# DSS – FIRST ASSIGNMENT

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# 1.INTERPRETATION OF THE PROBLEM

For this assignment a single Data Warehouse was created to provide more detailed informations with a single model.

Some tables were collapsed to create a friendlier structure, in particular:

- **Subcategory** and **Category** tables were merged, all the informations about the category to which each subcategory belongs is stored.

- **Product** and **Model** tables were merged, to keep informations about the model for each product.

- **Store** table was merged with **vStoreDemographics** view, the view provides useful informations about the stores.

- **SalesReason** and **SalesHeaderSalesReason** were merged, so each sales reason has directly its name, without having a foreign key to another table, just existing to associate the name to the sales reason ID.

- The **vPersonDemographics** view, the **Person** table and the **Customer** table were merged, to provide all details about the customers and successfully profile them.

- **SalesPerson** table was merged with **Person** and **Employee** tables, this operation was done to provide all informations able to evaluate the performance of the sales person.

- **Territory** and **Country** tables were merged, each territory keeps track of the country it belongs.

- **SalesOrderHeader** and **CurrencyRate** tables were merged to track with which currency each sale was made.

## 2.CUSTOMER PROFILING AND CUSTOMER RELATIONSHIP EVALUATION

**Interpretation of the customers**. To profile the customers, we decided to include age, gender, yearly income, marital status, date of the first purchase and total purchased in the current year. Other useful informations were included as the number of children, the number of children currently at home, the number of cars owned and if the customer is the house owner.

**Habits of consumption**. To understand customer habits of consumption all necessary sale details were included, including if the order was done online or not, the date of the effective payment and the ship date. Informations about the sale reasons were included as well.

**Relationship with the AdventureWorks**. The relationship with customers can be defined by the volume of product purchased and by the discount policy that AdventureWorks applies to them.

**Satisfaction with purchased services and products.** Satisfaction with AdventureWorks can be evaluated by analyzing the volume of purchases through time.

**And other information that might be relevant.** In our opinion other relevant informations can be acquired studying the distributions of purchases through the territories in which AdventureWorks is active.

## 3.CHARACTERIZATION AND EVALUATION OF SALE PERFORMANCE

**Sales Employee performance.** Many informations about the sales person were included, also the sales quota (to determine if the single sales person reached the sales goal or not), other useful indicators were included as the sick leave hours and the vacation hours.

**Store performance.** Data about the stores were included to analyze each store potential, including the annual revenues, the number of employees and the birth date.

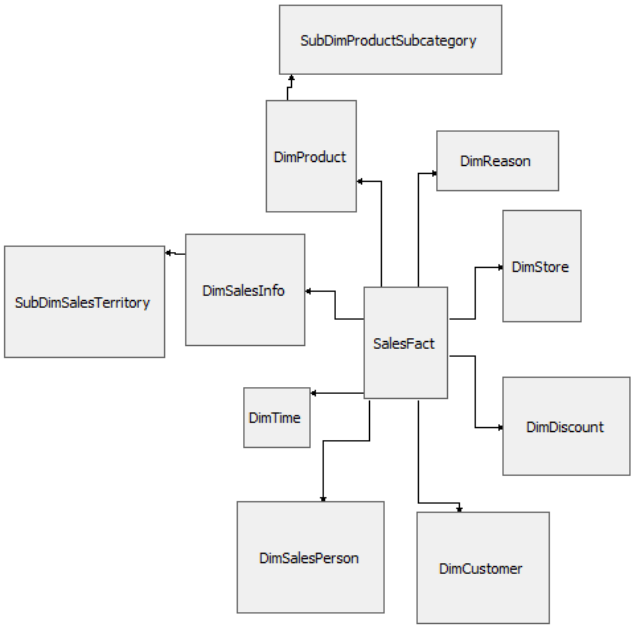
**Territory performance.** To analyze the territory performances, details for the total sales were included.

**Country performance.** As for territory, informations about the country were included in the merged territory table.

**Product category/ subcategory/ model performance.** In the data warehouse entries for both the production and sale were included, this can help to understand the profitability of a single product, the generic model, the subcategory or the category.

