Data Analyst Assignment

Title: Analysing Transport Data with Power BI.

Aim:

- The aim of this assignment is to utilize Power BI for analysing and visualizing transportation data provided in an Excel file. This task is designed to offer participants practical experience in transforming raw data into actionable insights, building interactive dashboards, and making informed business decisions based on analysis.

Steps to be done in this assignment:

- Data Import and Cleaning: Imported the given data file into excel and look for the missing values, outliers, and inconsistencies.
- Data Exploration: Explored dataset to understand the distribution and characteristics of transportation data.
- Data Visualization: Data visualization is a graphical representation of data to communicate information effectively and efficiently. It involves using visual elements such as charts, graphs, maps, and other graphical formats to present data patterns, trends, and relationships. Data visualization helps in understanding complex datasets, identify insights, and making data-driven decisions.
- Key Performance indicator (KPI): In KPI there are four major steps they are define key business goal, defining our key visuals, determining the measurements, finalizing KPI.
- Filtering and Slicing: filters and slicers help us to enable dynamic data exploration and limit data.

Summary Statistics:

- Summary Statistics for key metrics such as total miles, loaded miles, shipping cost, revenue, revenue per trip is essential for gaining insights into data. These statistics provides an overview and help us to grasp important details about how transportation is performing.

Key Performance indicator KPI's: calculated using DAX expressions

- On-time Delivery Rate = (Number of on-time deliveries / Total number of deliveries) * 100
- Average Shipping Cost per Mile = Total Shipping Cost / Total Miles
- Revenue per Shipment = Total Revenue / Total Shipments
- Profit = SUM of Revenue – SUM of Shipping Cost
- Average Delivery Time = Total Ship Days / Total Shipments
- Total Ship Days = `DATEDIFF(TransportData[DeliveryDate], TransportData[ShipDate], DAY)`

summary on set of visualizations:

- Bar chart of Trips by delivery status type we can see in dashboard we have more early deliveries then on-time ones, and there are of 53 late deliveries. We should focus on making deliveries on time or earlier to boost profit and business.

- Line chart of Revenue by delivery date by examining the results I have noticed generated revenue is high in month of March & June, while it is lowest in September. This indicates that there may be seasonal trends or factors influencing revenue generation, suggesting opportunities for strategic planning and resource allocation to maximize revenue during peak months.

- When analysing the geographic data using maps, we find that in Iowa, there's only one destination city, Appleton, while in Illinois, there are eight destination cities. Similarly, in Wisconsin, there are four destination cities, and in Indiana and Colombia, there are three destination cities each. This information highlights geographical distribution patterns that can inform strategic decisions related to transportation routes, resource allocation, and market expansion efforts.

- Line chart of revenue by ship date by examining the results I have noticed generated revenue is high in month of June, while it is lowest in January. This indicates that there may be seasonal trends or factors influencing revenue generation, suggesting opportunities for strategic planning and resource allocation to maximize revenue during peak months.

- When examining the trends of Revenue and Shipping Cost over time, we notice that both reach their peak in June and hit their lowest point in January. Interestingly, there's minimal difference between the highest revenue and shipping cost, suggesting a consistent relationship between the two metrics throughout the year.

- From the table displaying the top ten customers by revenue, it's clear that Quotefix ranks first with $64,062, while Zuntone holds the tenth position with $3,093.

- From the table displaying the top ten customers by profit, it's clear that Quotefix ranks first with $19,163, while Hayholding holds the tenth position with $11,039.

- Upon analysing the table for shipping cost per mile, we observe that for the route from Bangor to Davenport, the shipping cost is $3,57,092, with the highest cost per mile at $7.40. Conversely, from Gary to Milwaukee, the shipping cost is $2,83,344, with the lowest cost per mile at $5.35.

Note:

- Exploration By utilizing slicers for Trip Type, Shipper ID, Category ID, Origin State, Destination State, and Ship Date, we can quickly filter and analyse transportation data based on specific criteria. This enables us to pinpoint trends, identify patterns, and make informed decisions tailored to different segments or timeframes, enhancing our ability to optimize operations, improve efficiency, and meet customer needs effectively.
- Ship Days is an inconsistent Data where the numbers provided don't represent any context between the Ship date and delivery date. And there is a fixed set of values provided from 1 to 10. Ship Days doesn't accurately reflect the difference between the Ship Date and Delivery Date
- Shipping Cost is greater than the revenue. Is not an ideal business case until unless there's a special discount for Regular customer. Ex: Trip ID 10090.

- Imagine Delivery Date as the estimated Delivery date of Customer provided delivery date. Now the ship date is the actual product dispatch date. Now, we'll be able to formulate the Avg delivery time.
- If AVG Delivery time is negative, then we ship the product before the deadline.

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