenge of managing intricate supply chains that span numerous suppliers, distribution channels, and logistical processes, all while striving to meet fluctuating customer demand and optimize sales performance. Often, valuable data pertaining to supply chain operations and sales activities resides in disparate systems and formats, including spreadsheets like Microsoft Excel. This fragmented data landscape makes it exceedingly difficult for retail businesses to gain a holistic and real-time understanding of their overall performance.

This is to make bridge the gap between fragmented data and actionable insights by providing a centralized and dynamic platform for analyzing key performance indicators related to both the supply chain and sales functions. By visualizing these interconnected datasets, the report will enable retailers to gain a deeper understanding of the relationships between operational efficiency and revenue generation, leading to more informed strategic and tactical decisions.

V. SCOPE

The scope of this "E-Commerce Order Processing Dashboard" project is specifically focused on the analysis of retail supply chain and sales data utilizing Microsoft Power BI as the reporting and visualization tool, with Microsoft Excel serving as the primary source of data. This will involve the creation of a data model within Power BI that establishes relationships between the various datasets extracted from Excel. This data model will facilitate the calculation of relevant KPIs and enable the creation of insightful visualizations that demonstrate the interplay between supply chain activities and sales outcomes.

The sales analysis component will encompass the examination of sales transactions, including sales volume, sales value, revenue trends over time, product-level sales performance, and potentially customer-related sales data such as purchase frequency and average order value, again, depending on the data available in the Excel files. The analysis may also explore sales performance across different geographical regions or sales channels if this information is present in the data.

VI. Microsoft Power BI

Power BI Desktop integrates seamlessly with the Power Query Editor, a robust data transformation engine. Accessible through the "Transform Data" button, the Power Query Editor provides a graphical interface for performing a wide array of data cleansing and shaping operations without requiring extensive coding knowledge. Users can connect to various data sources, filter and sort data, remove or rename columns, change data types, split or merge columns, and even create custom columns using the powerful "M" language. This integrated tool ensures that the data loaded into the Power BI model is clean, consistent, and structured appropriately for analysis and visualization.

Once the data is prepared, Power BI Desktop's **Data View** allows users to inspect the loaded tables and columns. This view provides a spreadsheet- like interface where users can browse the data, apply basic filters, and gain a deeper understanding of the information they will be working with. It also serves as a space to create simple calculated columns using DAX, providing immediate insights into the data before moving to the more complex modelling stage. The Data View bridges the gap between

the raw transformed data and the visual representation, offering a tangible look at the information being analyzed.

The Model View is where the power of relational data modelling comes into play. Here, users can establish relationships between different tables based on common fields, defining how data from various sources connects and interacts. This is crucial for accurate analysis, especially when dealing with data spread across multiple tables, such as sales transactions, customer information, and product details. The Model View provides a visual representation of these relationships, making it easier to understand the data structure and ensure that queries and calculations are performed correctly across the linked datasets.

The primary interface for creating view is the Home page. This drag-and-drop canvas allows users to select from a rich library of built-in visualizations, including bar charts, line charts, pie charts, maps, tables, matrices, and more.

Step1:Identifying and Accessing the Data Source

1.Understand Data Location and Format: Determine where your data resides (e.g., databases, cloud services, files) and its format (e.g., CSV, Excel, SQL Server).

2.OpenPower BI Desktop: Launch the Power BI Desktop application. This is the primary tool

for report development.

3.Click "Get Data": On the "Home" tab of the Power BI, Desktop ribbon, you'll find the "Get Data"

button. Click on it to see a list of available data sources.

4.Select Your Data Source: Browse through the categories (e.g., All, File, Database, Power Platform, Azure, Online Services) and choose the connector that matches your data source. For instance, if your data is in an Excel file, select "Excel workbook."

5. Configure connection: Depending on the selected connector, you'll be prompted to

Provide specific information, such as:

File Path: For file-based sources like Excel or CSV, you'll need to browse to and select the

file.

Server Name and Database: For database connections like SQL Server, you'll need to enter the

server name and database name. Credentials you might be asked to provide username and

password for secure data sources.

