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| Business Template  **Retail of Electric vehicles** |
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# Business Description

## Business background

Electric vehicles (EVs) are becoming an essential part of modern transportation as society transitions toward sustainable solutions. This category includes Battery Electric Vehicles (BEVs), which rely solely on electric power, and Plug-in Hybrid Electric Vehicles (PHEVs), which combine electric power with a traditional internal combustion engine. Numerous businesses and organizations focus on providing EVs and related services to meet the growing demand for eco-friendly and efficient mobility options. This field is highly competitive, requiring a strategic approach to succeed, as businesses must consider various factors influencing consumer preferences, such as affordability, charging infrastructure, and technological advancements. Understanding market trends and consumer behavior is key, often achieved by collecting and analyzing data on BEV and PHEV adoption, usage patterns, and performance. These insights can help businesses refine their offerings, enhance customer satisfaction, and remain competitive in the evolving transportation landscape.

## Problems because of poor data management

Ineffective data management in the electric vehicle (EV) sector can significantly impede business growth and decision-making. Without proper tools to gather and analyze data on Battery Electric Vehicles (BEVs) and Plug-in Hybrid Electric Vehicles (PHEVs), businesses may lack critical insights into consumer behavior, market demands, and performance trends. This lack of information makes it difficult to devise effective strategies, adapt to changes in the industry, and stay competitive. In a field driven by innovation and data, poor data management can lead to inefficiencies, lost opportunities, and a failure to meet customer expectations.

## Benefits from implementing a Data Warehouse

Implementing a data warehouse can address the challenges outlined above and provide valuable insights into the electric vehicle (EV) market. A data warehouse can help answer critical questions such as:

* What are the most popular EV models based on sales data?
* Which vehicle makes and models are the most commonly registered in specific areas?
* What is the average electric range of registered Battery Electric Vehicles (BEVs) across different regions?
* How has the registration of Plug-in Hybrid Electric Vehicles (PHEVs) evolved over time in specific areas?
* Identify trends in EV adoption rates across cities.
* Analyze the impact of vehicle model year on registration trends.

By leveraging a data warehouse, businesses can gain a competitive edge through informed decision-making and strategic planning.

## DATASETS DESCRIPTION

The first dataset contains the following information about sales on the Washington market.

Product Information:

VIN (1-10): The 1st 10 characters of each vehicle's Vehicle Identification Number (VIN), unique identifier.

Model\_Year: The year of production.

Make: The brand or manufacturer of the car.

Model: The category of the car.

Electric Vehicle Type: This distinguishes the vehicle as all electric or a plug-in hybrid.

Clean Alternative Fuel Vehicle (CAFV) Eligibility: This categorizes vehicle as Clean Alternative Fuel Vehicles (CAFVs) based on the fuel requirement and electric-only range requirement in House Bill 2042 as passed in the 2019 legislative session.

Electric Range: Describes how far a vehicle can travel purely on its electric charge.

Sales Information:

TransactionID: The unique identifier of transaction.

Date: The date of the car sale.

Selling\_Price: The actual selling price of the car.

Customer Information:

Customer\_Passport: The unique identifier of customer.

Name: Name of customer

Gender: The gender of customer

Location Information:

State: This is the geographic region of the country associated with the record. (all WA)

City: The city in which the registered owner resides.

Postal Code: The 5 digit zip code in which the registered owner resides.

Employee (who sold a car) Information:

Employee\_id: The unique identifier of employee.

Employee\_name: Name of customer

Employee\_phone: The phone of employee

The second dataset contains the following information:

Product Information:

VIN: The Vehicle Identification Number (VIN), unique identifier.

Year: The year of production

Producer: The brand or manufacturer of the car.

Model: The category of the car.

Electric Vehicle Type: This distinguishes the vehicle as all electric or a plug-in hybrid.

Type CAFV: This categorizes vehicle as Clean Alternative Fuel Vehicles (CAFVs) based on the fuel requirement and electric-only range requirement in House Bill 2042 as passed in the 2019 legislative session.

Electric Range: Describes how far a vehicle can travel purely on its electric charge.

Transmission: type of transmission (automatic/manual)

Color: Color of the car.

Sales Information:

Transaction\_id: Unique identifier of transaction

Price ($): The actual selling price of the car.

Payment\_Method: the method of payment the price

Date: The date of the car sale.

Customer Information:

Customer\_id: The unique identifier of customer.

Customer\_name: Name of customer

Customer\_age: The age of customer

Location Information:

P\_Code: The digit zip code in which the registered owner resides, unique identifier

State: This is the geographic region of the country associated with the record. (all FL)

City: The city in which the registered owner resides.

Employee (who sold a car) Information:

Empl\_id: The unique identifier of employee.

Empl\_name: Name of customer

Empl\_email: The email of employee

The datasets difference based on geographical data, different systems for different states, in this case WA (Washington) and FL (Florida).

The datasets provide a comprehensive overview of the Battery Electric Vehicles (BEVs) and Plug-in Hybrid Electric Vehicles (PHEVs) sales, allowing for analysis and exploration of trends, sales performance, customer preferences.

## GRAIN / DIM / FACT

# Business Layer 3NF

# Business Layer Dimensional Model

# Logical Scheme

# Data Flow

# Fact Table Partitioning Strategy