



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

SECI 1513 - Sec 07

ASSIGNMENT 4 : ONLINE DASHBOARD REPORT

LECTURER: Hairudin Bin Abdul Majid

DUE DATE: 15/1/2022

Group leaders contact number: 018-2175343

GROUP MEMBERS	 Chok Rong Jie **(Group Leader)	 Tan Zeng Chai	 Yam Yuan Zhan	 Darren Leong Kah Xiang	 Chin Jun Er
MATRIC NUMBERS	A21EC0169	A21EC0136	A21EC0146	A21EC0021	A21EC0168

Group details

Group Leader: Chok Rong Jie A21EC0169

Group Member 1: Tan Zeng Chai A21EC0136

Group Member 2: Yam Yuan Zhan A21EC0146

Group Member 3: Darren Leong Kah Xiang A21EC0021

Group Member 4: Chin Jun Er A21EC0168

Describe Trends And Reflection: Chin Jun Er

What, When, Where To Use Microsoft BI: Chok Rong Jie

Reflection of The Talk: Tan Zeng Chai

Narrative Analytics: Darren Leong Kah Xiang

Variable Transformations: Yam Yuan Zhan

Discussion of Data Analytics: All Members

Trends of Data Analytics in Different Sectors and reflection of these trends.

The science of analysing raw data for the purpose of drawing conclusions is known as data analytics. It is a set of techniques for extracting relevant and useful information from large and diverse amounts of data acquired from many sources. Many of the data analytics approaches and processes have been transformed into mechanical processes and algorithms to process raw data for business usage. There are several trends of data analytics in different sectors such as finances, healthcare, communications, media and entertainment, and retails. For example, predictive analytics would make a significant impact in the finance sector. Banks are learning to combine internal and external customer data to create a predictive profile of each banking customer, similar to retail. Rather than pushing out mass marketing plans that treat all customers the same, financial institutions can use the data collected to provide consumers with personalized services that are tailored to suit every individual. Healthcare is a sector that utilizes both structured and unstructured data. Thus, data analytics can assist in rapid and precise decision making. Treatment options can be provided more efficiently using data analytics based on medical history and symptoms. Similarly, to meet the ever-changing demands of shoppers, the retail sector can refer to the huge amounts of processed data based on customer behaviours. Promotions and advertisements will appear in the range of vision of potential customers according to the data algorithms.

What is Microsoft BI?

Microsoft Power BI is a unified, scalable platform made up of a collection of software services, applications and connectors working together to process data into visually realistic, logical and interactive insights mainly for self-service and enterprise business intelligence.

When to use it?

Microsoft Power BI is very useful when data processing and relating is required. When a large amount of data is required to be processed, Microsoft Power BI can be used to connect, model and visualise the data into manageable parts for easier data analysis. Microsoft Power BI also provides the user the option to create customizable reports. By using Microsoft Power BI, data from all data sources can be connected and study and promote insights while maintaining data accuracy, consistency and security in the process. With the help of Microsoft Power BI, business intelligence of organizations will be able to make decisions confidently based on the insights and reports from a detailed analysis of data.

Why use it?

Microsoft Power BI provides users end-to-end data protection. Security of data is assured as better and consistent data protection across Power BI reports, dashboards, and data sets even outside the organization or exported to other file formats. The user experience of Microsoft Power BI can be enhanced with the usage of the other Microsoft software such as Azure and Office as it interoperates with the Microsoft technology you trust. Microsoft Power BI also provides users with extensive data connectors. Users will fully understand the concept of data-driven decision making with the help of a growing library of free connectors. Users can also connect to hundreds of on-premises and cloud data such as Dynamics 365, Azure SQL Database sources directly.

Reflection of talk

When we are doing some research or surveying some popular topics, there are various types of data and information. In order to present or explain those data or information, we need to visualize them so that it is easier to be understood. There are many ways to visualize data. By using a pie chart, bar chart and et cetera, we could use simple graphics to display the

data. Proper visualization is crucial for delivering the intended messages to the customers. Before doing the visualization, we need to differentiate the types of data and information. For example, data can be categorized into quantitative data, continuous data. This would help to determine which type of visualization is the most suitable for the data. Next, we need to determine the data relationship. For example, in nominal comparison, in correlation, in Part-To-Whole relationship etc. This would create a clear view for us on how our data will be visualized. Through the process of visualising the data, we can detect the errors and create a new pattern for the data. The new pattern will help in diverting the users' attention to the main points of the data. There are many platforms to visualize the data but the more popular ones include Microsoft Power BI. In order to do the visualization, we need to create an Excel file and input all our data into it first. After that, we need to import the Excel file into Microsoft Power BI. Then, we can start to do the visualization by choosing the type of visualization that we want and drag the data column by column from the right side to the panel of the properties of the visualizations that we choose. It is important to create a clean and tidy Excel file so that the data will be visualized systematically and logically in Microsoft Power BI.

