Executive summary:

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Introduction:

Big data has become a significant part of the current for all businesses including automotive as well. According to McKinsey Report, the overall revenue from car data monetization can reach upto US 450-750 billion by 2030. (*Monetizing Car Data New Service Business Opportunities to Create New Customer Benefits Advanced Industries*, 2016). Through the usage of big data, companies can gain

more insight about customers, current market demand, supply chain issues and many more. As innovation is rapidly changing the world, the automotive industries are trying to find new ways of making vehicles which are environment friendly, as the fossil fuels will not be available in the next 50 years. And upcoming automotive industries can use the power of big data in a way that would give them the competitive edge over competitors. This report will try to analyse the data for the HMC Motor Corporation. The report will analyse the overall performance analytics, financial analytics and do forecasting for the company so that the analysts can make decisions for the company.

Brief of HMC and automotive industry:

Huskie Motor Company is an automobile manufacturing company with production and sales around the world. One of the toughest industries are the automobile industries as they require complex machineries and big factories to manufacture their products. The company operates in 3 regions across 15 countries.

Challenges faced by the automotive industry:

Almost all industries are going through a digital transition. And by the rise of using big data, all the companies can now make more informative decision for the betterment of their business. Currently the main purpose automotive industries are using data are to generate economic and technical improvement. If stated more specifically, improving creation life cycle of automotive products, increasing energy efficiency, reduction emission, waste management, and many more useful tasks are possible only because of the perfect implementation of big data. For the use of data being perfect, companies need to know how to implement the use of the huge amount of data and also need the skilled people to know how to analyse them as well.

Challenged faced while analysing HMC data:

For doing the analysis of HMC data, we came across multiple anomalies in the data. We came across multiple unique IDs in the data, we did not receive data of various models' yearly variable cost, and so on. In a whole, we had repetitions of various data, and the lacking of multiple data fields which made the analysis not absolutely correct. So they were the problems our analytical team faced while analysing the data.

Our analytics team task:

Our team was assigned by HMC to conduct thorough analysis of the data set provided to us in four sectors namely:

1. Financial performance
2. Operational performance
3. Overall performance
4. Forecasting

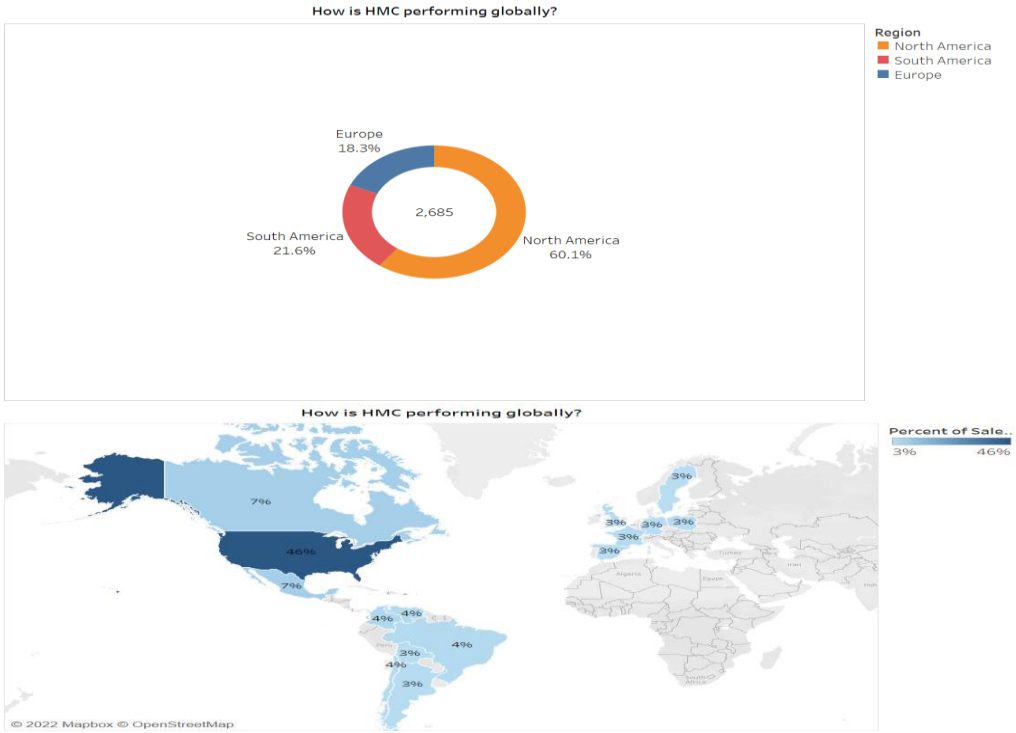
Our team members were assigned to all of these sectors separately for a better understanding of the data. Below there are the analyses of all those four sectors:

Overall performance of HMC across the world:

Through big data, company can now target the markets and do strategic campaigns which helps them to grow more as a company. By applying data analytics in analysing HMC, we can get a better overview of how the company is performing in the global scale. HMC gave us four queries in this sector. Let us answer them step by step:

