

SparkEV Case Study Analysis

INF20016 - Big Data Management

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Executive Summary

Overall Performance Analytics

The United States (\$39.9 million), Mexico (\$9.7 million), and Canada (\$9.1 million) are the top three best net sales performing countries. Storm (\$21 million and \$23 million), Centro (\$18 million and \$21 million), and Romeno (\$14 million and \$15 million) are the top three best net sales and gross sale performing models. Storm (\$6 million), Romeno (\$5 million), and Tranquil (\$4 million) are the top three best net revenue performing models. Gallen is the worst performing model in net sales, net revenue, and gross sales. North America leads significantly in net sale through dealer, fleet, and retail. This is followed by Asia and Europe.

Financial Analytics

Storm model has the highest contribution margin with \$8,688,638 and Gallen model has the lowest contribution margin with \$1,721,013. Tempest (\$7,402), Centro (\$5,243), and Storm (\$5,028) have the highest variability of total variable cost. Payment by cash and leasing is the highest for fleet. Payment by financing is the highest for retail.

Operational Analytics

The USA facility has consistently outperformed the Thailand facility in the number of vehicles manufactured each year since 2019. SparkEV luxury edition vehicle in the colour blue is the most popular with 360 vehicles manufactured. Blue, white, and gray are the most popular colours and brown is the least popular colour with only 4 vehicles. The average day on lot is 55.19 days. The total number of defect vehicles is 64 with 37 fixed and 27 total loss. SparkEV defect rate is 1.57%.

Two Years Forecast

In 2023, Q3 sales volume is forecasted to decline to 250.4, but in Q4 it is expected to increase to 258.9. The sales volume is forecasted to increase each quarter from 2023 Q4 to 2025 Q3. The net sales and net revenue for 2023 Q3 is forecasted to decrease. Net sales is anticipated to remain steady from 2023 Q4 to 2025 Q3. Net sales is anticipated to increase again in 2023 Q4. In 2023, Q3 contribution margin is forecasted \$2,788,332 and anticipated to remain the same to 2025 Q3.

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1. Introduction

Spark Electric Vehicle (SparkEV) is an electric vehicle manufacturer in the USA and Thailand. However, it is sold in 13 different countries in North America, Asia, and Europe. SparkEV value propositions is the ability to customise its vehicle from appearance to different models and styles.

The purpose of this report is to create visuals and analyse the data given by Sophie Smart, the Financial Director at SparkEV, for her to use and show to other board directors and senior management.

In order to create visuals and analytics, the data needed to be cleaned. This report gives a background analysis of the global electric vehicle market and a competitor analysis. Then it will provide an overall performance analysis, financial analysis, operational analysis, and a two year forecast of SparkEV. Along with each analysis, an interactive dashboard will be made for Sophie or other managers to use as well. The report will conclude with an infographic which will display key insights found from the analysis.

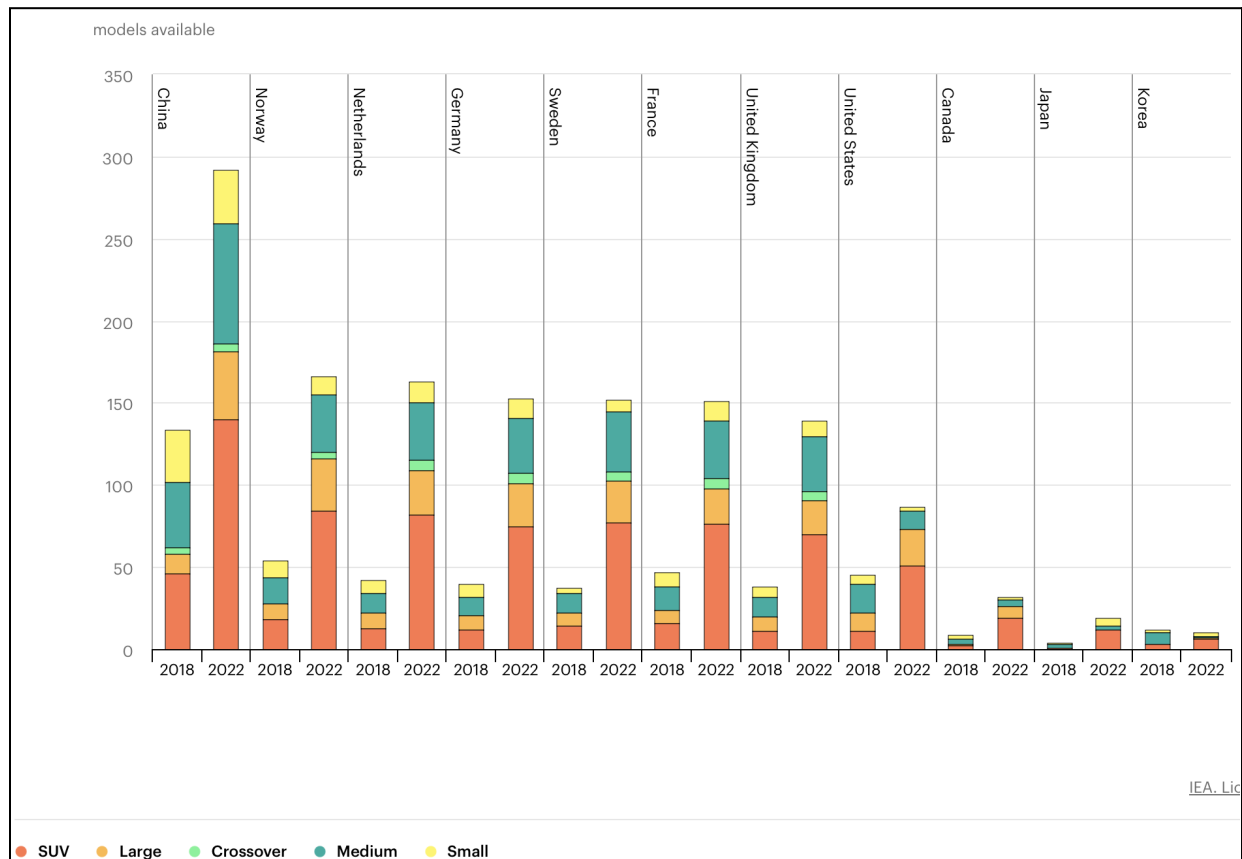
2. Background Analysis

2.1 Electric Vehicle Background

The global electric vehicle market is projected to grow at a compound annual growth rate of 18.2% between 2021 and 2030 (Jadhav & Mutreja, 2022). In 2022, China, Europe, and the United States are the top three largest electric vehicle sales markets (IEA, 2023). It is worth mentioning that even though China is one of the biggest electric vehicle markets, it is struggling to provide the charging infrastructure which is hindering its growth (Jadhav & Mutreja, 2022).

Technological advancement, national policies, government incentives, and increase in oil prices supports demand and sales of electric vehicles (Jadhav & Mutreja, 2022; IEA, 2023). In addition, maintenance cost is lower compared to fuel vehicles (Fortune Business Insights, 2023).

In 2022, 500 electric vehicle models options were available (IEA, 2023). Furthermore, within the same year, 900,000 charging points were built which totaled to 2.7 million public charging points being available globally (Virta, 2023). Figure 1 (below) shows the number of electric vehicle models available has increased significantly from 2018 to 2022 for the majority of the countries shown. In 2022, SUV and medium size electric vehicles had the most model options in most countries as seen in Figure 1.

Figure 1: Electric Vehicle Models Available by Size and Countries

(Source: IEA, 2023)

Jang and Choi (2021), conducted a study on factors that affect the adoption of electric vehicles and found that autonomous driving, long range driving, and fuel efficiency are the most important factors to consumers. However, high cost, distance to charging station, and long charging time are factors hindering the adoption of electric vehicles (Jang & Choi, 2021).

2.2 Competitor Analysis

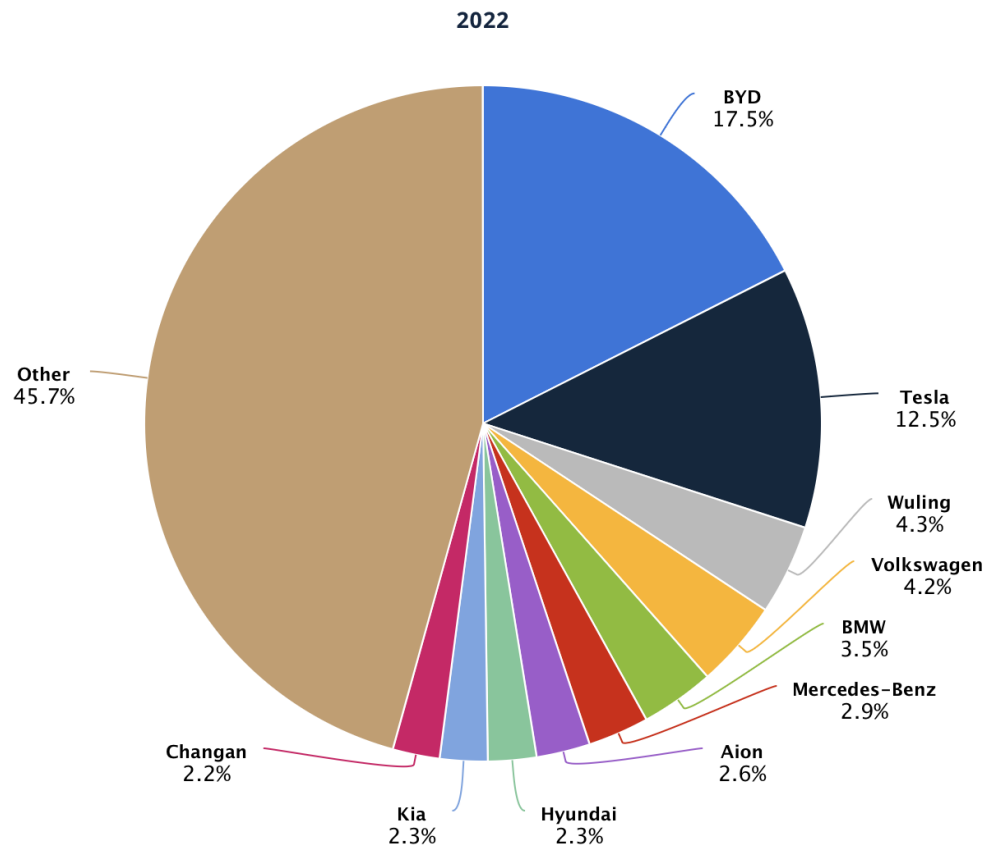
Automotive manufacturer strength, such as capital and production capability, and reputation is very important which makes it difficult for new entrants to enter the market (MarketLine, 2023). Furthermore, subsidies relating to manufacturing electric vehicles have been getting cut to prevent overcrowding of low quality and cost of electric vehicles (MarketLine, 2023).

In the electric vehicle industry, manufacturers are producing the electric vehicles locally to reduce operating costs which will benefit the customers and increase market shares (Palwe, 2023). Furthermore, advancement in technology and lower cost in manufacturing is making electric and hybrid vehicles more affordable (MarketLine, 2023). It is worth noting that electric and hybrid vehicle manufacturers are focusing on self-manufacturing components and parts to decrease their dependence on suppliers and avoid production disruptions (MarketLine, 2023).

Electric vehicle companies are focusing on acquisitions, collaborations, and innovations to gain competitive advantage (Fortune Business Insights, 2023).

Figure 2 (Below) shows 2022 global electric vehicle sales by top manufacturers.

Figure 2: Electric Vehicle Sales By Car Manufacturer in 2022



(Source: Statista, 2023)

3. Overall Performance Analytics

The goal of overall performance analytics is to analyse and demonstrate SparkEV's processes as a whole performance inside the organisation. As a result, it contains net sales in regions, which explain net sales, net revenue, and gross sales for each SparkEV model. Furthermore, the sales channel is taken into account in the analysis as well.