Narrative of analytics

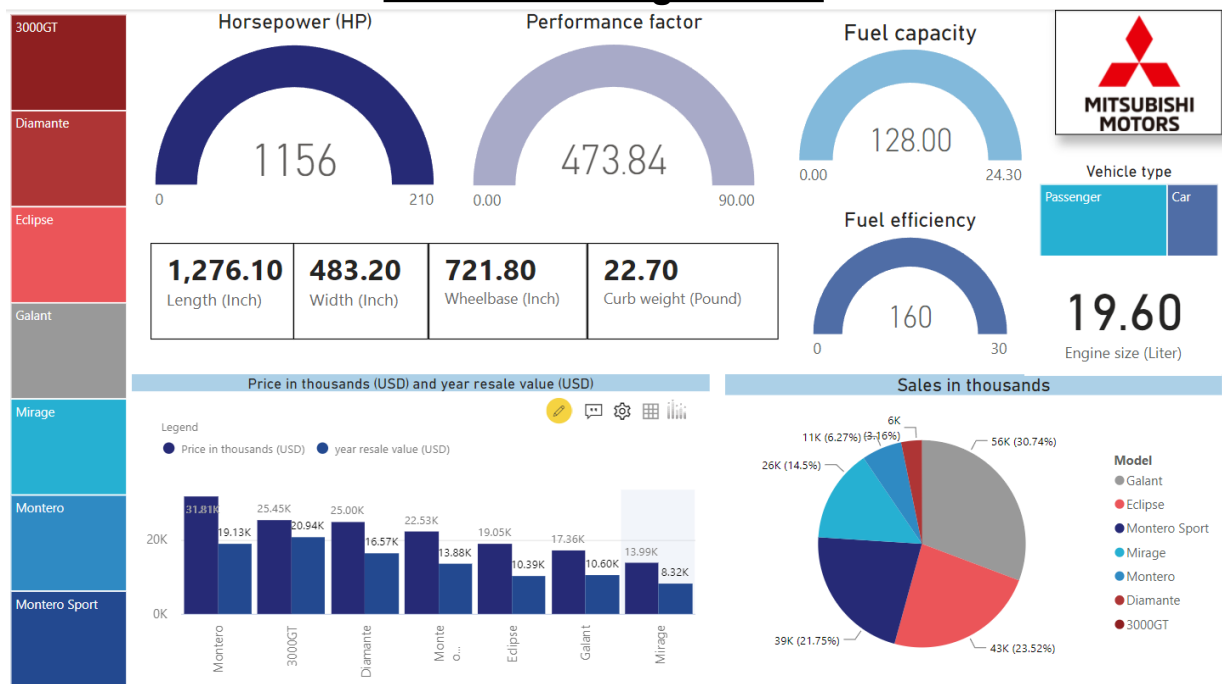
There are many car models produced by Mitsubishi but the data regarding all models is disorganised and untidy. Clients will find it hard to decide on their favourite Mitsubishi's car. Through the research, we found that most people choose cars without checking the specification like engine size, length and width of a car, fuel capacity and the quality. They do not know how to choose a car which is affordable for them regarding the actual price and the resale value of a car. For the reliability of a car, most people have little to no knowledge related to whether a car is reliable or not, like the power performance factor of a car, the maximum distance in kilometres a car can travel. Fuel economy is also one of the factors that the client is always worried about.

In order to provide them with a clear and detailed view of Mitsubishi's car, we made a data visualization on the details and specifications of each model of Mitsubishi's car by using Microsoft Power BI. The visualization also helps to answer the common questions by comparing those models using the collected data.