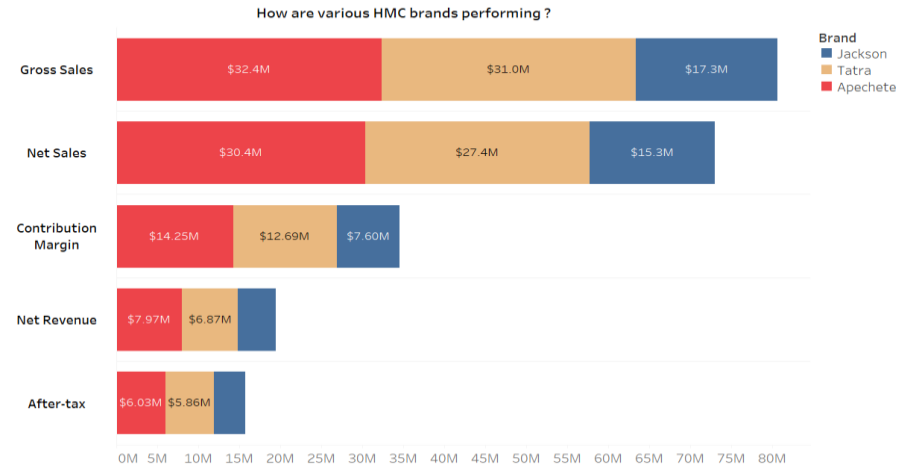
Q1. How is HMC performing globally?

HMC operates in three regions namely Europe, South America, and North America. Among those regions, the global volume sales is the most in North America with **60.1%** market capture. So we can say that in that region, the demand of HMC cars is huge and also they are performing extremely well there. And now we analyse them by country, then we see that USA is leading the race with a market share of 46%. And they have a mammoth net sales of 26.3 million. The second in line is Canada with a huge gap from USA having 7% percent of the market share. The data visualization is given below:



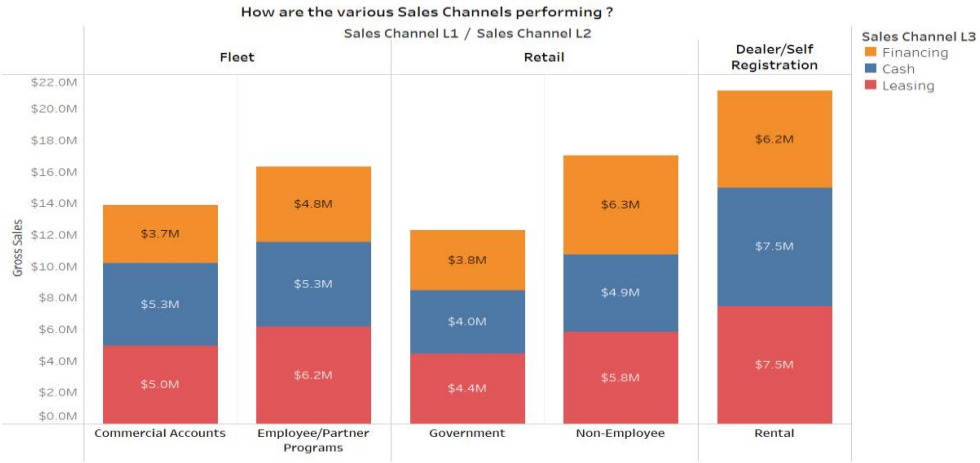
Q2. How are various HMC brands performing?

HMC has three brands with the names Jackson, Tatra, and Apechete. Among them, Apechete is the most successful brand. They have **32.4M** in gross sales with the contribution margin of **14.25M.** Though Tatra is not that far behind with **31M** in gross sales but Jackson is by far most struggling brand of them all with **17.3M** in gross sales. The data visualization is given below:



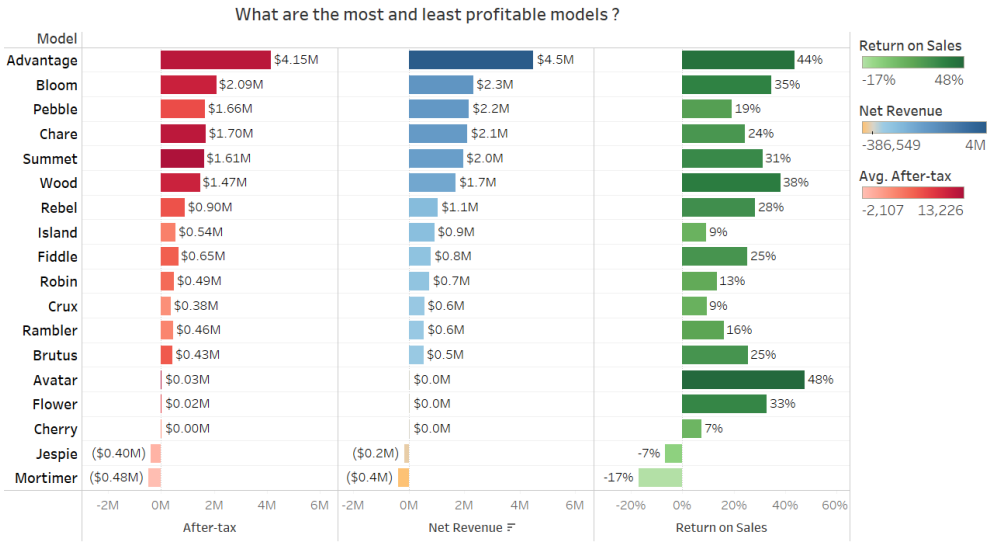
Q3. How are various sales channels performing?