3.1. Net Sales in Region

Figure 3: Country by Net Sale

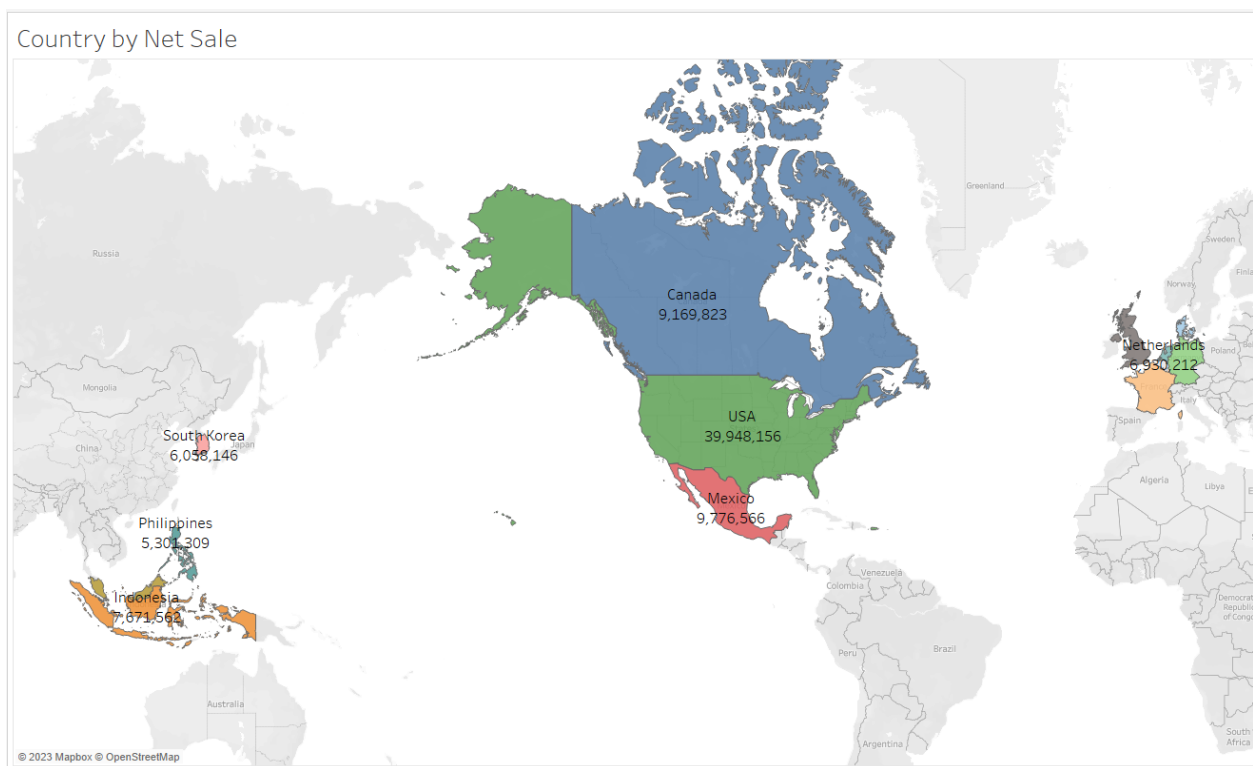
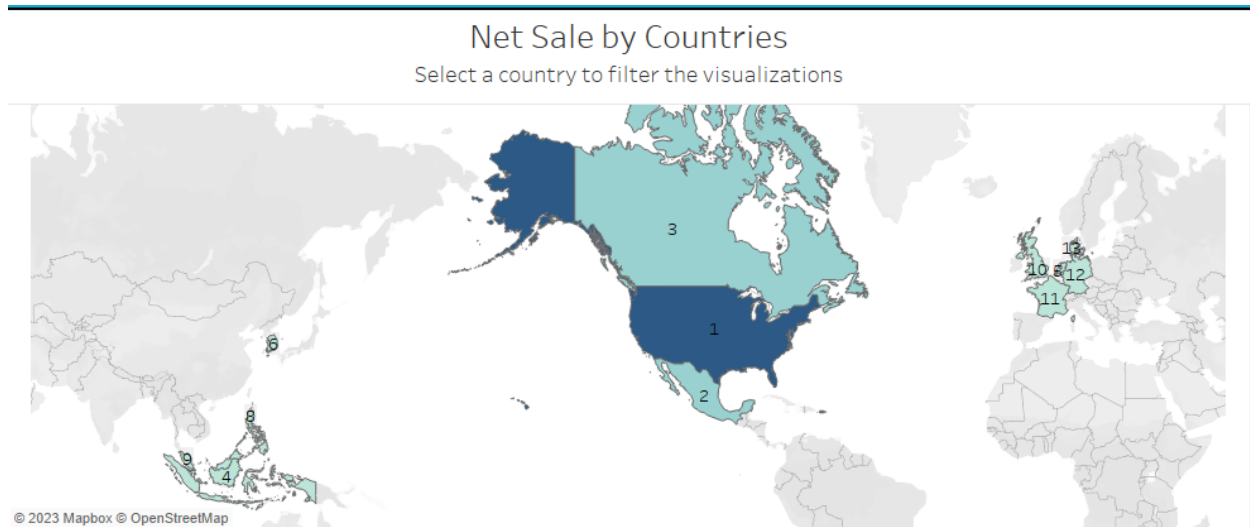


Figure 4: Net Sale By Country (Dashboard)

According to Figure 3 and 4, the United States placed first among the nations, with the largest net sales approximately \$39.9 million. Mexico ranks second with \$9.7 million net sales and Canada ranks third with \$9.1 million. As a result, the top three countries are all in North America, demonstrating the best performance among the countries. Following that, certain Asian nations follow behind North America and Europe, with the lowest net sales among all the countries listed in the figure above.

3.2. SparkEV's Models Performance

Figure 5: Net Sale By Model

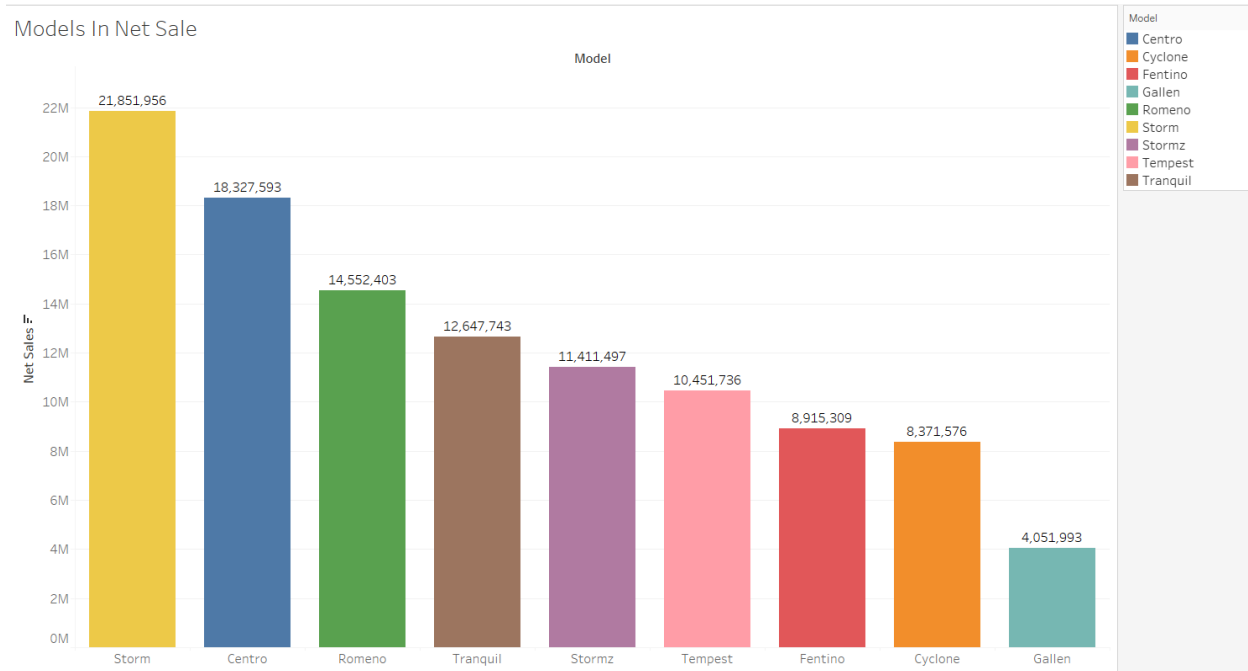
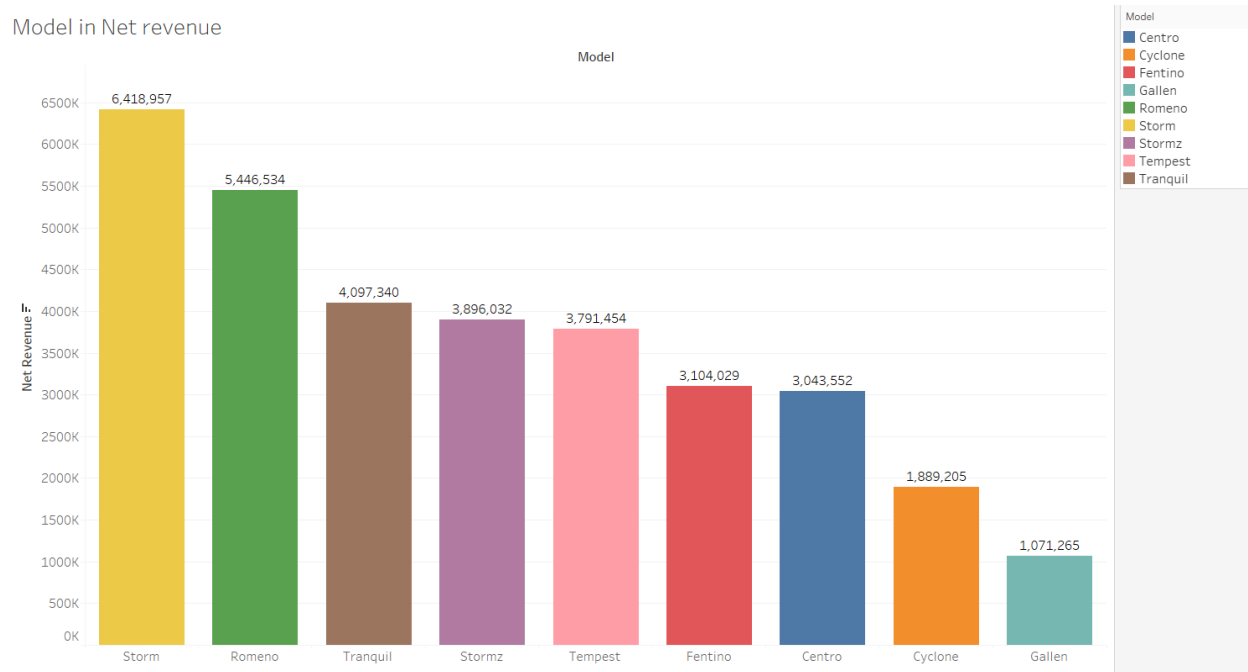
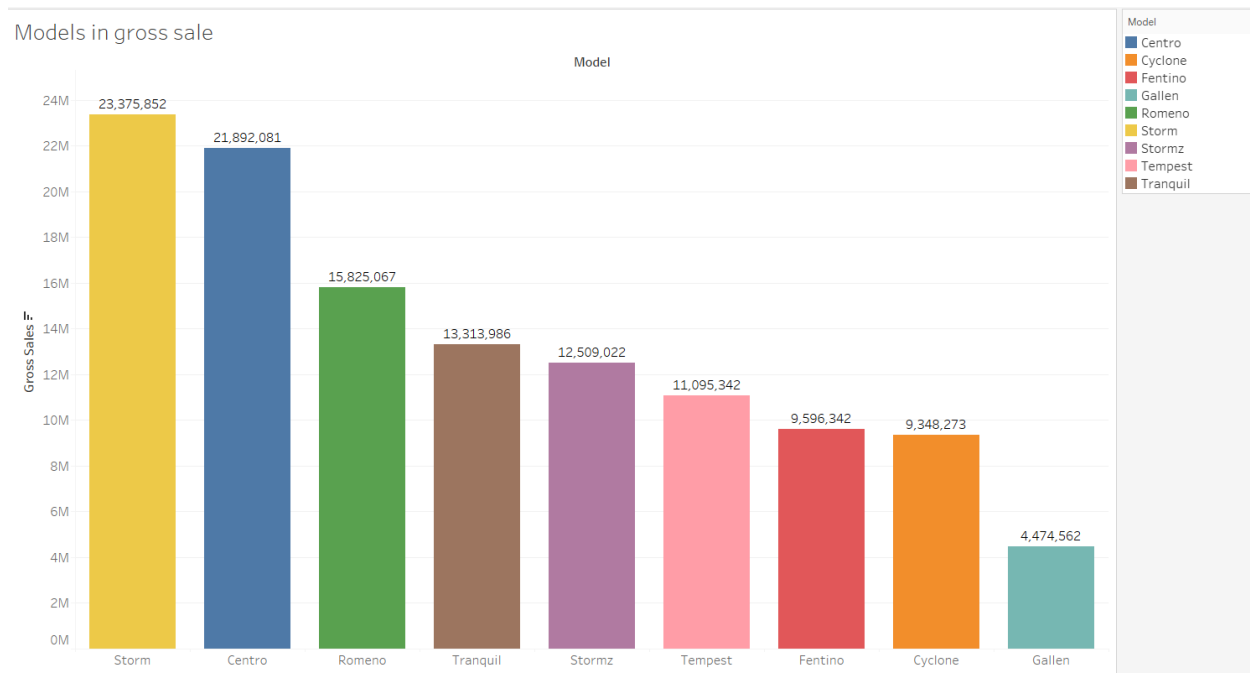


