# Introduction and Project Aim

Data analysis has proven to be very effective in sales and marketing. This is because, through data analysis, it is possible to extract key performance indicators (KPIs) to make smarter decisions. This saves time, resources, and money.

This project aims to analyze data from a sales records database for scale model cars in an attempt to extract information that could be useful for decision-making.

A good analysis should answer specific business questions, which are aligned with meaningful business objectives. Below are the questions this project sought to answer.

* Question 1: Which products should we order more of or less of?
* Question 2: How should we match marketing and communication strategies to customer behaviors?
* Question 3: How much can we spend on acquiring new customers?

# Answers and Discussion

First, I started by exploring the dataset. It's important to explore the data to understand what each table contains and how they relate to each other. Below is a table that offers an overview of the dataset.

Once I understood the data, I was able to answer the first question: which products should we order more of or less of? This question refers to inventory reports, including low stock and product performance. This will optimize the supply and the user experience by preventing the best-selling products from going out of stock.

* The low stock represents the quantity of each product sold divided by the quantity of product in stock. We can consider the ten lowest rates. These will be the top ten products that are (almost) out-of-stock.
* The product performance represents the sum of sales per product.
* Priority products for restocking are those with high product performance that are on the brink of being out of stock.

| **productName** | **productLine** |
| --- | --- |
| 2002 Suzuki XREO | Motorcycles |
| 1976 Ford Gran Torino | Classic Cars |
| 1995 Honda Civic | Classic Cars |
| 1932 Model A Ford J-Coupe | Vintage Cars |
| 1965 Aston Martin DB5 | Classic Cars |
| 1999 Indy 500 Monte Carlo SS | Classic Cars |
| 1968 Dodge Charger | Classic Cars |
| America West Airlines B757-200 | Planes |
| 2002 Chevy Corvette | Classic Cars |
| 1982 Ducati 996 R | Motorcycles |

*Table 1: Priority products for restocking*

*Table 1* highlights that classic cars (such as the 1976 Ford Gran Torino and the 1995 Honda Civic) are the ones that **sell frequently**, and they are the **highest-performance products**. Thus, they should have the priority for restocking.

We’ll explore customer information by answering the second question: how should we match marketing and communication strategies to customer behaviors? This involves categorizing customers: finding the VIP (very important person) customers and those who are less engaged.

* VIP customers bring in the most profit for the store.
* Less-engaged customers bring in less profit.

| **contactLastName** | **contactFirstName** | **city** | **country** | **profit** |
| --- | --- | --- | --- | --- |
| Freyre | Diego | Madrid | Spain | 326519.66 |
| Nelson | Susan | San Rafael | USA | 236769.39 |
| Young | Jeff | NYC | USA | 72370.09 |
| Ferguson | Peter | Melbourne | Australia | 70311.07 |
| Labrune | Janine | Nantes | France | 60875.30 |

*Table 2: VIP customers*

*Table 2* shows which the most important and least-committed customers are; this information can help us determine how to drive loyalty and attract more customers. For example, for our VIP customers, we could develop **loyalty programs** (such as events or special perks) to extract more value from them.

| **contactLastName** | **contactFirstName** | **city** | **country** | **profit** |
| --- | --- | --- | --- | --- |
| Young | Mary | Glendale | USA |  |
| Taylor | Leslie | Brickhaven | USA |  |
| Ricotti | Franco | Milan | Italy |  |
| Schmitt | Carine | Nantes | France |  |
| Smith | Thomas | London | UK |  |

*Table 3: Less engaged customers*

Conversely, we should create a **targeted campaign** for those customers who are less engaged (*Table 3*). For example, we could do an email marketing campaign that reinstates our value proposition as a company. The emails can be plugged into an automation software that can send personalized content based on customer profile and behavior.

Before answering question #3 (How much can we spend on acquiring new customers?)It is good to find the number of new customers arriving each month (Table 4). Doing so will allow us to understand whether it's worth spending money on acquiring new customers. A query composed of 3 CTE will enable us to filter and organize the dataset, examine it and answer the question.

| **year\_month** | **number\_of\_new\_customers\_props** | **new\_customers\_total\_props** |
| --- | --- | --- |
| 200301 | 100 | 100 |
| 200302 | 100 | 100 |
| 200303 | 100 | 100 |
| 200304 | 100 | 100 |
| 200305 | 100 | 100 |
| 200306 | 100 | 100 |
| 200307 | 75 | 68.3 |
| 200308 | 66 | 54.2 |
| 200309 | 80 | 95.9 |
| 200310 | 69 | 69.3 |
| 200311 | 57 | 53.9 |
| 200312 | 60 | 54.9 |
| 200401 | 33 | 41.1 |
| 200402 | 33 | 26.5 |
| 200403 | 54 | 55 |
| 200404 | 40 | 40.3 |
| 200405 | 12 | 17.3 |
| 200406 | 33 | 43.9 |
| 200407 | 10 | 6.5 |
| 200408 | 18 | 26.2 |
| 200409 | 40 | 56.4 |

*Table 4: # of new customers each month*

Table 4 highlights that the number of clients has been decreasing since 2003, and in 2004, the store had the lowest values. The year 2005, which is present in the database, isn't present in the table above; this means that the store has not had any new customers since September of 2004. Thus, it makes sense to spend money acquiring new customers.

To determine how much money we can spend acquiring new customers, we can compute the Customer Lifetime Value (LTV), representing the average amount of money a customer generates. We can then determine how much we can spend on marketing.

| **CLTV** |
| --- |
| 39039.594388 |

*Table 5: CLTV*

LTV tells us how much profit an average customer generates during their lifetime with our store. We can use it to predict our future profit. So, if we get ten new customers next month, we'll earn 390,395 dollars, and we can decide based on this prediction how much we can spend on acquiring new customers.

If we want to have a precise number, we can determine our ideal spending, based on the business objective, by computing the **Target CPA** (cost-per-acquisition) for our future marketing campaign:

**(T)CPA = LTV - Gross Profit - Desired Net Profit**

*Example:*

*LTV: 40*

*Gross Profit: 10*

*Desired Net Profit: 5*

*(T)CPA: 25*

With a LTV of $40 and a Gross Profit of 10, we can spend up to $25 per customer, and still receive a Net Profit of $5 for each one of them.

## Conclusions

As we dig deeper into sales data analysis, we can quickly and easily extract KPIs to make smarter decisions that can save the organization resources and money. Even though the analysis presented here is relatively straightforward, it is extremely valuable because it provides clear insights that can be used to make strategic decisions. It is our job as employees in an organization to answer business questions on a day-to-day basis. Data analysis is just one way to do so, but a very effective way indeed.

For this project we were able to see which products are the best performing, and thus should have the priority for restocking. Then we identified the most suitable marketing strategies depending on the consumers’ behaviors. Finally, we identified how much we can spend for each customer by calculating her average lifetime value.

By combining these three insights together, we have solid information we can use to build a business or marketing plan to increase the business profitability.