**Introduction to Random Motors Project**

Imagine you are the Lead Business Analyst at **Random Motors**, an automobile conglomerate that manufactures cars across a large range of price points. Given the scale of your firm, you have different brands for different consumer segments.

For the price-conscious working-class consumers, Random Motors manufactures cars under the brand **Rocinante.**The various models of Rocinante fall in the range of **₹5–10 lakh.**The brand is known for cars that are**value for money and very attractive mileage.**

For the consumers willing to purchase a luxury car, Random Motors operates under the brand **Marengo.**Marengo models fall in the range of**₹30–60 lakh.**They are considered sports cars and have **high horsepower and top speed.**

**Every time Random Motors launches a new model, it advertises the model’s specifications, such as price, mileage, and top speed, because consumers usually take these factors into account before purchasing cars.**

Suppose your chief engineer has recently come up with two new models: **Rocinante36 and Marengo32.**He promises that they will outperform the existing competitors in the market.

**Rocinante36**is priced at**₹7 lakh**and has been designed to deliver a mileage of **22 km/litre**and a top speed of **140 km/hr.**

**Marengo32**is priced at **₹41 lakh**and has been designed to deliver a mileage of **15 km/litre**and a top speed of **210 km/hr.**

The chief engineer has built 20 prototypes of each of the two models to check if the cars are performing as per the desired specifications. If the cars are performing better than expected, then the engineer wants to revise the specifications. However, if they are performing worse than expected, then it is an indication that more investment is needed in the design to improve their performance.

The test drive results for the 20 prototypes of each of the two models are provided in the file titled **Data Exhibit 1.**During the test, the mileage and the top speed is recorded for each of the prototypes. The data will be used for performing hypothesis testing for the claims made on the specifications.

**Data Exhibit 1**

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Additionally, the chief engineer reported that the cost of manufacturing the Rocinante36 model would be **₹6 lakh per car** and that of the Marengo32 model would be **₹33 lakh per car**, including all the overhead expenses. Given the business scenario, you need to invest the total manufacturing cost upfront. The manufacturing cost will be recovered slowly by the next financial year as sales start happening. These details are summarised in the table given below.

|  |  |  |
| --- | --- | --- |
| **Specifications** | **Rocinante36** | **Marengo32** |
| Price | ₹7 lakh | ₹41 lakh |
| Manufacturing cost | ₹6 lakh | ₹33 lakh |
| Mileage | 22 km/litre | 15 km/litre |
| Top speed | 140 km/hr | 210 km/hr |

Currently, the company has **enough cash reserves to invest in only one model.**Therefore, as the Lead Business Analyst, you need to carefully choose the right model and decide the number of cars that you want to produce. Since you believe in making data-based decisions, you ask your team to provide you with the sales data of all the past models released under the brands Rocinante and Marengo. The sales data is provided in the file titled**Data Exhibit 2.**

**Data Exhibit 2**

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Remember that you need to present your findings to the CEO by next week. You need to demonstrate these findings in an easy-to-understand presentation, which should also include the analysis that you have performed on the data.

**The data in Exhibit 1 and Exhibit 2 will be used to predict the sales for Rocinante36 and Marengo32 and to make decisions regarding which model will generate maximum revenue for the company.**

Project objectives

* Perform hypothesis testing to verify the claims that the engineering team has made about the specifications (mileage and top speed) of the Rocinante36 and Marengo32 models.
* Build multiple regression models to predict the sales for Rocinante36 and Marengo32. Choose a model that will generate maximum profit for the company.
* Create a presentation to showcase your decisions to the CEO of Random Motors.