6.Navigator Pane: After successfully connecting, the "Navigator" pane will appear. This displays the tables, views, or sheets available in your data source.

7.Select Data Objects: Choose the specific tables or sheets you want to import into your Power BI model by checking the boxes next to them. You can preview the data to ensure you've selected the correct objects.

8.Choose Load or Transform Data: Choose this if your data is already clean and structured.

9.Transform Data: Click "Transform Data" to open the Power Query Editor. This is highly recommended as it allows you to clean, shape, and transform your data before loading it into the data model.

Phase 2: Data Transformation and Cleansing (using Power Query Editor)

The Power Query Editor is a powerful integrated tool within Power BI Desktop for data preparation.

Step 2.1: Accessing the Power Query Editor

If you clicked Transform Data" during data connection, the Power Query Editor will open automatically. You can also access it later by clicking the "Transform data" button in the "Queries" group on the "Home" tab of the Power BI Desktop ribbon.

Step 2.2: Applying Transformations

Within the Power Query Editor, you can apply a series of transformations to clean and shape your data. Each transformation is recorded as a step in the "Applied Steps" pane on the right. Common transformations include:

Renaming Columns: Double-click on a column header to change its name to be more descriptive.

Changing Data Types:

Select a column and click the data type icon.

Next to the column header to ensure the data type (e.g., Text, Number, Date) is correct.

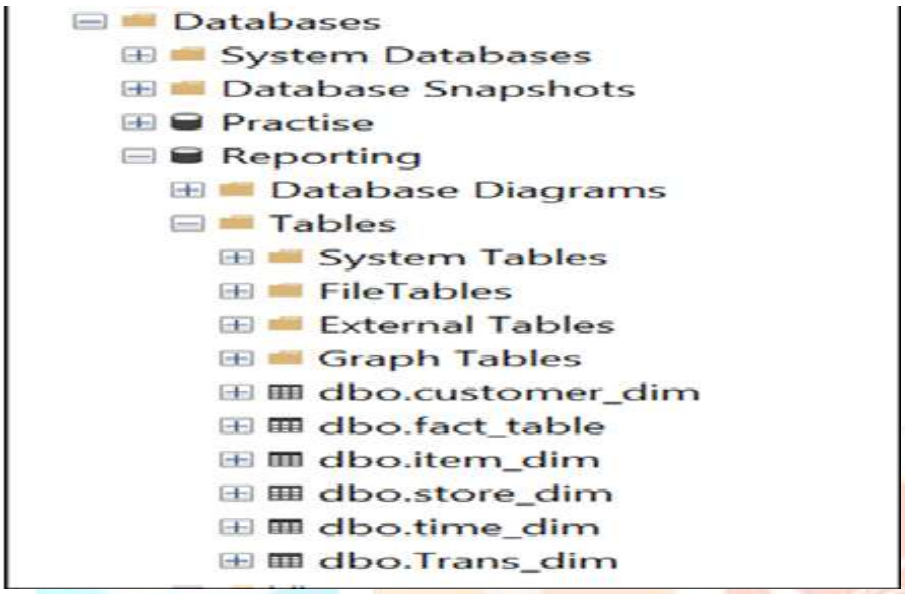
Removing Rows/Columns: Select unwanted rows or columns and click "Remove Rows" or "Remove Columns" on the "Home" tab.

