



# Axon Classic Cars

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SQL Case Study  
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# Introduction

In This project, I have worked on Axon Company's data, which is a classic car retailer company. The sales team lacks a centralized system to effectively manage and analyze sales data, which is affecting the decision-making process. The aim is to use Microsoft Power BI and SQL to create a Business Intelligence (BI) solution, that offers insights and helps them make better decisions for the future.



# Problem Statement

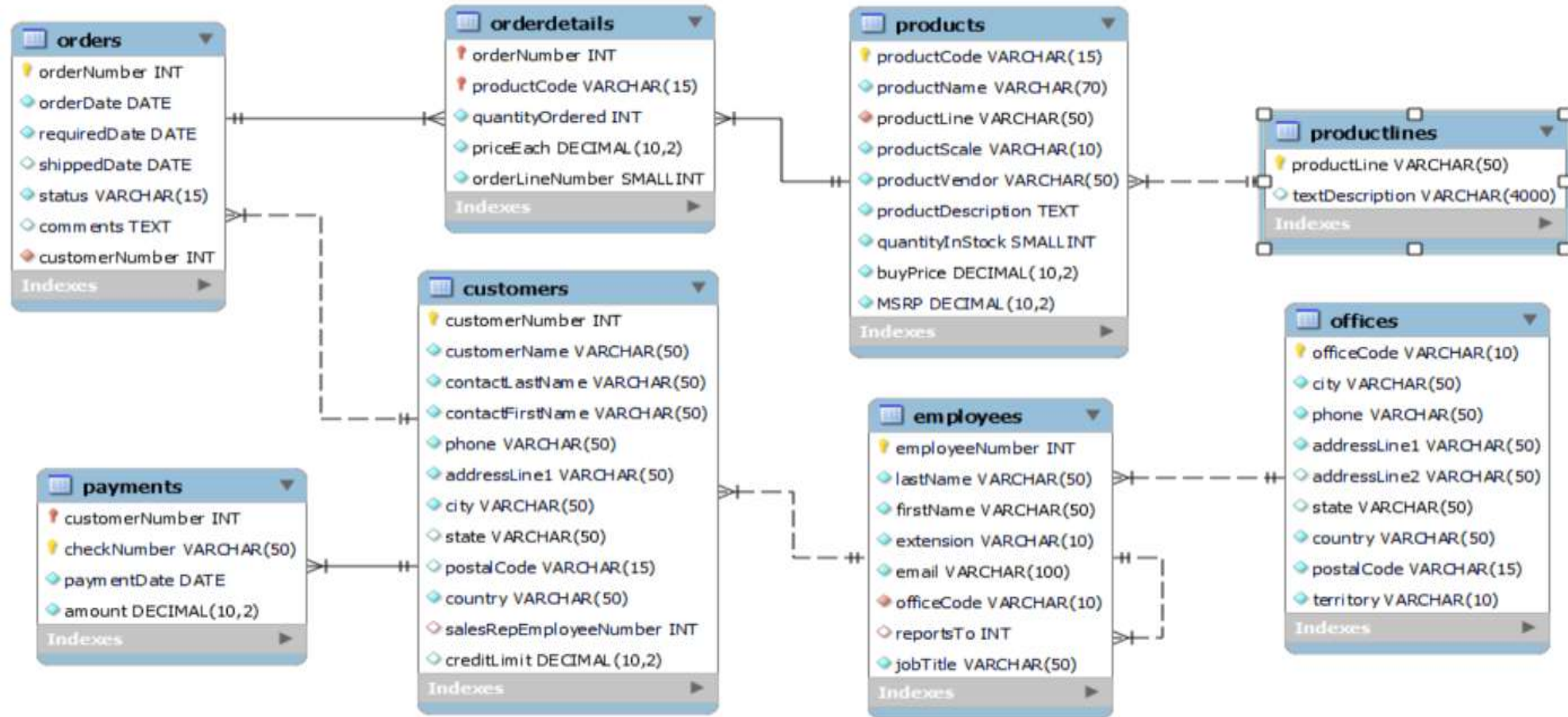
- Axon's sales data is disorganized and lacks a centralized system, leading to inaccuracies and making it challenging to make informed decisions.
- The absence of a BI tool hampers data analysis, preventing the sales team from deriving meaningful insights and understanding market trends.
- Management struggles to access timely and accurate sales reports, which hinders their ability to make decisions based on up-to-date information.
- The company is unsure whether to choose Microsoft Power BI or SQL as the BI tool, leading to uncertainty about tool compatibility and capabilities.