Figure 5 shows Storm had the greatest net sales total for the year, which was \$21.8 million. Centro is second with \$18.3 million which is around 3 million behind Storm. Romeno takes third place with \$14.5 million in net sales. Gallen ranked last with net sales of \$4 million, which is half of Cyclone, which ranked second last.

Figure 6: Net Revenue By Model

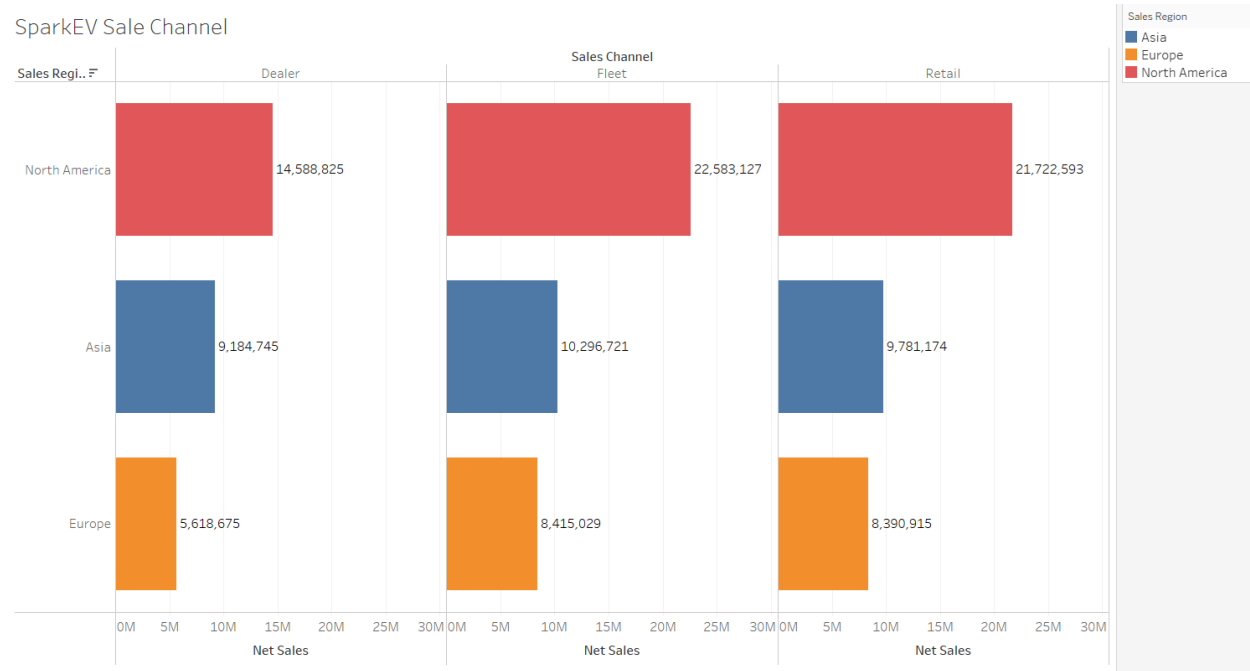
Storm is still rated first in terms of net revenue, with a total of 6.4 million. However, Romeno, which is rated third in net sales, has risen to second in net revenue with 5.4 million, while Stormz is placed third with 4.1 million. Gallen excessively remains at the bottom with its 1 million net revenue.

Figure 7: Gross Sale By Model

Similarly, gross sales are depicted in the figure above, with Storm still ranking first with 23.3 million, Centro ranking second with 21.9 million, and Romeo ranking third with 15.8 million. As a result, Gallen's rank stays at the bottom with gross sales of 4.4M, half the amount difference with Cyclone despite being rated second last.

3.3. Spark EV's Sales Channels

Figure 8: Net Sale By Sale Channel



In the field of sales channels, there has been a breakdown of significant numbers that offer light on regional sales distribution. Within the dealer channel, North America leads with 14,656,968, followed by Asia with 9,184,745 and Europe with 5,618,675. Meanwhile, the fleet channel has its own distinct sales distribution, with North America dominating the scene with 22,583,127, followed by Asia with 10,296,721, and Europe with 8,415,029. Different insights into sales distribution within different channels provide significant data for understanding regional market dynamics.

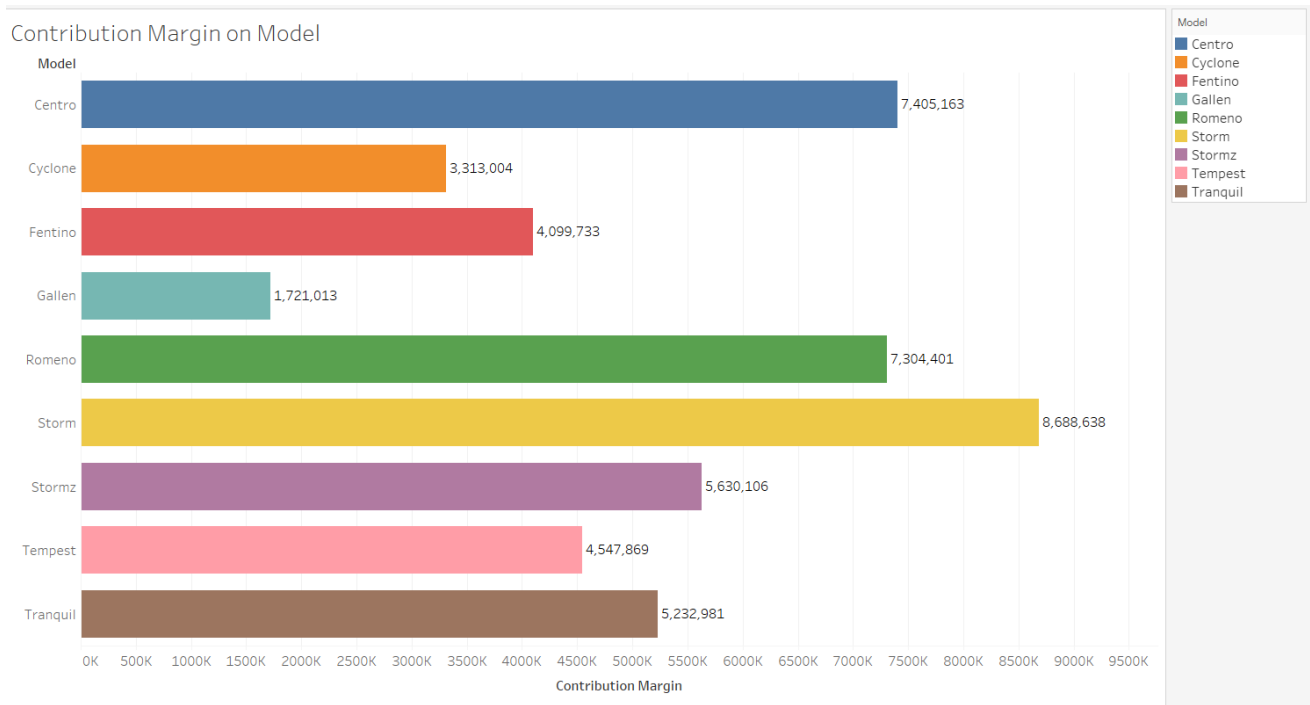
4. Financial Analytics

The Financial Analytics section of this report is dedicated to presenting a comprehensive overview of SparkEV's financial performance and profitability. Through the use of insightful visualisations, we aim to provide a clear and concise understanding of the company's financial dynamics. Our analysis encompasses critical financial indicators such as the Operating Expense Ratio, Profit Margin Ratio, Total Expense Breakdown, and Total Expense for Each Model. Additionally, we offer a time series plot spanning the years 2019 to 2023, featuring key financial metrics, including net sales, net revenue, profit, contribution margin, tariffs, total costs, sales volume, and more.

This report's Financial Analytics section is devoted to providing a thorough summary of SparkEV's profitability and financial performance. Our goal is to present a clear and succinct picture of the company's financial dynamics through the use of intelligent visualisations. Important financial metrics including the operating expense ratio, profit margin ratio, total expense breakdown, and total expense for each model are all included in our analysis. We also provide a time series plot with important financial data from 2019 to 2023, such as net sales, net revenue, profit, contribution margin, tariffs, total costs, sales volume, and more.

4.1. Contribution Margin Per Model

In this section, we explore SparkEV's financial performance through an examination of the contribution margin (CM) for each of its models. Contribution margin is a vital financial metric that reveals the profitability of individual models after accounting for variable expenses (King, 2018). The following bar chart represents the contribution margin for each model.

Figure 9: Contribution Margin By Model

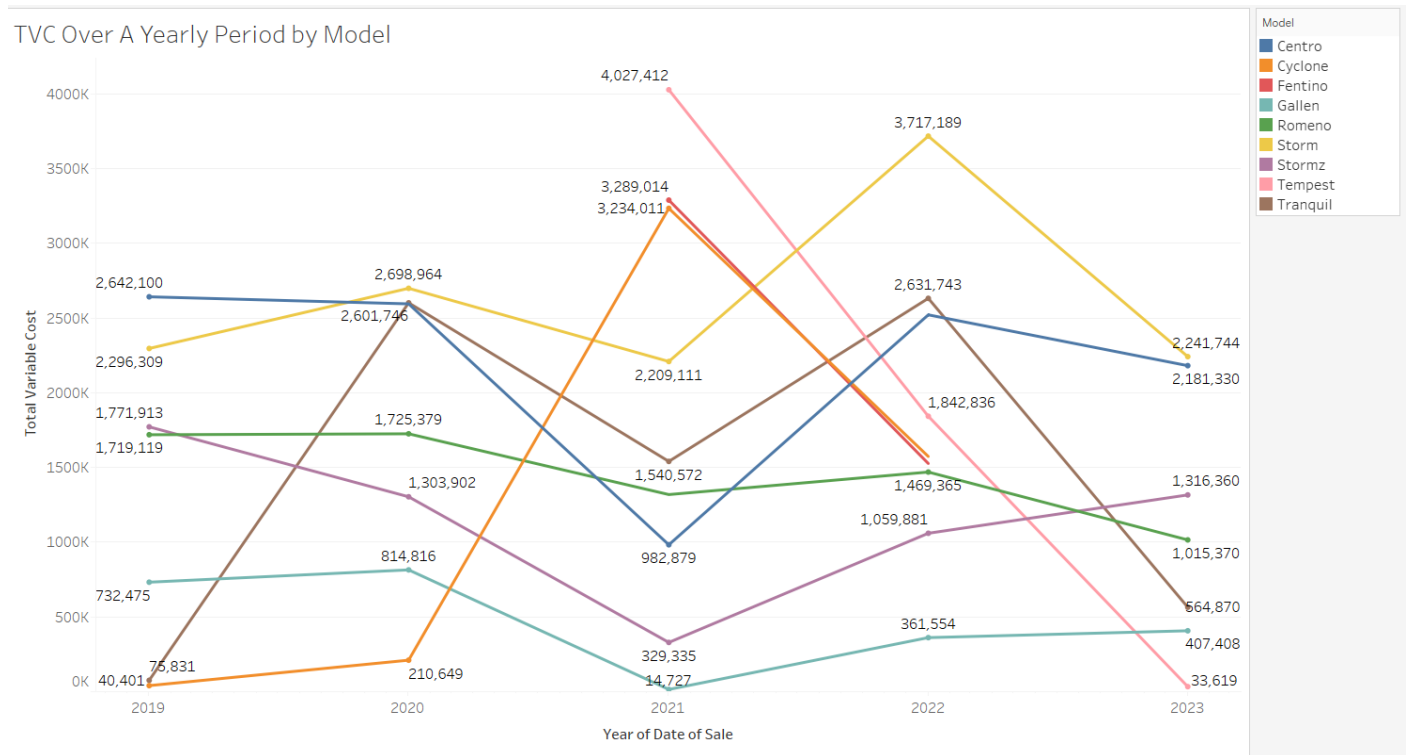
These CM figures provide valuable insights into the financial performance of each model within the SparkEV product lineup. Notably, the model 'Storm' demonstrates the highest CM at \$8,688,638, indicating its strong profitability. On the other hand, 'Gallen' exhibits the lowest CM at \$1,721,013, suggesting a comparatively lower contribution to revenue.

