

POWER BI PROJECT

Project Overview:

Welcome to the Mavins analytic project by Adventure works , here I embark on an exciting journey of exploration and analysis. Adventure work is a fictitious bikes, accessories and clothing manufacturing company that represents a real-world business scenario. Our goal is to dive deep into this company's data, uncover insights, and provide actionable recommendations to drive business growth and success.

In this project, we are leveraging the power of DAX functions within Power BI to bring our analysis and insights to life.

What is DAX

DAX is the language that derived the front end of the power bi and it is designed specifically for analyzing relational data models.

Types of DAX .

- Calculated column
- Measures
- Calculated Column : is a column that you create and define in a data table. These values can be seen and used just like regular columns in your tables. You can use these magic columns for things like adding up numbers, counting items, and organizing your data into groups.
- Measures : They are calculations or expressions that are used to perform aggregations, calculations, or summarizations on your data, They are done on-the-fly and are normally used in visuals, They are typically used for numerical or aggregated calculations like sums, averages, counts, percentages, and more.

The 8 different tables provided are:

- Calendar lookup Table
- Customer lookup Table

- Product Category lookup Table
- Product lookup Table
- Product Sub Category Table
- Return Table
- Sales Table
- Territory Table

On the Calendar Table, the day name and the month short was added the columns

Day name : To calculate the day number , Using the switch formula = (day number = SWITCH(Calendar _Lookup[Day Name], "Wednesday", 4, "Thursday", 5, "Friday", 6, "Saturday", 7, "Sunday", 1, "Monday", 2, "Tuesday", 3) .

Month short: Month short = UPPER(LEFT(Calendar_ Lookup[Month Name], 3))

all this was added to the rest of the columns

On the Customer Table,

Customer Full name ,Annual income level, birth year columns was added to tables.

Customer Full name :

```
Customer Full Name (CC) =
'Customer Lookup'[Prefix] & " " & 'Customer Lookup'[FirstName]
```

Annual Income level :

```
Annual income level = IF('Customer Lookup'[Annual Income]>=150000,"very high",
IF('Customer Lookup'[Annual Income]>=100000,"high",IF('Customer Lookup'[Annual
Income]>=50000,"Average","low")))
```

Birth Year:

```
Birth Year =
YEAR(
    'Customer Lookup'[BirthDate]
)
```

On the Sales Table, Retail price , Revenue and Quantity Type was added to the table :

Quantity type:

```
Quantity Type =  
IF(  
    'Sales Data'[OrderQuantity] > 1,  
    "Multiple Items",  
    "Single Item"  
)
```

Revenue :

```
Revenue =  
'Sales Data'[Retail Price] * 'Sales Data'[OrderQuantity]
```

Retail price :

```
Retail Price =  
RELATED(  
    'Product Lookup'[ProductPrice]  
)
```

All the above calculations were done on the Calculated column .

THE VISUALS :

MEASURES : As said above ,measure are done on-the-fly and are normally used in visuals.

The measures calculated to create this :

REVENUE :

The revenue represents Adventure Works' overall earnings prior to accounting for expenses and other costs. The calculation below illustrates how our revenue is calculated.

We employed the SUMX formula due to the complexity of the calculation. Additionally, the RELATED formula was utilized to retrieve a specific column (price) from another table. This operation is only feasible when a relationship exists between the two tables.

```
Revenue =  
SUMX(  
    'Sales Data',  
    'Sales Data'[OrderQuantity]  
    *  
    RELATED(  
        'Product Lookup'[ProductPrice]  
    )  
)
```

To present the revenue details, I utilized a card visual. Here's how I did it:

1. I added a card visual to the report.
2. I dragged the revenue field onto the card visual.
3. To enhance the visual presentation, I created a shape.
4. I added the card visual into the shape.
5. To insert a shape, I went to the "Insert" tab, navigated to the "Shape" option, and selected my preferred shape. By following these steps, you can make your revenue information look more attractive and organized within a shape.

Profit

Profit represents the financial advantage that Adventure Works gains from its operations. It's commonly calculated as the disparity between revenue (the income generated) and expenses (the costs incurred). The total profit can be expressed as:

$$\text{Total Profit} = \text{Total Revenue} - \text{Total Cost}$$

Orders

Distinct Count is employed for its ability to reveal the number of unique entities within a dataset. In the context of mavins , Total Orders can be calculated using Distinct Count, providing a count of unique sales order numbers:

```
Total Orders = Distinct Count(Sales Data[Order Number])
```

Return Rate

To determine the return rate, I employed the **Divide** function, which computes the ratio of returned items to items sold. The formula used is:

```
Return Rate = Divide(Quantity Returned, Quantity Sold)
```

This same approach was applied to compute other key performance indicators (KPIs) similar to the one used for revenue.