# Dataset

- **Customers:** stores customer's data.
- **Products:** stores a list of scale model cars.
- **ProductLines:** stores a list of product line categories.
- **Orders:** stores sales orders placed by customers.
- **OrderDetails:** stores sales order line items for each sales order.
- **Payments:** stores payments made by customers based on their accounts.
- **Employees:** stores all employee information as well as the organization structure such as who reports to whom.
- **Offices:** stores sales office data

# Entity Relationship Diagram



# Uncovering Insights

RDBMS Used:-

MySQL





## Which are the top 10 products by order

```
select
    productName, SUM(od.quantityOrdered) as total_orders
from
    products p
    inner join
    orderdetails od on p.productCode = od.productCode
group by od.productCode
order by total_orders desc
limit 10;
```

productName	total_orders
1992 Ferrari 360 Spider red	1808
1937 Lincoln Berline	1111
American Airlines: MD-11S	1085
1941 Chevrolet Special Deluxe Cabriolet	1076
1930 Buick Marquette Phaeton	1074
1940s Ford truck	1061
1969 Harley Davidson Ultimate Chopper	1057
1957 Chevy Pickup	1056
1964 Mercedes Tour Bus	1053
1956 Porsche 356A Coupe	1052

**Suggestion: Promote the top 10 best-selling scale model cars and Ensure they are always in stock. Analyze why these products are popular for future product development.**



## Which countries has highest number of customer


```
Select
    country, count(*) as total_customers
from
    customers
group by country
order by total_customers desc
limit 5;
```

country	total_customers
USA	36
Germany	13
France	12
Spain	7
Australia	5

**Suggestion:** Focus on strengthening the market in the USA, consider expansion in Germany and France, and implement targeted marketing in smaller markets like Spain and Australia

## Find the top 2 product line by order

```
select
    p.productLine,
    sum(od.quantityOrdered) as total_orders
from
    productlines pl
    inner join
    products p on pl.productLine = p.productLine
    inner join
    orderdetails od on p.productCode = od.productCode
group by p.productLine
order by total_orders desc
limit 2;
```



productLine	total_orders
Classic Cars	35582
Vintage Cars	22933

**Suggestion:** Focus on Classic Cars and Vintage Cars as they are the top-performing product lines. Analyze and improve the performance of lower-selling product lines. Explore customer segmentation for more targeted marketing and product development.



## Which are the top 5 customers with the highest number of orders products by order

```
select
    c.customerName, count(o.orderNumber) as total_orders
from
    customers c
    inner join
    orders o on c.customerNumber=o.customerNumber
group by c.customerName
order by total_orders desc
limit 5;
```

customerName	total_orders
Euro+ Shopping Channel	26
Mini Gifts Distributors Ltd.	17
Danish Wholesale Imports	5
Australian Collectors, Co.	5
Dragon Souvenirs, Ltd.	5

**Suggestion:** Concentrate efforts on maintaining a strong relationship with "Euro+ Shopping Channel, "Mini Gifts Distributors Ltd." your top customer. Understand the preferences of top customers to tailor marketing strategies, and consider expanding product lines to attract a wider audience for sustained growth.

find each year how many orders are placed

```
select  
    year(orderDate) as year, count(orderDate) as total_orders  
from orders  
group by year(orderdate);
```

year	total_orders
2003	111
2004	151
2005	64

**Suggestion: Analyze yearly order counts to replicate successful strategies from peak years like 2004. Develop plans to boost sales during weaker years, customize marketing based on insights from successful years, and evaluate the impact of customer engagement on order counts.**



Find the product which is not ordered by any customer.

```
select
    productName
from
    products
where productCode not in (select
                            productCode
                        from
                            orderdetails);
```

productName
1985 Toyota Supra

Suggestion: Look into the "1985 Toyota Supra" due to its lack of sales and determine its future in the product lineup. Collect customer feedback and market data to understand why the product is not selling and make informed decisions.

# Find The Number Of Customers For Each Sales Representative

```
select
    employeeNumber,
    concat(firstname, " ", lastname) as representativename,
    count(*) as total_customers
from
    customers c
    inner join
    employees e on c.salesRepEmployeeNumber = e.employeeNumber
where
    salesRepEmployeeNumber is not null
group by employeeNumber
order by total_customers desc;
```

employeeNumber	representativename	total_customers
1401	Pamela Castillo	10
1504	Barry Jones	9
1323	George Vanauf	8
1501	Larry Bott	8
1286	Foon Yue Tseng	7
1370	Gerard Hernandez	7
1165	Leslie Jennings	6
1166	Leslie Thompson	6
1188	Julie Firrelli	6
1216	Steve Patterson	6
1337	Loui Bondur	6
1702	Martin Gerard	6
1611	Andy Fixter	5
1612	Peter Marsh	5
1621	Mami Nishi	5

**Suggestion: Acknowledge and reward high-performing employees like Pamela Castillo and Barry Jones for their substantial customer base. Encourage other employees to enhance customer engagement.**



find number of products ordered, total quantity and total price  
by each vendor

```
select
    productvendor,
    count(distinct p.productcode) as total_products,
    sum(quantityordered) as total_quantity,
    sum(quantityordered*priceeach) as total_price
from
    products p
    inner join
    orderdetails od on p.productcode=od.productcode
group by productvendor
order by total_products desc;
```

productvendor	total_products	total_quantity	total_price
Classic Metal Creations	10	9678	934554.42
Carousel DieCast Legends	9	8735	667190.00
Exoto Designs	9	8604	793392.31
Gearbox Collectibles	9	8352	828013.76
Motor City Art Classics	9	8873	704806.89
Autoart Studio Design	8	7702	736928.03
Highway 66 Mini Classics	8	7808	664508.39
Min Lin Diecast	8	7729	680657.99
Second Gear Diecast	8	7845	803892.06
Studio M Art Models	8	7552	474426.49
Unimax Art Galleries	8	8439	884167.33
Welly Diecast Productions	8	7580	776165.33
Red Start Diecast	7	6619	655487.61