It is essential to consider recent trends in contribution margin as well. For instance, the CM for July 2023 stands at \$1,457,004, marking a significant increase compared to July 2022, where it was \$857,101. Notably, in May 2023, the CM experienced a substantial decrease from \$1,771,229 to \$693,299 in June 2023. This was followed by a notable recovery, with the CM rising to \$1,457,004 in July 2023.

These observed trends in contribution margin not only aid in understanding the financial dynamics of each model but also serve as a crucial reference point for forecasting and strategic decision-making in SparkEV's financial operations (Renfro 2022).

4.2. Total Variable Cost Over A Yearly Period By Model

Figure 10: Total Variable Cost Over A Yearly Period By Model



In examining the average variable cost (AVC) trends for the SparkEV models over the years, we can observe noteworthy fluctuations, as displayed in figure above.

First, let's consider the Storm model. In 2022, this model had an average variable cost of \$3,717,189, as shown on the graph. However, in 2023, the AVC for the Storm model dropped significantly to \$2,241,744. This substantial decrease in variable costs could be attributed to various factors, such as improvements in production efficiency or the management of variable expenses.

The Tempest model, which had the highest AVC among all models in 2021 at \$4,027,412, as indicated in the graph. Nevertheless, the Tempest model exhibited a substantial reduction in AVC over the subsequent years. In 2022, the AVC decreased to \$1,842,836, and it further plummeted to \$33,619 in 2023. These reductions suggest a substantial improvement in cost management, which may have positively impacted the

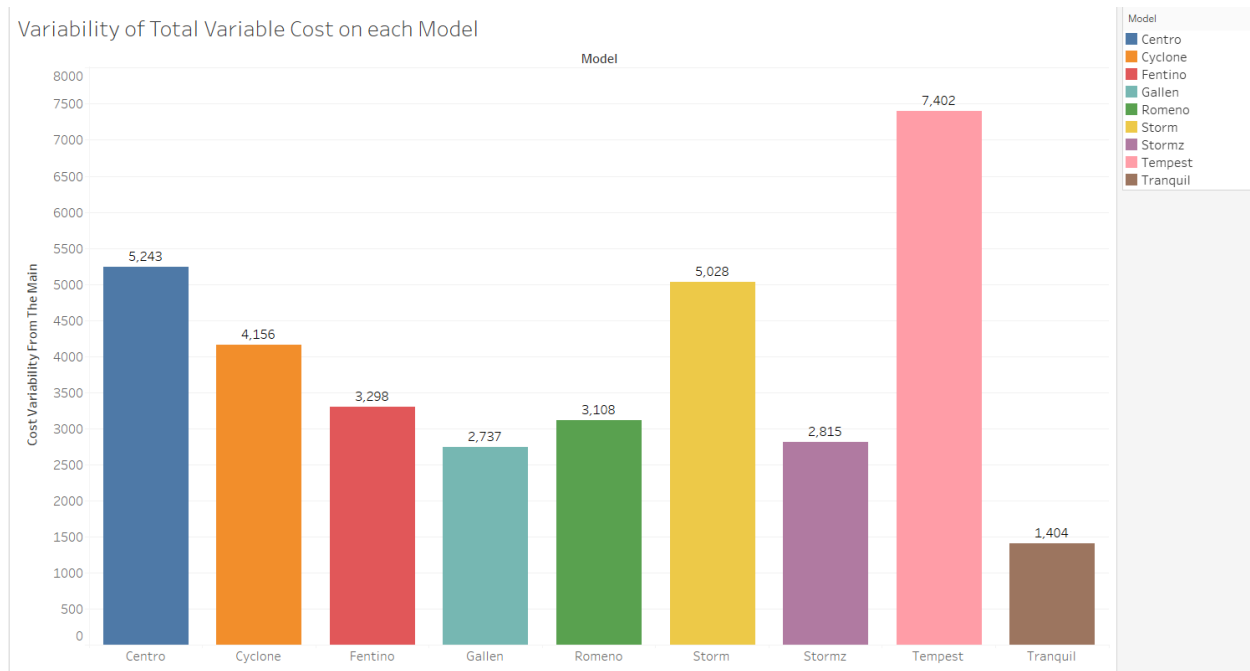
overall profitability of the Tempest model. As for the significant reduction in AVC from the years 2022 to 2023, it could potentially be attributed to enhanced production efficiency, streamlined operational processes, or cost-saving initiatives that contributed to the overall profitability of the Tempest model (Indeed Editorial Team 2023).

Conversely, the Gallen model displayed different trends in AVC. In 2021, it had the lowest AVC among all the models at \$14,727, as depicted in the graph. However, the Gallen model's AVC increased significantly in 2022, reaching \$361,554. This uptrend continued into 2023, with an AVC of \$407,408. This increase in variable costs might be attributed to various factors, such as raw material price fluctuations or changes in production processes.

The AVC trends highlighted above underscores the significance of cost management and its impact on the profitability of SparkEV models. Analysing the relationship between AVC and contribution margins (CM) can provide further insights into optimising model profitability, aligning with the principles observed in the graph (Schmidt 2023). This emphasises the importance of monitoring and managing variable expenses to ensure the sustained profitability of SparkEV's product line.

4.3. Variability in Total Variable Costs

The visualisation above depicts the standard deviation of variable costs for each of SparkEV's models. Understanding this variability is a crucial indicator for the company, shedding light on the internal dynamics and financial performance of each model.

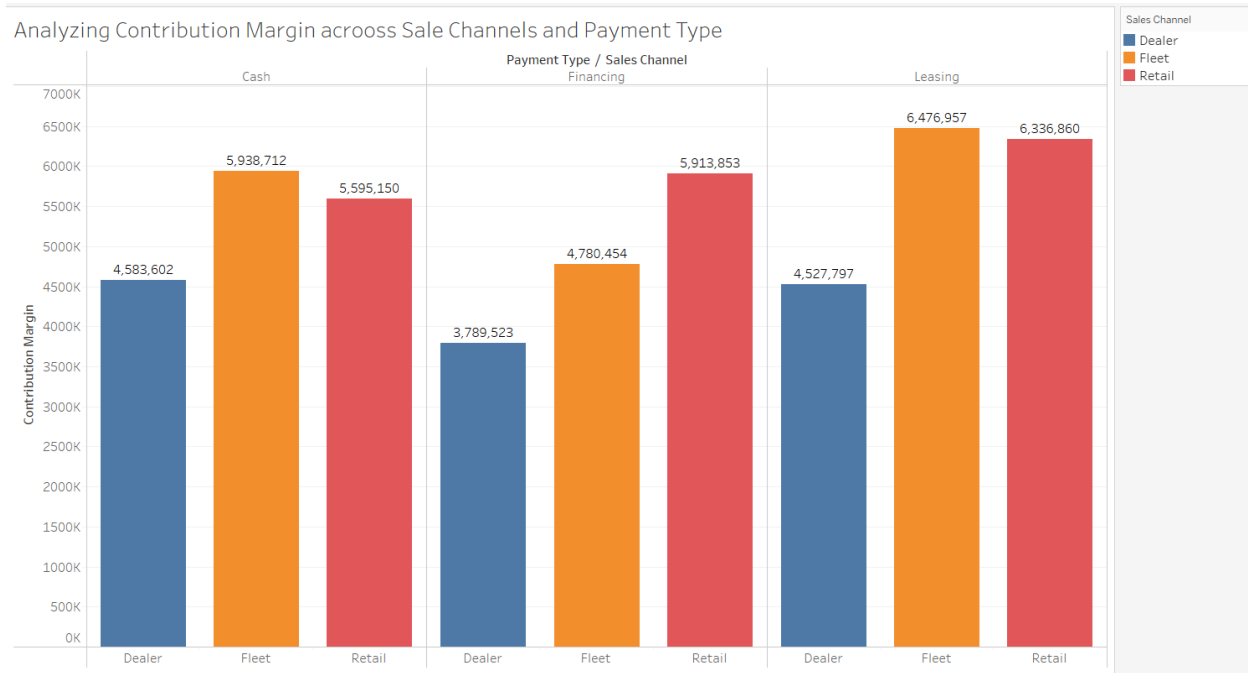
Figure 11: Variability of Total Variable Cost By Model

Among SparkEV's models, Tempest demonstrates the highest cost variability, as indicated by a significant standard deviation of \$7,402. Centro and Storm closely follow with standard deviations of \$5,243 and \$5,028, respectively. In contrast, Tranquil displays the most stable cost dynamics, with a notably low standard deviation of only \$1,404. This data not only highlights the variability but also unveils the financial predictability within the company. Models with larger standard deviations signify greater unpredictability in their variable costs.

The variability of total variable costs is a crucial indicator for SparkEV. It offers valuable insights into the financial health and operational efficiency of each model. High variability can indicate inefficiencies or external factors affecting production, while low variability suggests stability and predictability in costs. By understanding these patterns, SparkEV can make informed decisions about resource allocation, pricing strategies, and future investments to enhance its overall business performance.

4.4. Analysing Contribution Margin Across Sales Channels And Payment Types

Figure 12: Contribution Margin by Sales Channel and Payment Type



We evaluate contribution margins across sales channels and payment types in our financial analysis, revealing insights into SparkEV's financial performance.

Within the 'Dealer' sales channel, we find varying contribution margins based on payment types. Cash transactions contribute \$4.58 million, financing adds \$3.79 million, and leasing generates a substantial \$4.53 million.

In the 'Fleet' sales channel, cash transactions contribute \$5.94 million, financing yields \$4.78 million, and leasing is particularly profitable, resulting in a margin of \$6.48 million.

In the 'Retail' sales channel, we observe similar variations. Cash transactions contribute \$5.60 million, financing adds \$5.91 million, and leasing generates a significant \$6.34 million contribution margin.