The Revenue Trending :

In our analysis of revenue trending, we've chosen to present the data using a line chart, where the X-axis represents the start of the week and the Y-axis displays revenue figures. This visualization method allows us to track and understand how revenue fluctuates over time, with a focus on weekly patterns.

By plotting revenue against the start of week, we can identify trends, peaks, and valleys in our sales data. This insight is particularly valuable for making informed decisions and optimizing strategies. Here are a few key takeaways from the revenue trend analysis, the line chart displaying revenue trending based on the start of the week provides us with a powerful tool for understanding the dynamics of our business. It empowers us to make informed decisions and optimize our strategies to achieve sustainable growth and success.

Orders by Category

Our analysis of orders by category is effectively represented using a bar chart, with the X-axis displaying the total number of orders and the Y-axis showing the category

names. This visual presentation provides a clear snapshot of our sales distribution across different product categories.

Upon examining the chart, a few notable trends emerge:

1. **Accessories** : stand out as the category with the highest number of orders. This indicates a strong demand for these products among our customers, followed by the **bikes** and the **clothing**.

Highest purchased product

To accomplish this, I included a table from the visual representation that contains product names along with associated data such as orders, revenue, and return rate. Through this analysis, I identified that the product "water bottle" had the highest number of orders, totalling 3983, indicating its popularity among customers.

Monthly Revenue

Calculating monthly revenue is a fundamental practice that provides crucial insights into mavins performance. In our analysis, we've harnessed the power of key metrics, including "Total Revenue," "Start of the Month," and "Previous Month Revenue," to create a comprehensive understanding of our financial trends and targets. It helps us track progress, identify growth opportunities, and make better decisions that drive the continued success of the business.

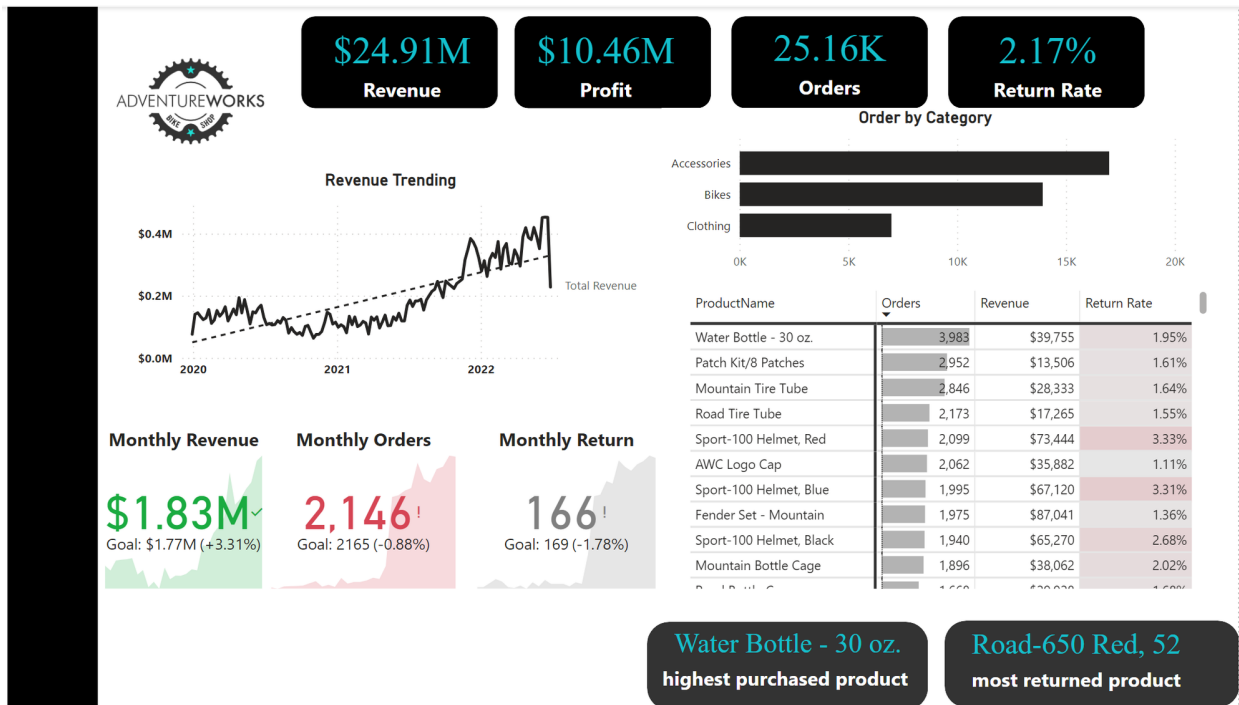
Monthly Orders :

our monthly order analysis, This was built on the foundation of total orders, start-of-the-month references, and comparisons with previous months, This has equips us with actionable insights. It assisted us in monitoring the progress, identifying opportunities for growth, and making informed decisions to enhance the overall performance of the business .