Most of the sales volume is through the Fleet and Retail channels. We observe a difference in Sales channel L2 for each Sales Channel L1. In the Fleet sales channel 'Employee/Partner Programs' has 60% sales volume while in Retail, there is no sales volume of 'Employee/Partner Programs. For dealer/Self Registration total sales volume is in by Rental Channel. From the following stacked bar chart, we can clearly see that 'Leasing' is the most popular Sales Channel L3 among financing and cash.

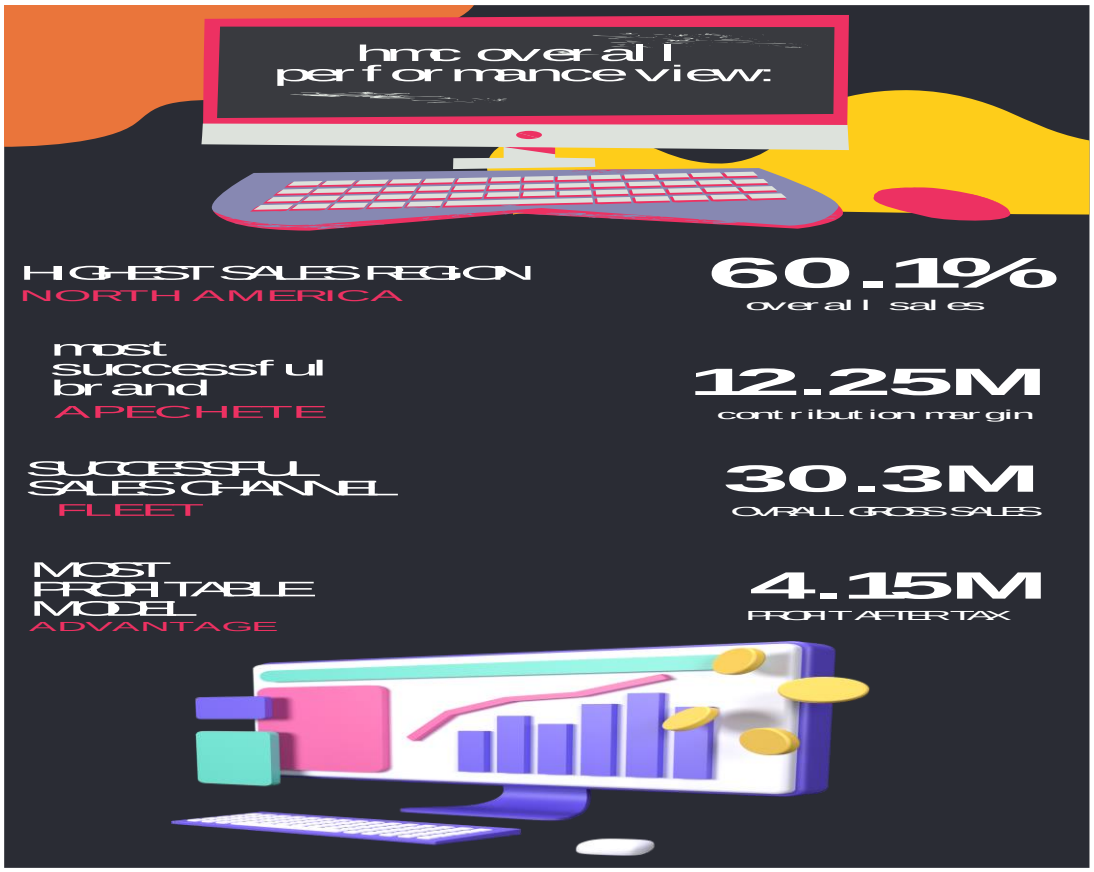


Q4. What are the most least and most profitable models?

Among all eighteen models, Advantage turns out to be the most successful one with a **44%** return on sales. They are earning **4.5M** in net revenue and the after-tax pay **is 4.15M.** Bloom and Pebble are also earning huge for the company but among all of them, Jespie and Mortmier turns out to be the least most profitable models. These two models are giving the company -7% and -17% percent return on sales respectively. And their net revenues are also not eye soothing with a disastrous loss of 0.2M and 0.4M respectively.