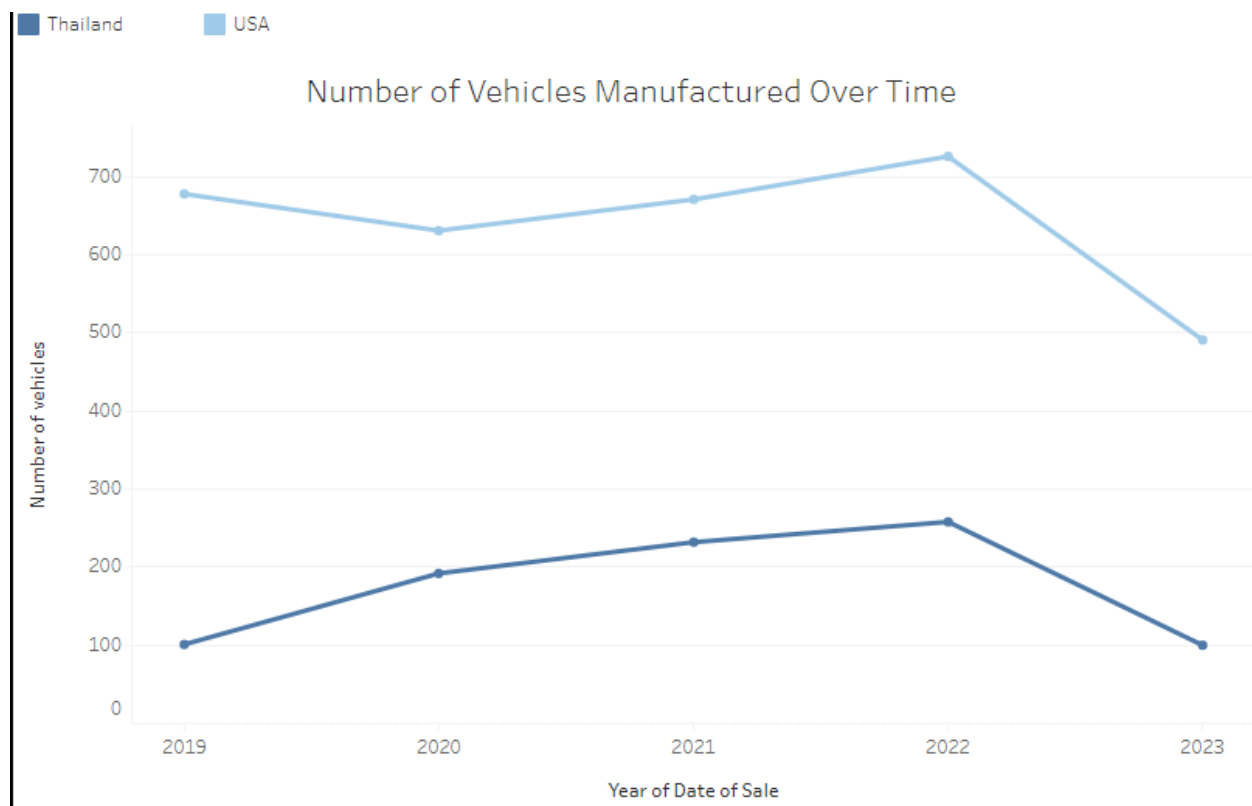
These findings highlight differences in contribution margins across sales channels and emphasise the impact of payment methods on overall financial performance. This analysis offers valuable insights for strategic decision-making, helping SparkEV optimise revenue streams and operational efficiency.

5. Operational Analytics

5.1. Manufacturing Analysis

5.1.1. Manufacturing Facility Analysis

Figure 13: Number of Vehicle Manufactured Over Time

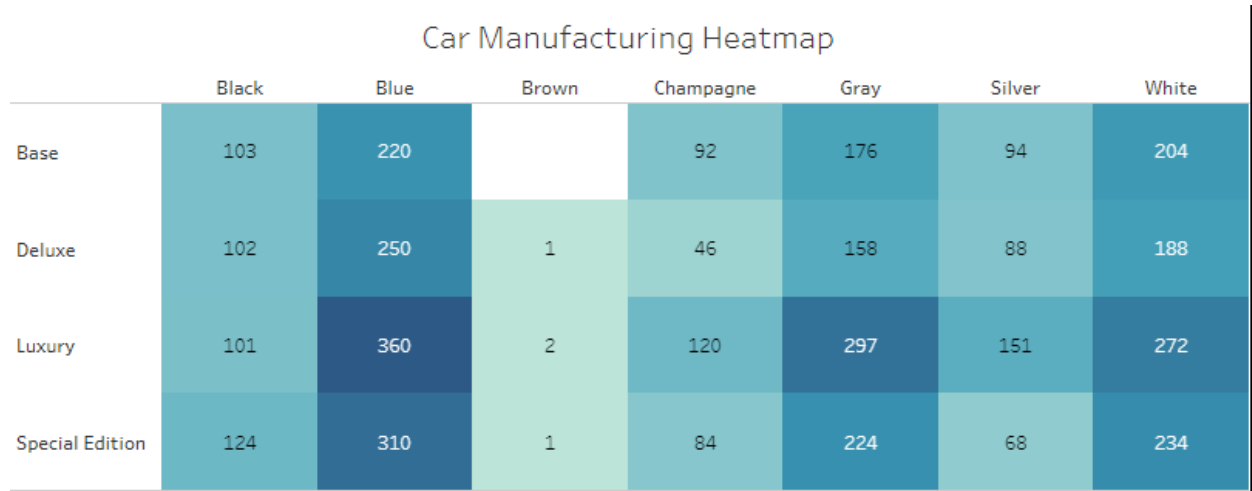


A significant aspect of SparkEV's manufacturing operations lies in the comparison between two primary production facilities: one located in the USA and the other in Thailand. The line charts reveal compelling insights into the number of cars manufactured at each facility over the years. Notably, the USA facility has consistently

outperformed its counterpart in Thailand, producing a greater volume of vehicles over time from the year 2019 to 2023 (See Figure 13).

5.1.2. Car Configuration Insights

Figure 14: Car Manufacturing Heatmap



Additionally, a fundamental aspect of SparkEV's manufacturing operations is the extensive customization it offers to customers. After doing some data analysis, we have come up with some valuable insights of the preferred car configuration of the consumers (see Figure 14):

- Electric vehicles with luxury edition and colour blue are the most popular configuration with 360 vehicles sold.
- With only four cars manufactured, brown colour is the least favoured option among SparkEV consumers.
- Blue, white, grey are the top 3 most popular colour choices.

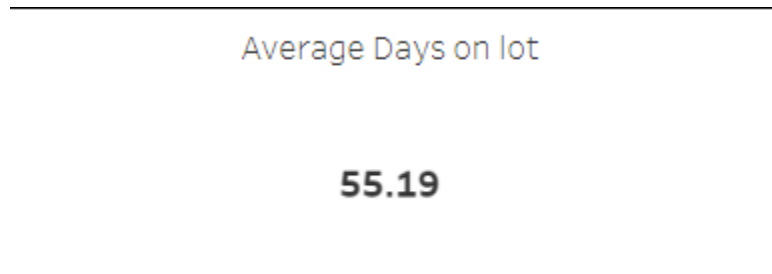
The insights derived from the analysis of vehicle configurations not only reflect customer preferences but also serve as a practical guide for SparkEV's manufacturing operations. Prioritising the production of favoured configurations not only meets customer expectations but also provides tangible benefits in terms of manufacturing efficiency and cost control.

5.2. Days on Lot Analysis

Efficient inventory management is a critical factor in ensuring customer satisfaction and profitability. The analysis of Days on Lot provides valuable insights into inventory turnover, its implications, and strategies for improved performance.

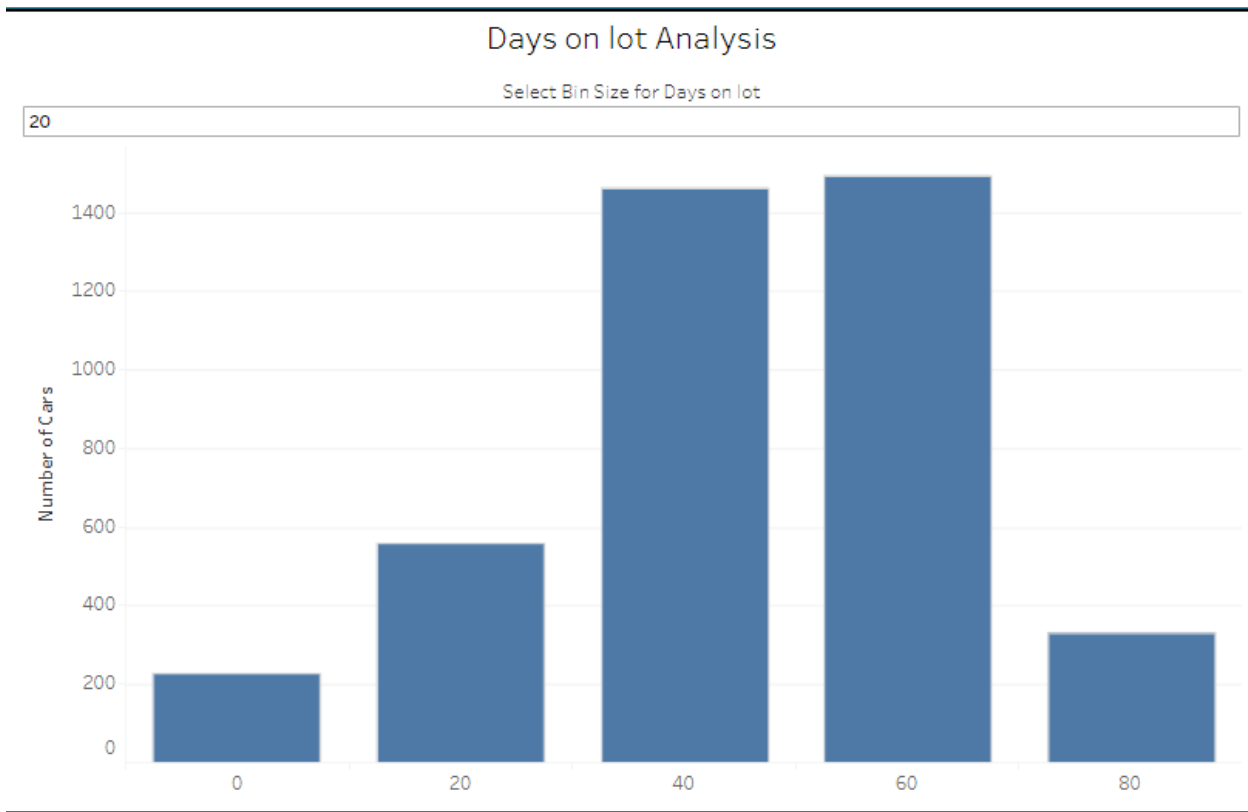
Currently, the average Days on Lot for all vehicle models is 55.19 days (see Figure 15). This metric signifies the average duration a vehicle spends in the inventory lot before being sold.