**Suggestion: Enhance relationships with top vendors, consider product expansion with selected vendors, and align product offerings with market and customer preferences.**

## find customers, orders, total products of "On Hold" products

```
select
  o.customernumber,
  customername,
  od.ordernumber,
  count(productcode) Total_products,
  sum(quantityordered*priceeach) Total_Price,
  status
from
  orders o
  inner join
  payments p on o.customernumber=p.customernumber
  inner join
  orderdetails od on o.ordernumber=od.ordernumber
  inner join
  customers c on p.customernumber=c.customernumber
where
  status ="On Hold"
group by o.customernumber,customername,od.ordernumber,status;
```

customernumber	customername	ordernumber	Total_products	Total_Price	status
144	Volvo Model Replicas, Co	10334	12	46028.34	On Hold
328	Tekri Collectables Inc.	10401	24	87050.08	On Hold
450	The Sharp Gifts Warehouse	10407	12	52229.55	On Hold
362	Gifts4AllAges.com	10414	28	101613.70	On Hold

Reach out to customers with orders "On Hold" promptly to resolve their concerns and ensure a positive experience. Check product availability to fulfil orders promptly. Ensure smooth payment procedures to prevent order delays. Keep customers informed about order status and estimated delivery times for better customer satisfaction.



## Find the customer who taken more days to ship the order

```
select
    customername,
    datediff(shippeddate,orderdate) as total_days
from
    customers c
    inner join
    orders o on c.customernumber=o.customernumber
where shippeddate is not null
order by total_days desc
limit 1;
```

customername	total_days
Dragon Souvenirs, Ltd.	65

**Suggestion:** Improve order processing and reduce the time from order placement to shipment. , optimizing inventory to meet demand more efficiently, maintaining transparent customer order status updates, streamlining the supply chain, and continuously benchmarking against competitors for competitiveness.

## Find Number Of Products Ordered By Each Vendor

```
select
    p.productVendor as vendername,
    count(od.orderNumber) as total_orders
from
    products p
    inner join
    orderdetails od on od.productcode = p.productCode
group by productVendor
order by total_orders desc;
```

vendername	total_orders
Classic Metal Creations	270
Motor City Art Classics	249
Carousel DieCast Legends	246
Unimax Art Galleries	244
Gearbox Collectibles	242
Exoto Designs	240
Highway 66 Mini Classics	222
Autoart Studio Design	221
Min Lin Diecast	220
Second Gear Diecast	220
Studio M Art Models	217
Welly Diecast Productions	216
Red Start Diecast	189

**Suggestion: Prioritize top-performing vendors with high order counts. Ensure efficient supply chain management, particularly for vendors with high order volumes.**

# Insights

- **Customer Distribution:** Most of our customers are located in the USA, with Germany following closely.
- **Popular Product Lines:** Among our product lines, "Classic Cars" stands out as the most frequently ordered, closely followed by "Vintage Cars."
- **Top-Selling Product:** The product that has seen the highest number of orders from our customers is the "1992 Ferrari 360 Spider Red," with the "1937 Lincoln Berline" as the runner-up.
- **Top Customers:** The "Euro+ Shopping Channel, "Mini Gifts Distributors Ltd." your top customer.
- **Top-Performing Employee:** Gerard Hernandez from our Paris office has demonstrated exceptional promise as our most prolific employee, generating the highest number of orders.



# Recommendation

- **Market Expansion:** While the USA is a significant market, consider leveraging the success in Germany as a stepping-stone to further expand into European markets. Invest in marketing and customer engagement strategies specifically tailored to European audiences to tap into this growth potential.
- **Product Line Expansion:** Capitalize on the popularity of "Classic Cars" and "Vintage Cars" by expanding these product lines. Introduce new models, variations, or related accessories to cater to the existing customer interest and potentially attract new customers with similar preferences
- **Promote Best-selling Products Focus** marketing efforts on promoting the "1992 Ferrari 360 Spider Red" and the "1937 Lincoln Berline" as top-selling products to maximize sales and customer engagement.
- **Team Up with Vendors:** Improve Partnerships with Successful Vendors such as 'Classic Metal Creations,' 'Motor City Art Classics,' and 'Carousel DieCast Legends' to Increase Sales.
- **Employee Recognition and Development:** Implement an employee recognition program to celebrate and reward outstanding performance. This can boost morale and motivate all employees to excel. Offer career development paths and opportunities for growth within the organization to retain top talent and allow them to advance their careers.



**THANK YOU**