To have a summary of the whole overall performance panel of HMC's overall performance, let us view the infographic:



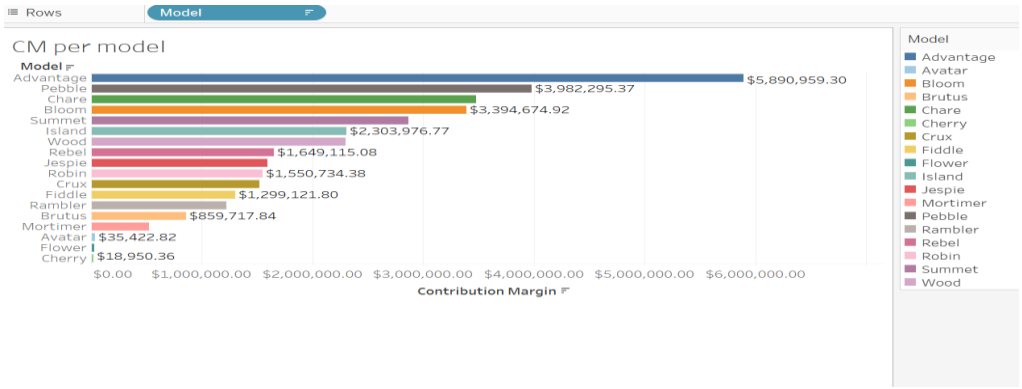
Financial performance of HMC across all fields:

Financial performance is a subjective measure of how well a firm can use assets from its primary mode of business and generate revenues. The term is also used as a general measure of a firm's overall financial health over a given period. (*Financial Performance: Definition, How It Works, and*

Example, n.d.). The better the condition of their financial performance, the better their company's stand in the market. We will know try to answer four queries related finance for the HMC data:

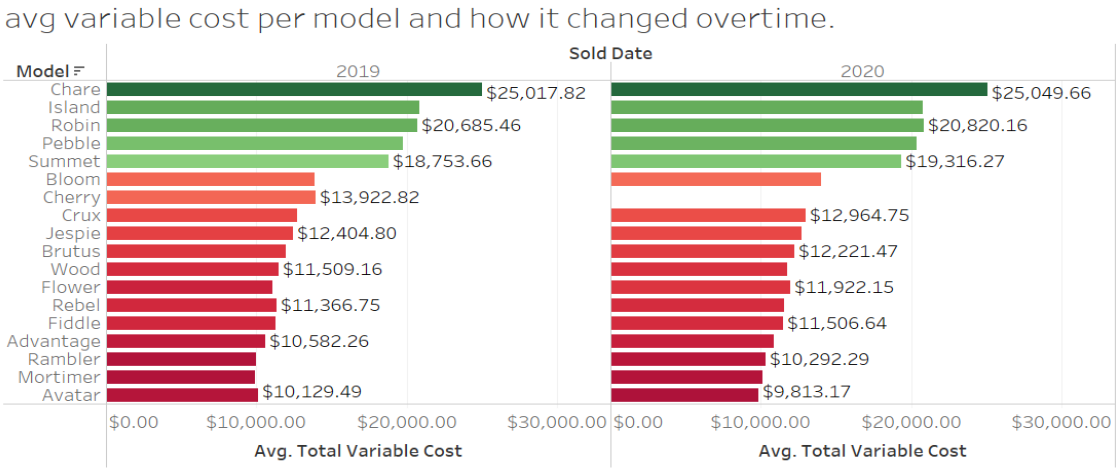
Q1. What is the current contribution margin of the models?

The contribution margin can be stated on a gross or per-unit basis. It represents the incremental money generated for each product/unit sold after deducting the variable portion of the firm's costs. (Estevez, 2019). In case of HMC, Advantage has the most contribution margin of **5.89M.** Bloom, Summet, Island, Rebel, Char has been visible in the top of contribution Margin level Currently . The model Cherry is contributing the least. On the other hand , Brutus ,Avatar, Flower is remaining in the bottom of contribution margin. Let us now see the data visualization:



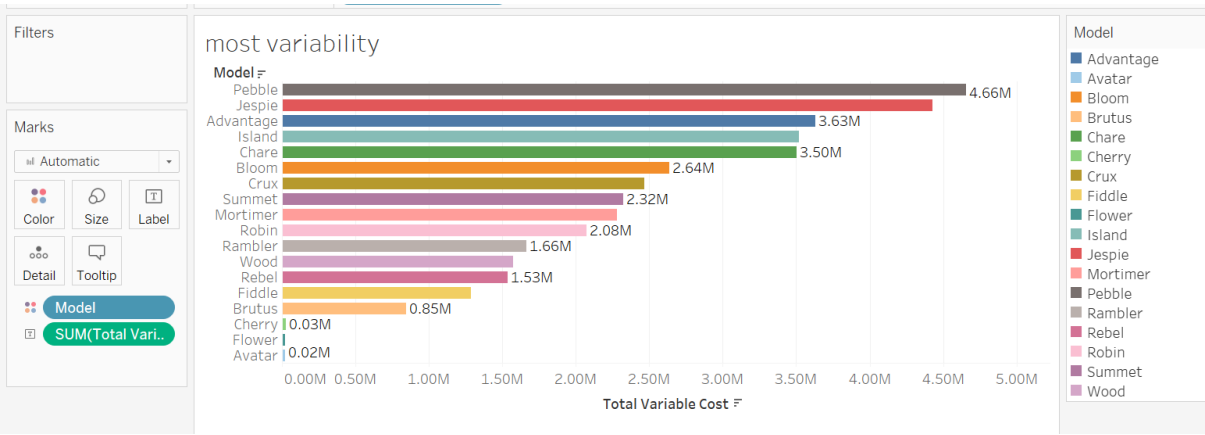
Q2. What is the average variable cost per model? And how has it changed overtime?

