Code.Hub

Project 1:
Data reporting and visualization

This assignment aims to get you acquainted with data reporting and visualization in Business Intelligence. You will attempt to explore a given data warehouse and implement interactive dashboards for the business users.

Deliverable

The solution should be submitted in a Power BI project file. This file should:

- be well formatted and documented
- consist of a series of pages displaying the dashboards
- provide rich interaction

Data warehouse

The given database is the data warehouse (DW) of an OLTP database which is also given in the same web page. The DW provides the prepared tables as facts and dimensions. The databases are taken from a fictitious commercial company AdventureWorks.

Download the AdventureWorksDW2019.bak backup file from https://docs.microsoft.com/en-us/sql/samples/adventureworks-install-configure?view=sql-server-ver15&tabs=ssms

Then, restore the database into the MSSQL server using SSMS or Azure Data Studio. You have to explore the DW and answer the following questions. As a final step create a new Power BI file and import all the fact and dimension tables from the DW.

Comprehension Questions/Tasks

1. How many facts, measures and dimensions are there in the DW?
2. What is the schema type of the DW?
3. What is the purpose of the dimDate table?
4. Explore the model that is provided by the Power BI and inspect the relationships. When two tables are connected by two or more relationships (directly or indirectly) the second and next relationships are considered inactive. What are the implications of this behavior?
5. Inspect the visualizations in the Report tab. Consider five different types of the various charts and provide some demo graphs, along with an explanation of the strengths and weaknesses of the chart type.
6. Provide a page (dashboard) for the Internet Sales Manager. Show the sales per year, per month, per promotion, per country, and per currency.
7. In another page for the Internet Sales Manager provide visualizations for the tax, discounts, profit, and freight costs. Give absolute values and percentages grouped accordingly as before.
8. Provide a page (dashboard) for the Call Center Manager. Show operation statistics grouped by year, month and calendar week. Provide suitable slicers.
9. Provide a page (dashboard) for the Inventory Manager. Show costs and stocks group by the characteristics of the products. Also, visualize the flow of products in time.
10. Provide a page (dashboard) for the Marketing Manager. Visualize the survey responses in time grouped by geographic criteria, and product categories.
11. Provide a mobile version of the Marketing Manager Dashboard.
12. Provide a demo of the three different types of AI-Powered Visualizations.

Good Luck!