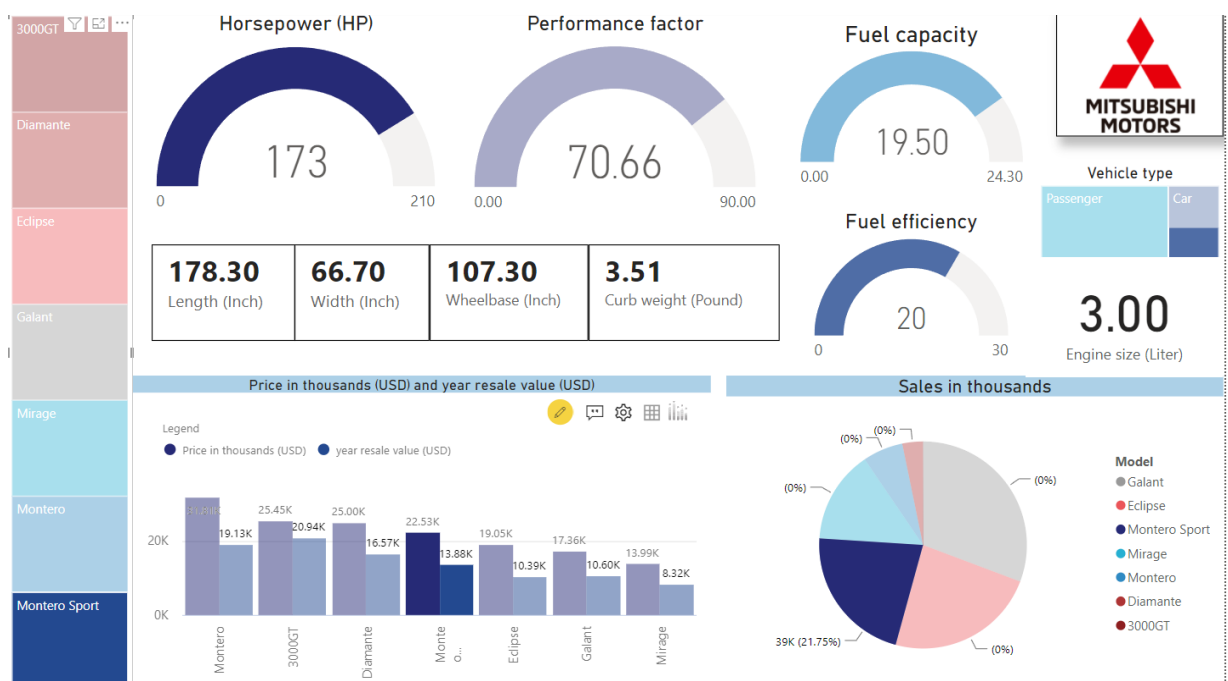
1. Which is the best and recommended car in Mitsubishi for people to buy
2. Which car holds the most value
3. How the specifications affect each other
4. What is the factor we need to consider when choose a car
5. What is the average price that most of the people can afford

Power BI dashboard

Before selecting a model



After selecting a model



Data analytics interpretation for the chosen data

The data visualization shows various important information for 7 different types of Mitsubishi's car models which includes Mirage, Eclipse, Galant, Diamante, 3000GT, Montero, and Montero Sport. The information covered includes horsepower, performance factor, fuel capacity, fuel efficiency, engine size, sales, price, and resale value. The vehicle type is also included to clarify the difference between Passenger and Car Vehicles. Car vehicles are meant for personal use while passenger vehicles are mainly made to carry passengers which requires to be more powerful than Car vehicles. We are using Microsoft Power BI, an interactive data visualization software developed by Microsoft to create the data visualization.

Discussion of the results for data visualization

By using the data visualization created using Microsoft Power BI, we can get to know that there are two vehicle types in Mitsubishi, Car vehicles and Passenger vehicles. The examples of Passenger vehicles type include Mirage, Eclipse, Galant, Diamante, and 3000GT while the examples of Car vehicle type include Montero, and Montero Sport. From the visualisation, we also can see that for all the models of Mitsubishi's cars listed, the price is higher than the resale value. For Mitsubishi Montero, the highest price is 31.81K (USD) and the resale value is 19.13K (USD). For Mitsubishi 3000GT, the price is 25.45K (USD) and the highest resale value is 20.94K (USD). For Mitsubishi Diamante, the price is 25.00K (USD) and the resale value is 16.57K (USD). For Mitsubishi Montero Sport, the price is 22.53K (USD) and the resale value is 13.88K (USD). For Mitsubishi Eclipse, the price is 19.05K (USD) and the resale value is 10.39K (USD). For Mitsubishi Galant, the price is 17.36K (USD) and the resale value is 10.60K (USD). For Mitsubishi Mirage, the lowest price is 13.99K (USD) and the lowest resale value is 8.32K (USD).