The average costs of generating a certain amount of product are measured by average total and variable costs though it can vary sometimes. The additional cost of creating one more unit of output is known as the marginal cost. The difference between the total cost and the change in quantity can be used to compute the marginal cost. By basing on Visualization ,**Chare** exists on highest amount of Variable cost in both years and the difference is not that much to notice like Jespie whose average variable cost per model increased in the next year .The model Cherry has got no data as it's been viewed blank from Tableau .The data related to this Model hasn't been provided for 2020.It's also noticeable that **Avatar** has got in the least variable cost for both of the years. . Let us now see the data visualization:



Q3. Which model has the most variability in variable cost?

The price of raw materials, distribution, and labour associated with each unit of a good or service you sell constitutes a variable cost, or variable expense. Depending on the level of production in your business, variable costs rise or fall. Variable costs may be either large (in the case of significant change) or fairly minimal, depending on the strategic objectives of your company. It's important to note that when looking HMC'S income statement, it increased costs which aren't always a bad sign. It may actually signify a rise in sales, which would raise the price of producing the necessary quantity of items. In turn, this results in more money coming in over time. We can observe the most variability in Pebble and in the bottom of variable cost is indicated to Avatar which is only $19942.66. Advantage, Chare, Bloom lies in the middle of most variability in variable cost. . Let us now see the data visualization:



Q4. What is the current CM per channel?

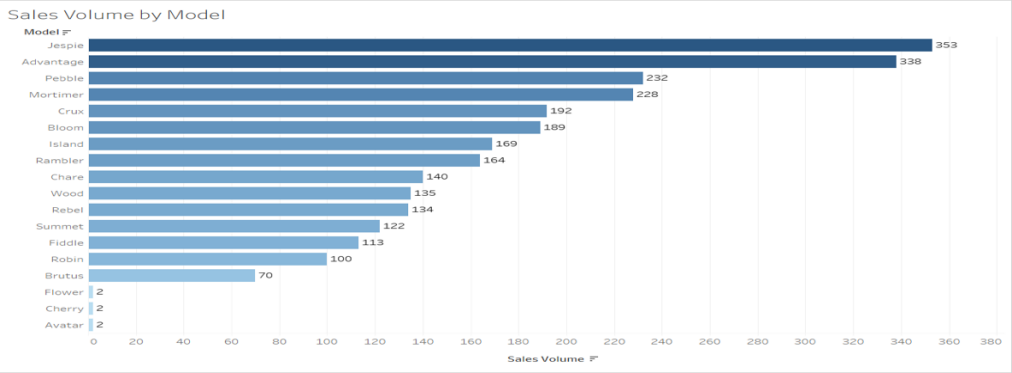
Please write this again Afifa. ☺ and infographic made by me.

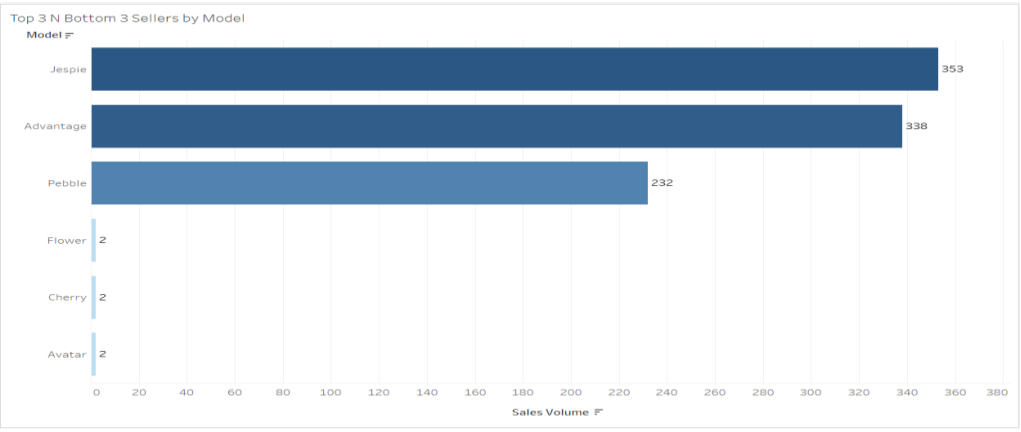
Operational performance of HMC around the world:

Today, every business is a succession of instantaneous occurrences. The way they gather and use that data, though, is what sets the good apart from the exceptional. (Bhat, n.d.). Businesses that use operational analytics are primarily concerned with increasing revenue and profitability through incredibly efficient operations based on real-time data. This is not a stand-alone project in a small area of the company. (Bhat, n.d.). The four queries given to us by HMC are given below:

Q1. What model options are top and bottom sellers?