Figure 15: Average Days on lot KPI



For the detailed the number of car for each days on lot analysis , the distribution of cars across the number of Days on Lot is identified as below (see Figure 16):

- Days on lot from 0 to 19 days: 227 cars
- Days on lot from 20 to 39 days: 560 cars
- Days on lot from 40 to 59 days: 1460 cars
- Days on lot from 60 to 79 days: 1493 cars
- Days on lot from 80 to 99 days: 330 cars

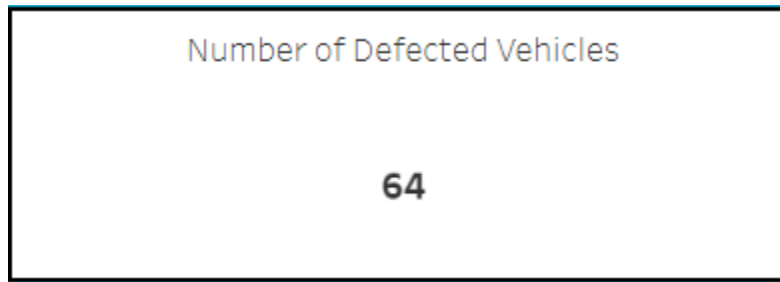
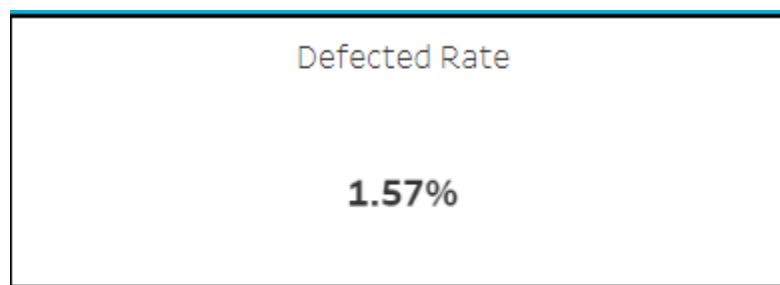
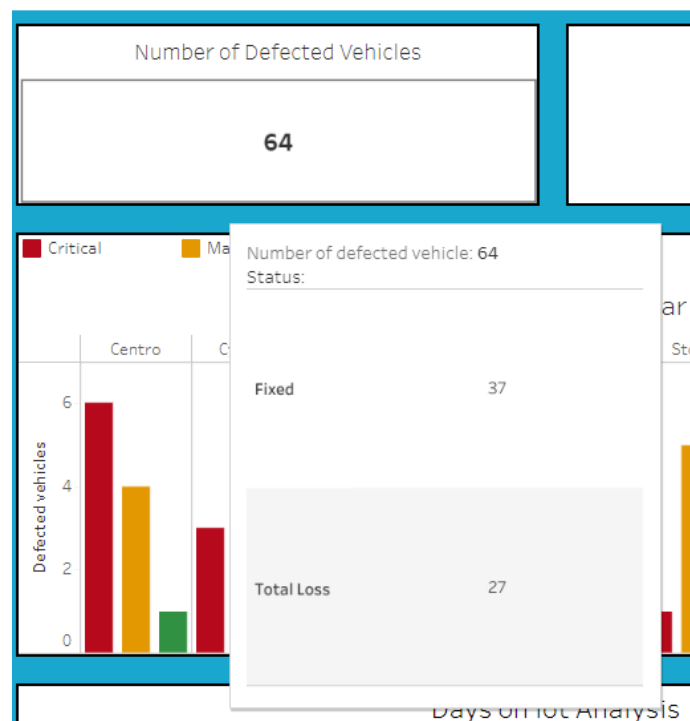
Figure 16: Days on lot histogram

This analysis can provide SparkeV with insights into prioritising the optimal days on lot for the development of strategic pricing adjustments and promotional activities, leading to an increase in sales volume in the future.

5.3. Quality and Defects Analysis

Quality and defect analysis is a critical aspect of operational analytics, especially in industries like automotive manufacturing, where product quality directly impacts customer satisfaction, brand reputation, and profitability.

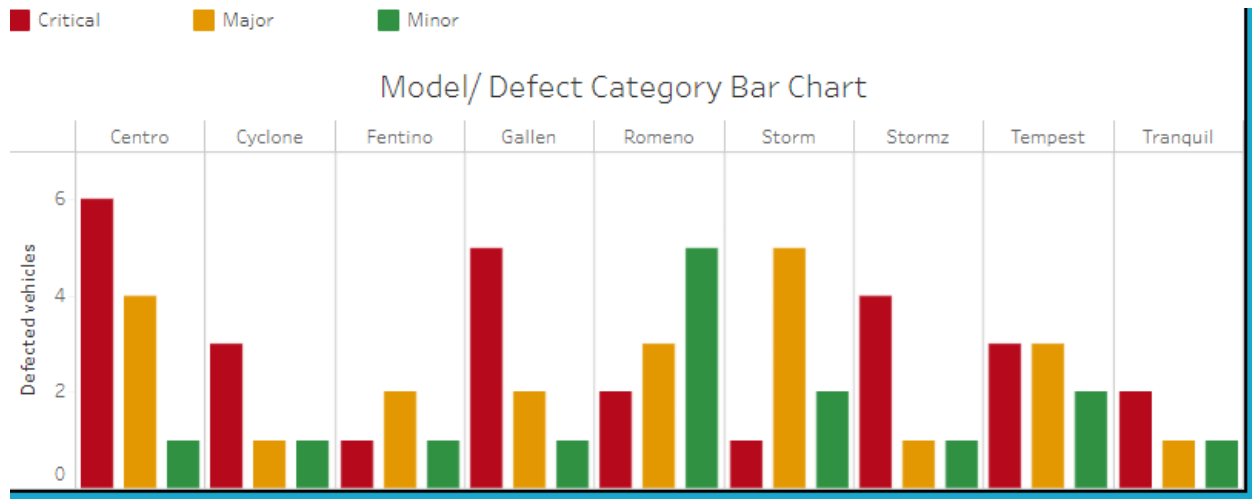
Based on the analysis of SparkeV, the number of defected vehicles is 64 with the rate of defect is only 1.57%, which is relatively low (see Figure 17 and Figure 18).

Figure 17: Number of Defected Vehicles KPI**Figure 18: Defected Rate KPI****Figure 19: Status of Defected Vehicle Tooltip (on Number of Defected Vehicles KPI)**

However, it is worth noting that nearly 50% of the defected vehicles result in a total loss that can not be repaired, which is an exceptionally high percentage (refer to Figure 19).

Beside that, the breakdown of the defective vehicles for each model is presented in the following visualisation (see Figure 20).

Figure 20: Model / Defect Category Bar Chart



One of the key insights that should be included is for the vehicles with a Critical defect category, the rate of total loss is 100%, which means those vehicles' cases can not be fixed and resolved. This is a very emergent as it will deeply affect the reputation of the company. In this situation, maintaining transparency, prioritising customer safety and satisfaction, and taking steps to prevent similar issues in the future are the top priorities to preserve SparkeV 's reputation and customer trust in the competitive electric vehicle market.

6. Two Years Forecast

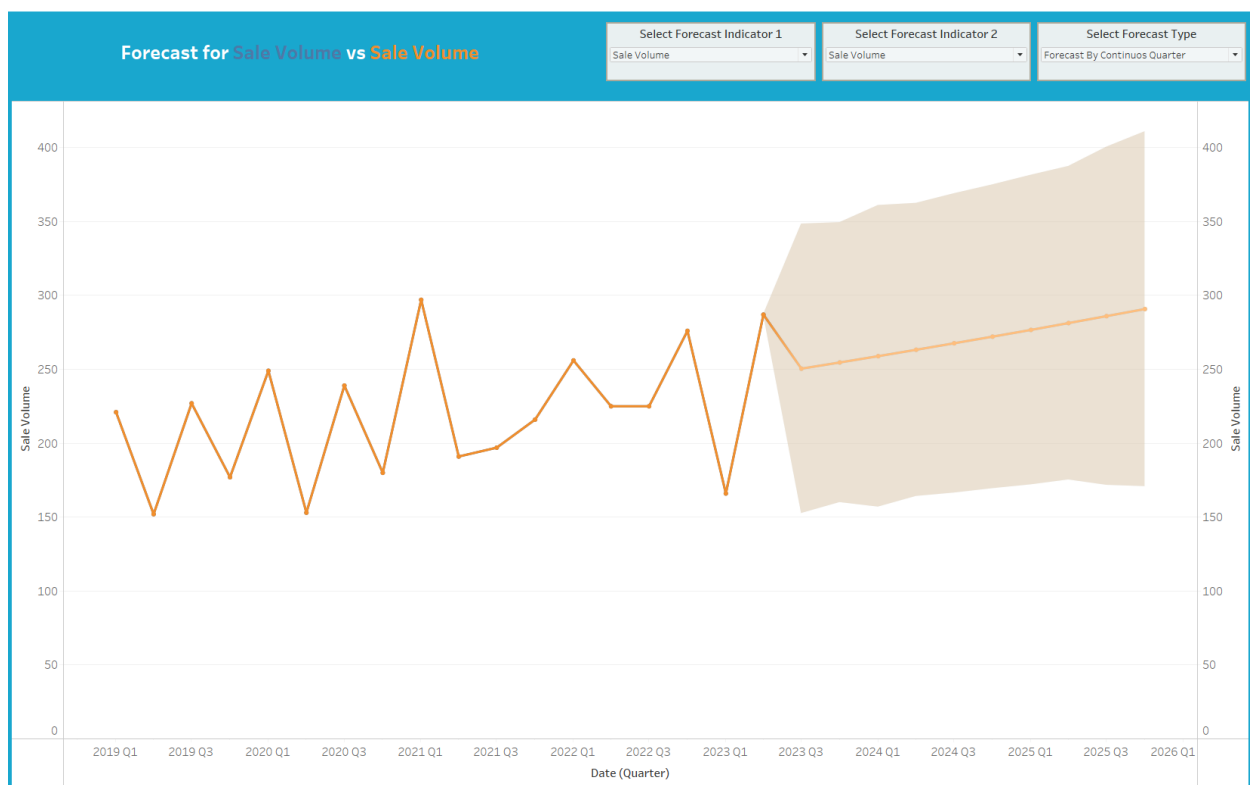
A two-year forecast is a 24-month strategic financial prediction that provides insight into a company's predicted financial performance and standing in the near future. A two-year forecast can be a useful tool for SparkeV in terms of planning, decision-making, and goal-setting. SparkeV can manage the complicated business landscape, optimise resource allocation, and assure long-term sustainability by forecasting financial trends,

identifying potential difficulties, and defining opportunities. This projection enables the organisation to set realistic goals, efficiently manage resources, secure investments, and ultimately drive informed company growth (Intangent 2023).

6.1. Quarterly Sales Volume

The sales volume quarterly forecast for SparkEV, it's evident that there's a fluctuating trend over the coming quarters in 2023, as indicated by the graph below. The actual data from Q1 and Q2 of 2023 shows that sales are on an upward trajectory, with a substantial increase from 166 to 287. However, the predicted data for the subsequent quarters reveals a shift. Q3 is anticipated to experience a slight drop in sales volume to 250.4, followed by a minor rebound in Q4, reaching 258.9. The sales volume will continue to increase each quarter from 2023 Q4 to 2025 Q4.

Figure 21: Quarterly Sale Volume Forecast



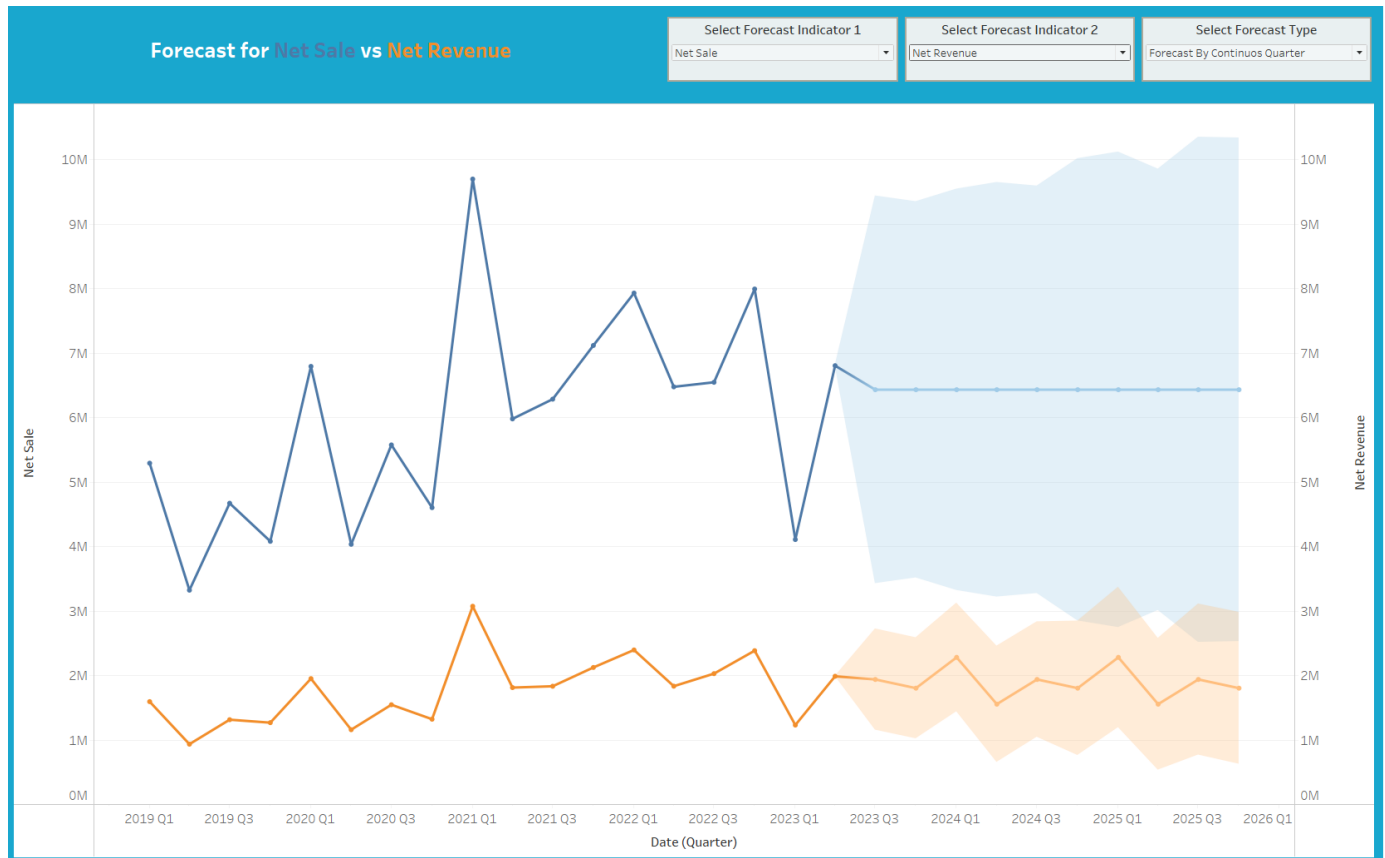
This forecast indicates that SparkEV's sales team and financial planners need to be prepared for seasonal variations in customer behaviour. The company can deliberately deploy funds and resources to meet these trends, with the largest sales occurring in Q1 and a fall in Q2 followed by volatility in the other quarters. For example, devoting more resources and training for the sales force in advance of a Q1 sales peak could be advantageous. Cost-cutting techniques, on the other hand, could be employed for the quarters with lower sales.