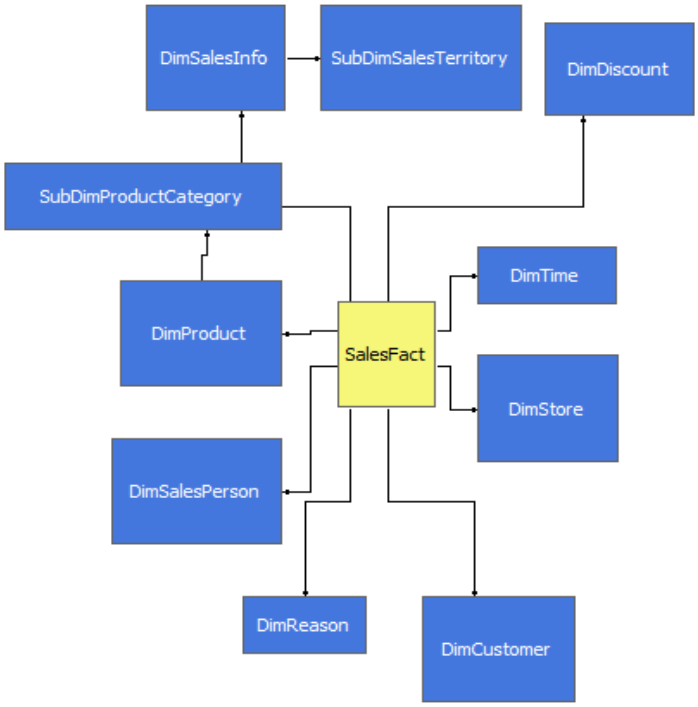
# 4.IMPLEMENTATION OF THE DATAWAREHOUSE

To provide the required informations the Data Warehouse includes the following tables:




The fact table connects the dimensions and has a measure group containing the metrics used to provide informations required by the goals.

It follows the generated cube:



## 5.USED DIMENSIONS

The following dimensions were used:

| | |
|---|---|
| DimTime | it provides the date in year, month and day. |
| Dim Store | -Annual Revenues<br>-Annual Sales<br>-Name<br>-Number of employees<br>-Specialty<br>-Year the store opened<br>-Business type |
| Dim Customer | -Yearly income<br>-Birth date<br>-Marital status<br>-Gender<br>-Total purchase of current year<br>-Date of first purchase<br>-Person type<br>-First name<br>-Middle name<br>-Last name<br>-Promotion email flag<br>-Total number of children<br>-Number of children at home<br>-Home owner flag<br>-Number of cars owned<br>-Occupation |
| DimReason | -Reason name |
| DimSalesPerson | -Sales quota (minimum amount of sales required)<br>-Bonus<br>-Sales in current year<br>-Sales in the last year<br>-Commission percentage<br>-Job title<br>-Birth date<br>-Hire date<br>-Salaried flag (if salaried or not)<br>-Sick leave hours<br>-Vacation hours |

| | |
|---|---|
| | -First name<br>-Middle name<br>-Last name |
| DimSalesInfo | -Order date<br>-Due date (date of payment)<br>-Ship date<br>-Status<br>-Online order flag<br>-Sub total<br>-Tax Amount<br>-Total order due<br>-Freight (shipping cost)<br>-Average rate (USD/Payment currency) |
| DimProduct | -Product name<br>-Make Flag<br>-Finished Goods flag (this product can or cannot be sold)<br>-Color<br>-Safety stock level (minimum inventory quantity)<br>-Reorder point (inventory level triggering a purchase/work order)<br>-Standard cost<br>-List price (selling price)<br>-Days to manufacture<br>-Product line (road/mountain/touring or standard line)<br>-Class (high, medium or low class)<br>-Style (women, men or universal)<br>-Sell start date (available from…)<br>-Sell end date (no longer available from…)<br>-Discontinued date (suspended production)<br>-Weight |
| DimDiscount | -Description of product (discount description, to understand the relationship with the customer)<br>-Discount percentage<br>-Type (discount category)<br>-Category<br>-Minimum quantity (minimum discount percentage allowed)<br>-Maximum quantity (maximum discount percentage allowed) |

## 6.FACT TABLE AND METRICS EXPLANATION

To fulfill the goals, we inserted the following fact rows in the fact table:

**Primary key combination**

- Sales order detail ID
- Sales Order ID
- FK_date
- FK_salesperson
- FK_Customer
- FK_Store
- FK_ProductID
- FK_Reason
- FK_discountpolicy

**Fact rows**

- **Order quantity**: number of items sold
- **Unit price**: per sold unit
- **UnitPriceDiscount**: discount policy used for items
- **ListPriceHistory**: list price in the moment of the sale
- **StandardCostHistory**: unit cost in the moment of the sale