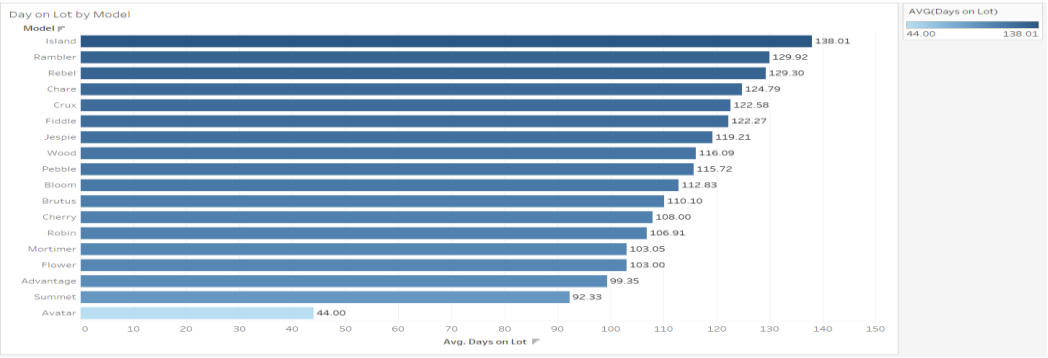
In terms of performance by model on sales volume, Jespie is the model that bought the highest sales for HMC. Jespie and Advantage have total sales of 353 and 338 respectively which is the highest among the models. In contrast, Flower, Cherry and Avatar were three product lines with lowest sales.





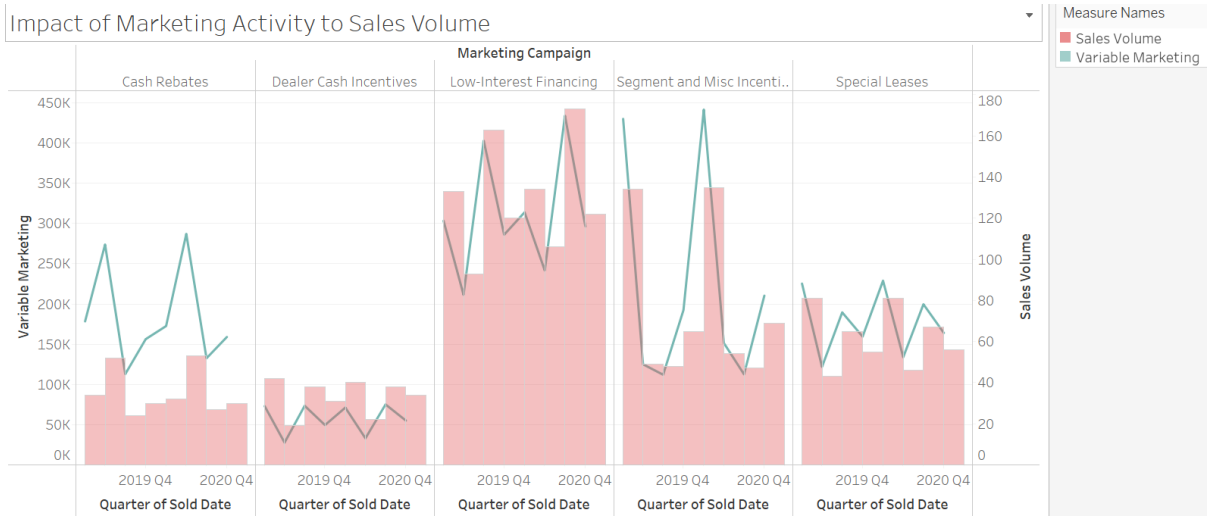
Q2. How many days are the various models on the lot prior to sale?

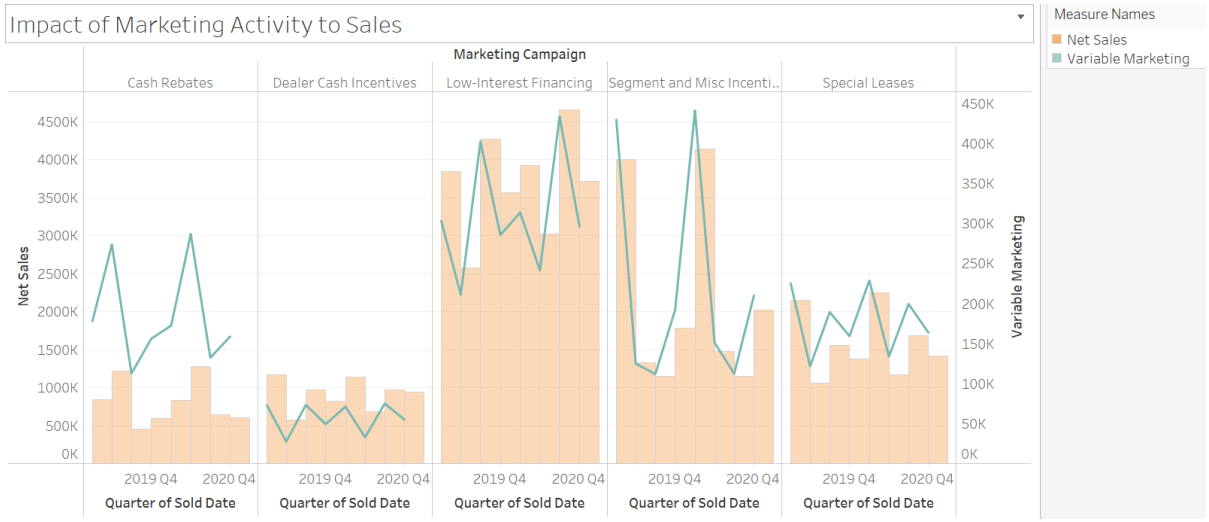
Island has an average of 138.01 days on the lot prior to sale which is the highest among all the models. On the other hand, Avatar has an average of 44.00 days on the lot prior to the sale which is the lowest among the models. Other than Summet and Advantage, which have got averages of less than 100 days on the lot (99.35 and 92.33 respectively), every models have an average of more than 100 days on the lot prior to sale.