This approach ensures that SparkEV can efficiently manage its operations and allocate resources where they are needed most, enhancing adaptability and overall performance based on foreseeable shifts in sales volume.

6.2. Quarterly Forecast for Net Sales compared to Net Revenue

Analysing the quarterly forecast for net sales and net revenue provides valuable insights into SparkEV's financial performance. In 2023 Q1, net sales and net revenue stood at \$4,109,212 and \$1,232,025, respectively, showing promising figures. The following quarter continued this upward trend, with net sales increasing to \$6,805,110 and net revenue rising to \$1,988,417 in 2023 Q2.

Figure 22: Quarterly Forecast for Net Sales (Blue) compared to Net Revenue (Orange)

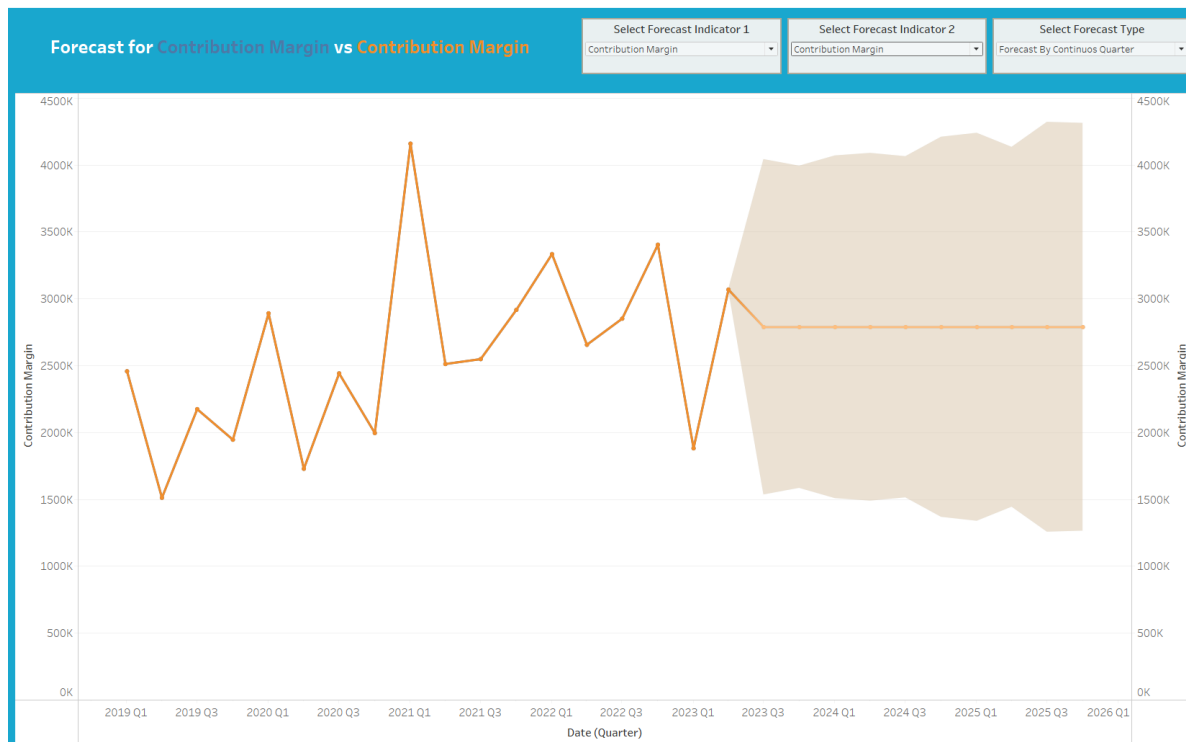


However, the first forecast for 2023 Q3 forecasts a slight decrease in both net sales, which are predicted to fall to \$6,432,623, and net revenue, which are expected to fall to \$1,939,300. This decrease may imply larger allowances or returns, reflecting potential changes in customer behaviour or market conditions. In the fourth quarter of 2023, net revenue is likely to climb to \$1,804,079, while net sales are expected to remain steady. Furthermore, net sales remain steady to 2025 Q4. This increase in net revenue could indicate greater operational efficiency in handling returns and deductions, which would be consistent with SparkeV's financial optimisation efforts.

6.3. Quarterly Contribution Margin

Analysing the quarterly contribution margin forecast for SparkEV, we can observe some notable trends in the data. In 2022, Q4 recorded a contribution margin of \$3,404,117, representing a positive end to the year. However, the first quarter of 2023 started with a slightly lower margin at \$1,882,234. It's essential to note that Q1 has consistently shown this pattern over the years. Yet, the contribution margin saw a significant upswing in Q2, reaching \$3,068,497, indicating the potential for increased profitability during this period.

Figure 23: Quarterly Contribution Margin Forecast



The data for the rest of 2023 indicates a relatively stable contribution margin, with Q3 anticipated at \$2,788,332 and successive quarters keeping consistent levels. This constant projection is encouraging for SparkEV's financial planning because it enables smart budgeting and resource allocation techniques. These insights allow the organisation to connect its financial strategies with predicted contribution margin trends, ensuring financial stability and informed decision-making.

7. Conclusion

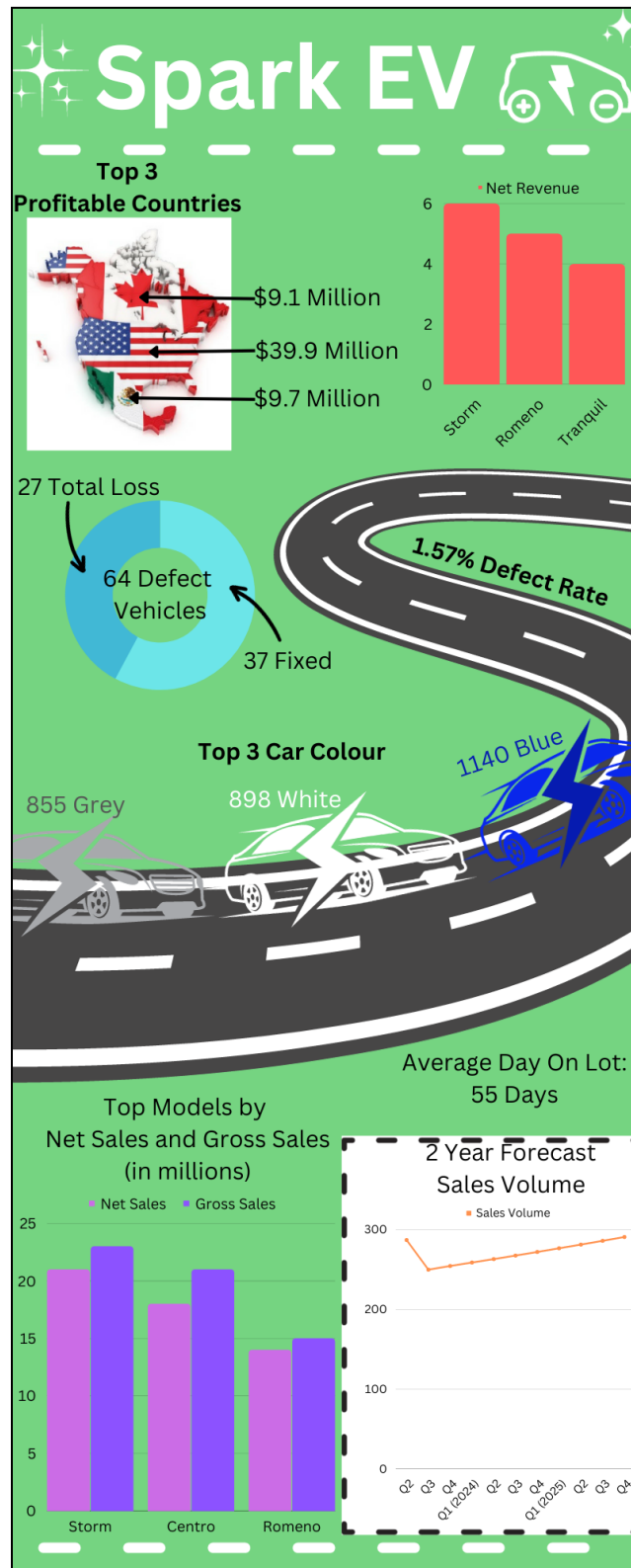
Finally, this in-depth examination of SparkEV's operations and financial performance offers significant insights into numerous facets of the electric car business. The extraordinary development trajectory of the global electric vehicle market, driven by reasons such as technology improvements, government incentives, and rising gasoline prices, highlights the enormous potential for firms like SparkEV. Customer preferences for electric car configurations differ, as indicated by the popularity of premium editions and specific colours, which provides useful information for the production process.

Efficient inventory management, as shown by the average Days on Lot, emphasises the need of strategic pricing adjustments and promotional efforts to maximise sales volume. Furthermore, the quality and defect analysis emphasises the importance of preserving openness, prioritising customer safety, and addressing issues as soon as possible in order to protect the company's reputation.

The financial analytics section provides critical financial information for decision-making by addressing contribution margins, variable costs, and financial trends. Sales volume is seasonal in the approaching quarters, indicating the necessity for flexible resource allocation. The prediction for net sales and net revenue indicates anticipated adjustments in market conditions and customer behaviour, necessitating flexibility. Finally, the contribution margin forecast demonstrates SparkEV's firm financial foundation, allowing for smart planning and resource allocation.

As a result, SparkEV gains a thorough insight of its operational, financial, and market aspects as a result of this holistic study. It provides actionable data for strategic decision-making, cost management, and customer-centric methods, putting SparkEV in a strong position to succeed in the competitive electric car market.