From the data, we also can get to know that the sales in thousand for Mitsubishi 3000GT is the lowest, 0.11K units. For Mitsubishi Diamante, the sales in thousand is 6K units. For Mitsubishi Eclipse, the sales in thousand is 43K units. For Mitsubishi Galant, the sales in thousand is the highest, 56K units. For Mitsubishi Mirage, the sales in thousand is 26K units. For Mitsubishi Montero, the sales in thousand is 11K units. For Montero Sport, the sales in thousand is 39K units.

From the data, we also can see that 3000GT has a 3.00 liters engine size with horsepower of 161 and the fuel capacity of 19.8 Gallons. Diamante has the highest horsepower of 210 generated from the 3.50 liters engine size and the fuel capacity of 19.0 Gallons. Eclipse has 2.40 liters engine sizes with horsepower of 154 and the fuel capacity of 15.9 Gallons. Galant has 2.40 liters engine sizes with horsepower of 145 and the fuel capacity of 16.3 Gallons. Mirage has 1.80 engine size with horsepower of 113 and the fuel capacity of 13.2 Gallons. Montero has a 3.50 liters engine size with horsepower of 200 and the highest fuel capacity of 24.3 Gallons. Montero Sport has the horsepower of 173 generated from 3.00 liters engine size and the fuel capacity of 19.5 Gallons. The car model that has the highest horsepower is the Mitsubishi Diamante, which is 210HP, while the car model that has the highest fuel capacity is the Mitsubishi Montero, which is 24.3 Gallons. For the performance factor for each model, 3000GT has a 67.54 performance factor. Diamante has 84.83 performance factor which is the highest among 7 models. Eclipse has 62.44 performance factor and meanwhile Galant has 58.61 performance factor. For Mirage, Montero and Montero sport, each has 45.83, 83.92, and 70.66 performance factors.

By going through these data, **we can get to know 3000GT will hold the most value as it has the highest resale value which is 20.94K (USD)** and the smallest differences between the price and the resale value among these 7 models. Normally, the reasons are because of the lack of spare parts. The used cars have a higher probability of needing to repair or do maintenance of the car as the equipment will gradually wear and tear. Other than that, **we also can get to know that Galant is the best and recommended model passenger vehicle car** in Mitsubishi to buy. Although it doesn't have the lowest price and highest resale value, it has the average level of specification and a reasonable price which is only 17.36K (USD) which caused it to have the highest sales in thousands. Furthermore, **we can conclude that the performance factor will be affected by the horsepower and the engine size as in theory, if the engine size is larger, then the engine can generate higher horsepower, and the performance factor will become higher.** For example, Diamante has the highest horsepower and highest performance factor and largest engine size among 7 models which is 210 HP, 84.83 performance factor, and 3.50 liters. From the visualization, **we can know that the affordable price range for most people is around 17K to 19K (USD)** as the price of Galant is 17.357K (USD) and the price of Eclipse is 19.047K (USD). They have the highest and the second highest sales in thousand respectively. They also have higher fuel efficiency which means they can travel a longer distance on a single gallon of gas. It can help the driver

to save the expense on fuel or in other words to save the money. **Also, we can see that the Galant has the best factor than the Mirage if we want to choose a car that is in the affordable price range.** If we compare their engine size, horsepower, performance factor, fuel capacity and fuel efficiency. Galant has a bigger engine size, higher horsepower, higher performance and larger fuel capacity than Mirage while Mirage only has higher fuel efficiency.

Conclusion

Based on the two questions above, we can conclude the price, resale value, horsepower and fuel capacity of every model of Mitsubishi's car listed in the data visualization are different and some of them affect each other. Some of the models are more expensive but have a lower resale value than the cheaper models. Some of the models have higher horsepower but lower fuel capacity.

Online dashboard link:

<https://app.powerbi.com/view?r=eyJrIjoibDU4ZWMyZDUtZjBIMy00YjU1LWIyNDMtZmU4Y2U4MTRkNzhmIiwidCI6IjBIMGRiMmFkLWM0MTYtNDdjNy04OGVjLWNIYWM0ZWU3Njc2NyIsImMiOjEwfQ%3D%3D&pageName=ReportSection>