Q3. What is the impact of HMC's marketing to its sales and financial performance?

To answer this question, we must see two graphs :



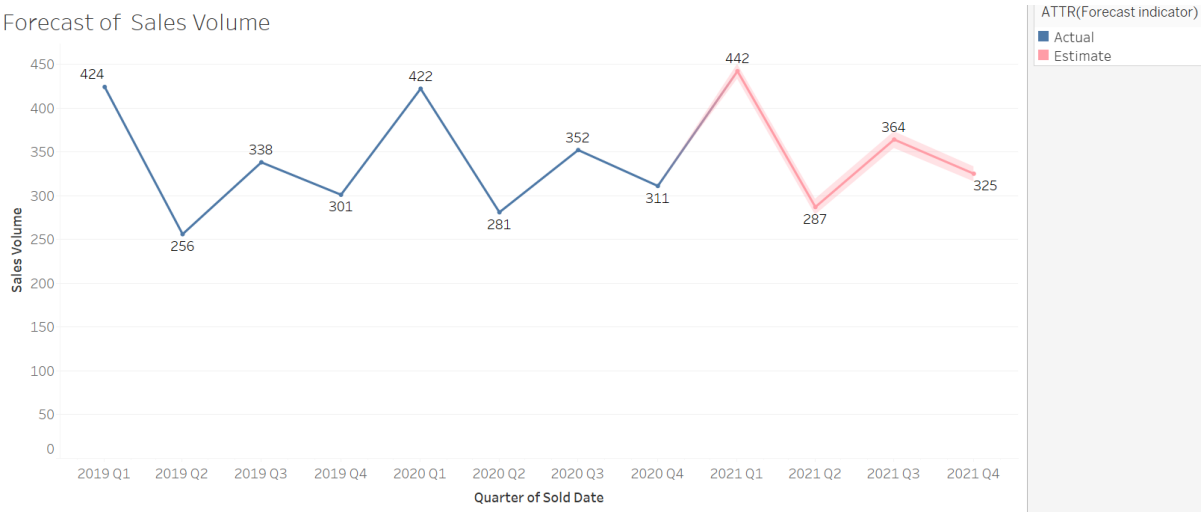


Based on the above two appendices, the graph shows that when the use of incentives for different marketing campaigns increases, so do sales volume and sales. Now let us have an overall view through an infographic:

Forecasting of HMC's data:

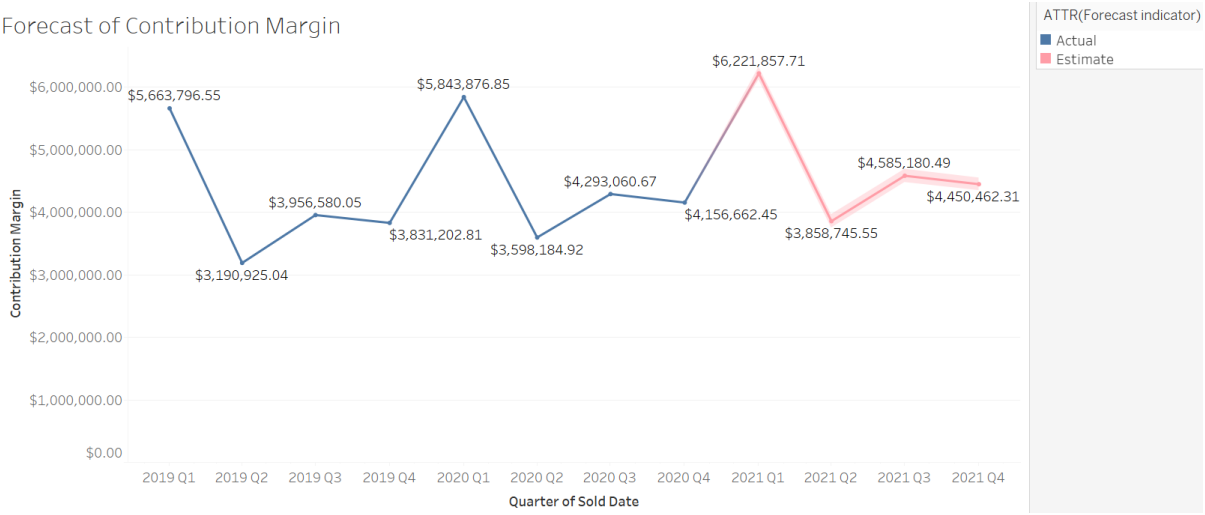
Using historical data as inputs, forecasting is a process that produces accurate predictions of the future course of trends. (Tuovila, 2020). Businesses use forecasting to decide how to spend their budgets and make plans for upcoming expenses. Typically, this is based on the anticipated demand for the offered goods and services. HMC provides us with queries which are described below:

Q1. What is the forecasting of sales volume four quarters in advance?