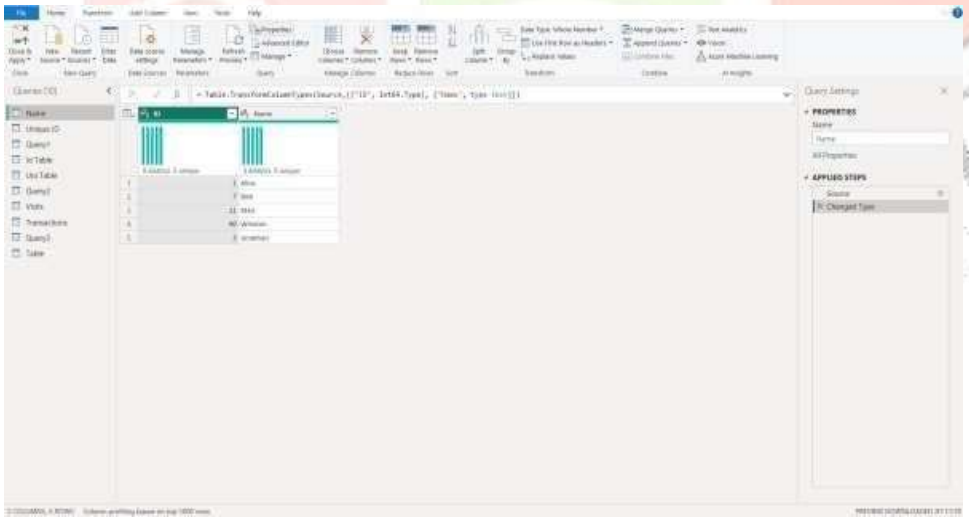
Filtering Rows: Use the dropdown arrow in a column header to filter data based on specific criteria. Sorting Data: Use the dropdown arrow in a column header to sort data.

Splitting Columns: Divide a single column into multiple columns based on a delimiter

(e.g., splitting a "Full Name" column into "First Name" and "Last Name").
Merging Columns: Combine data from multiple columns into a single column

Adding Custom columns: Create new columns based on formulas using Power Query's "M" language.
Conditional Columns: Create new columns based on specific conditions.
Pivoting and Unpivoting Columns: Reshape your data for better analysis and visualization.
Appending Queries: Combine data from multiple tables with the same structure.
Merging Queries: Join data from two or more tables based on matching columns (similar to SQL JOIN operations.





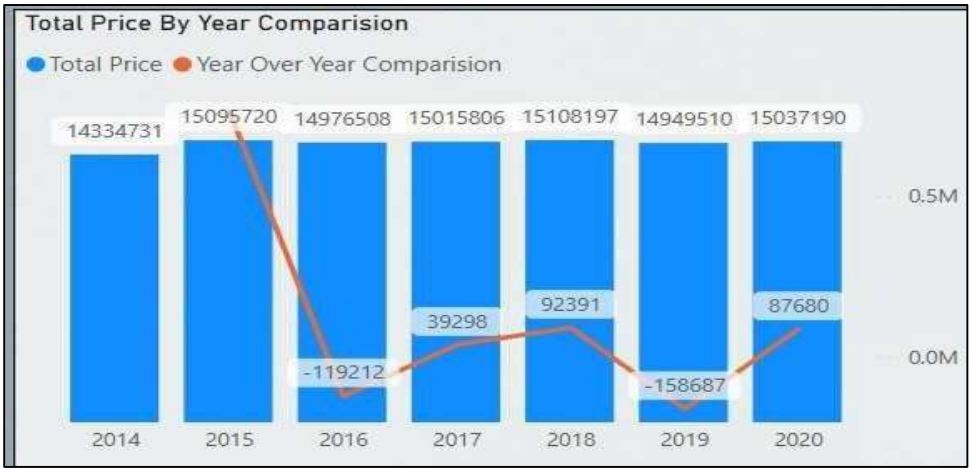
Implementation Plan :

The successful implementation of the "E-Commerce Order Processing Dashboard" report in Power BI, utilizing Microsoft Excel as the primary data source, requires a structured and phased approach.

Home page: opens on landing page.

E-Commerce Platform

Which provides the facilitates to the user to select the visuals across years like Quarter, Month filtering
option, and the yearly comparison of price/profit:



Conclusion The development of this "E-Commerce Order Processing Dashboard" report using the robust visualization and analytical capabilities of Microsoft Power BI, with Microsoft Excel serving as the primary data source, has provided a comprehensive and interactive platform for understanding critical aspects of the retail business. By transforming raw, often disparate, Excel data into meaningful insights through carefully crafted data models, DAX measures, and engaging visualizations, this report empowers stakeholders with a clearer understanding of their operational performance and the intricate relationships between supply chain efficiency and sales outcomes.

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