Monthly Returns :

Calculating monthly returns is crucial to understand customer satisfaction and product quality. We use key metrics like "Return," "Start of the Month," and "Previous Month Returns" to see how returns change over time.

This is for the **Executive dashboard**



Then created a dashboard to display the **customer's performance**.

Revenue Trending

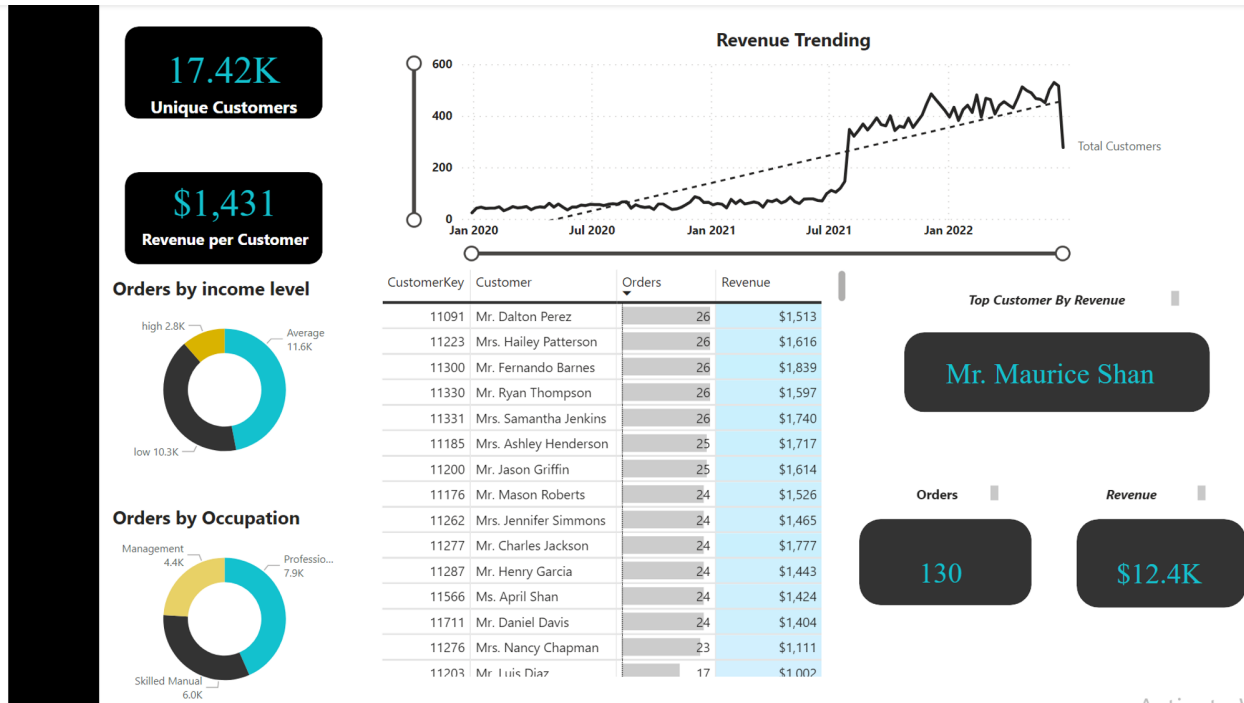
In this analysis, we've created a visual representation that maps customers against the start of the week. This approach allows us to pinpoint our top-performing customers, particularly those who make significant purchases.

Orders by income level :

To facilitate a more structured analysis, we divided income levels into three segments: high, average, and low. This division provides clarity in our assessment. Using a bar chart, I incorporated income levels into the legend, while total orders were placed on the value axis. This visualization allows us to examine the relationship between income and the number of orders placed in a clear and organized manner.

Orders by Occupation :

To determine order distribution by occupation, I assigned occupations to the legend and total order quantities to the values axis. For a more focused view, I applied a "TOP N 3" filter calculation to identify the top three occupations with the highest purchase activity. This insightful data was then presented in a donut chart for a visually appealing and informative display.



CONCLUSION :

Adventure works company serves as an ideal project because it mirrors many real-world business scenarios. It allows us to showcase how data analysis can address common challenges faced by companies, such as market analysis, customer segmentation, and product optimization. By working with the Adventure works company dataset, we can demonstrate the value of data-driven decision-making in a practical and relatable context.