From the above forecasting above, we can say that the forecasting of their sales volume looks to be improving.

Q2. What is the forecasting of contribution four quarters in advance?



From the data visualization, we can interpret the fact that the contribution margin is supposedly to be improving. Basing on the two forecasting analysis, we can say that the marketing and sales strategies of HMC is proving to be effective.

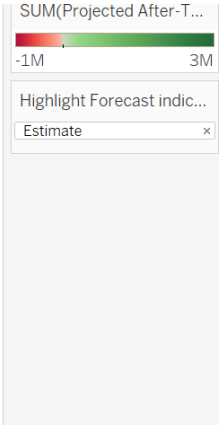
Q3. If there is an increase of 0.7% (average) on existing tariffs imposed by government of the countries we are operating in starting in 2022, what would be our projected after-tax for the year end of 2022 and 2023 (assuming we are looking at calendar-year)?

Assuming there is an increase in the tariffs imposed by government of different countries, using calculations field in tableau to estimate the areas with high taxes and low incomes that will leading to lower profitability of HMC.

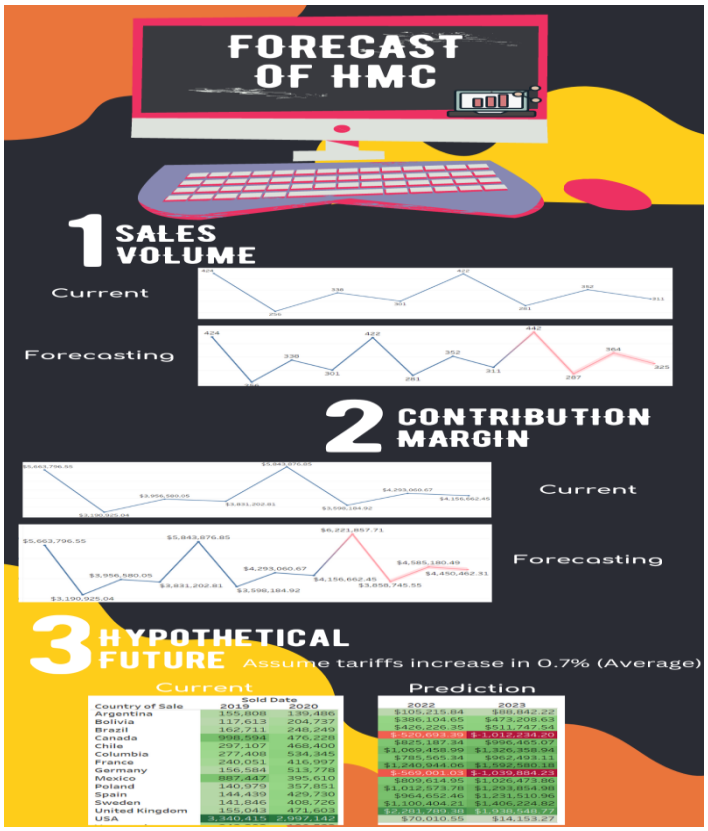
For example, assume there is an increase of 0.7% (average) on existing tariffs imposed by government. Adding calculation field to predict the projected after tax.

Projected After Tax

Country	Sold Date 2019	2020	2021	2022	2023
Argentina	$155,701.17	$139,327.55	$121,589.46	$105,215.84	$88,842.22
Bolivia	$117,534.02	$204,638.01	$299,000.66	$386,104.65	$473,208.63
Brazil	$162,536.04	$248,057.22	$340,705.17	$426,226.35	$511,747.54
Canada	$998,511.20	$476,190.09	$-29,152.59	$-520,693.39	$-1,012,234.20
Chile	$297,080.99	$468,358.72	$653,909.60	$825,187.34	$996,465.07
Columbia	$277,350.83	$534,250.77	$812,559.05	$1,069,458.99	$1,326,358.94
France	$240,038.05	$416,965.82	$608,637.57	$785,565.34	$962,493.11
Germany	$156,574.04	$513,747.87	$889,307.94	$1,240,944.06	$1,592,580.18
Mexico	$887,175.95	$395,504.98	$-98,117.82	$-569,001.03	$-1,039,884.23
Poland	$140,966.67	$357,825.58	$592,756.05	$809,614.95	$1,026,473.86
Spain	$144,427.77	$429,702.70	$731,292.58	$1,012,573.78	$1,293,854.98
Sweden	$141,838.76	$408,697.26	$697,793.96	$964,652.46	$1,231,510.96
United Kingdom	$155,029.93	$471,573.00	$794,583.60	$1,100,404.21	$1,406,224.82
USA	$3,340,114.59	$2,996,873.98	$2,625,029.99	$2,281,789.38	$1,938,548.77
Venezuela	$242,237.18	$186,379.89	$125,867.84	$70,010.55	$14,153.27



From the table provided above, it shows that the impact of increasing in tariffs to different country of HMC. Focus on the data provided in the table, there are 2 country that will be having negative income after deducting the taxes, which are Canada and Germany. Besides that, the predicted income after tax of Argentina, USA and Venezuela also decreasing from year to year. Below there is an overall view o forecasting in an infographic:



Recommendation and conclusion:

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