8. Infographic



9. References

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10. Appendix

10.1. Data Cleaning and Transformation

Issues	Data Preparation Type	Solutions
Records with duplicate VIN#	Data Cleaning	Remove all the records with duplicate VIN#
Fields related to geography in the dataset (MFG Origin, Country of Sale, Country,...)	Data Transformation	Change to Geographic Data Type
Transmission Field Value(eg: 6 Speed Auto) is unnecessary	Data Transformation	Split the field to create a new field called Transmission Type with 2 records: Auto and Manual)
Some Country Name of the sale data mismatch the Tariff Rate Table.	Data Cleaning	Change it to match the values
Some calculation such as Net Sale, Net Revenue are incorrectly calculated	Data Cleaning	Create new calculations and remove the old ones
For the Tariff Rate Table, the country "Philippines" is incorrectly input	Data Cleaning	Change it to the correct format
Field related to geography in the Tariff Rate Table	Data Transformation	Change it to Geographic Data
Duplicated fields and null values show up after the main table being left-joined with the Defects Table	Data Cleaning	Remove Duplicate Field, replace the Null Values to something that is more meaningful (Eg: No Defect Category)

10.2. Visualisations used in the report

Here is the link to the dashboards for this case study in Public Tableau:

https://public.tableau.com/app/profile/tung.nguyen.nam/viz/CaseStudyAnalysis_16981466950940/Performance

Figure 24: Performance Dashboard

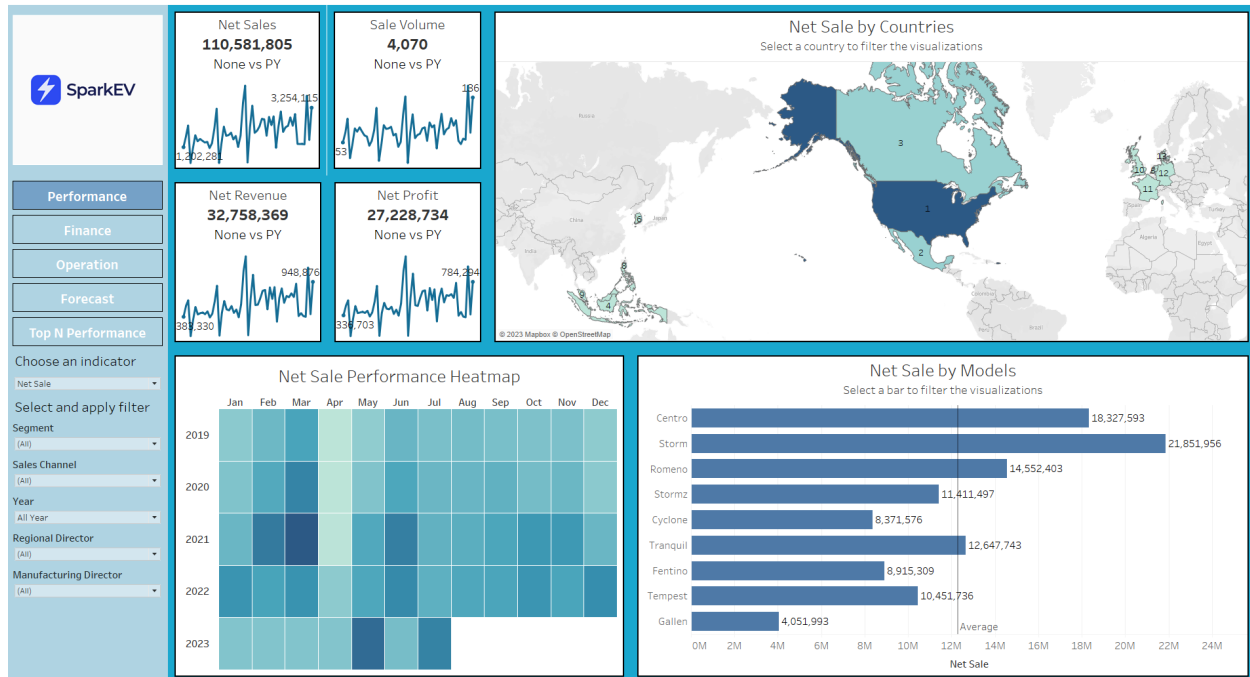


Figure 25: Finance Dashboard

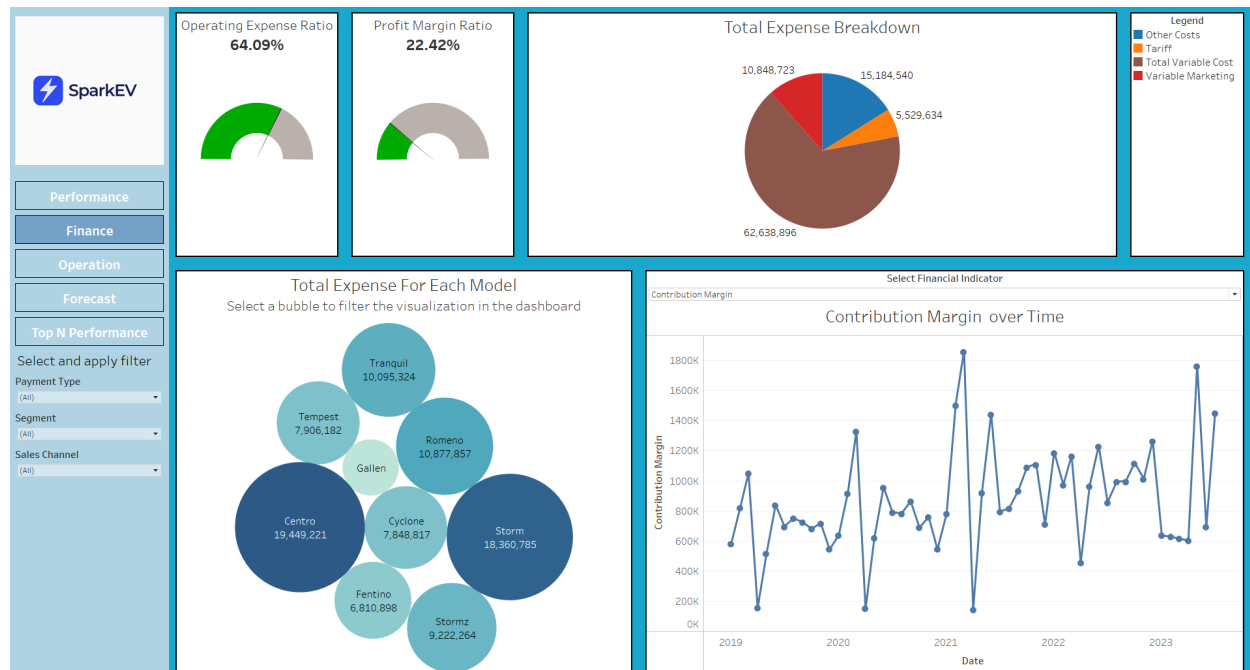


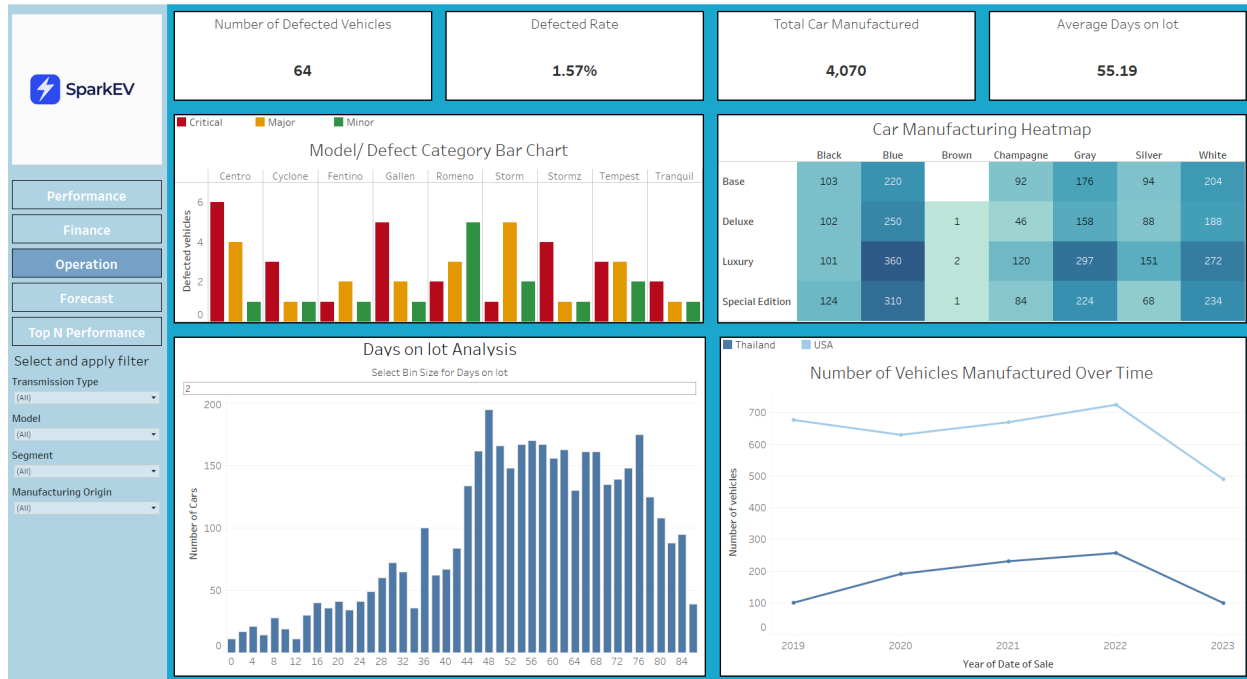
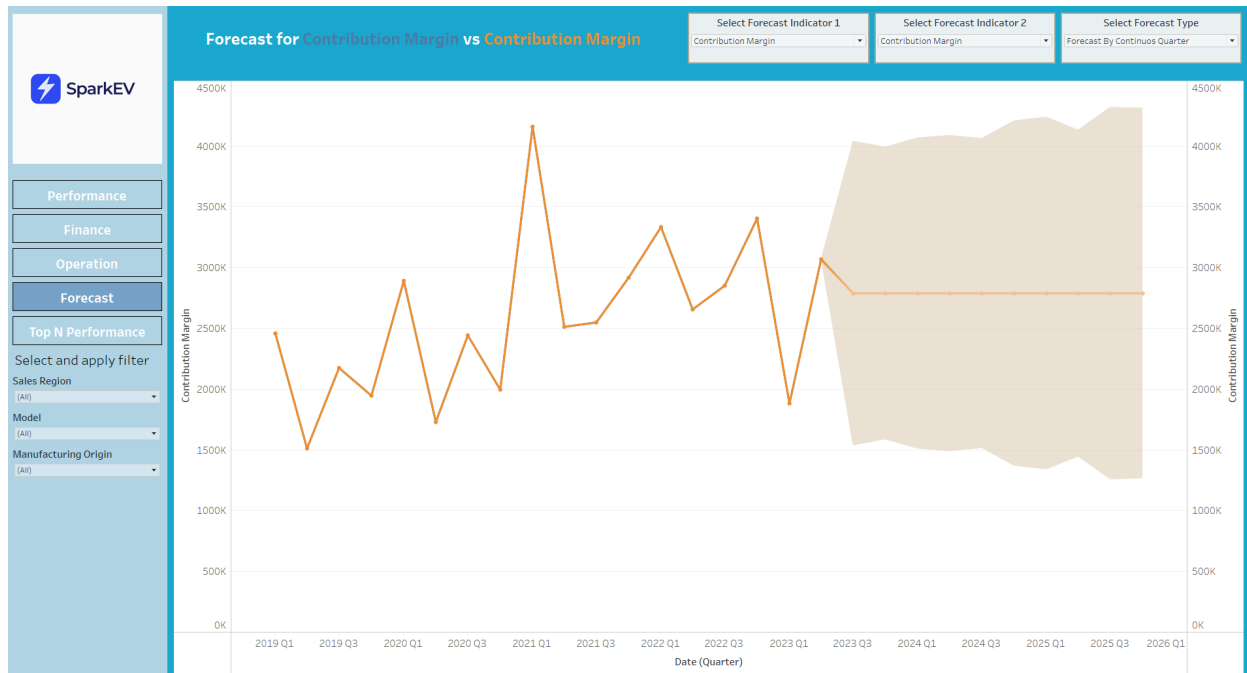
Figure 26: Operation Dashboard**Figure 27: Forecast Dashboard**

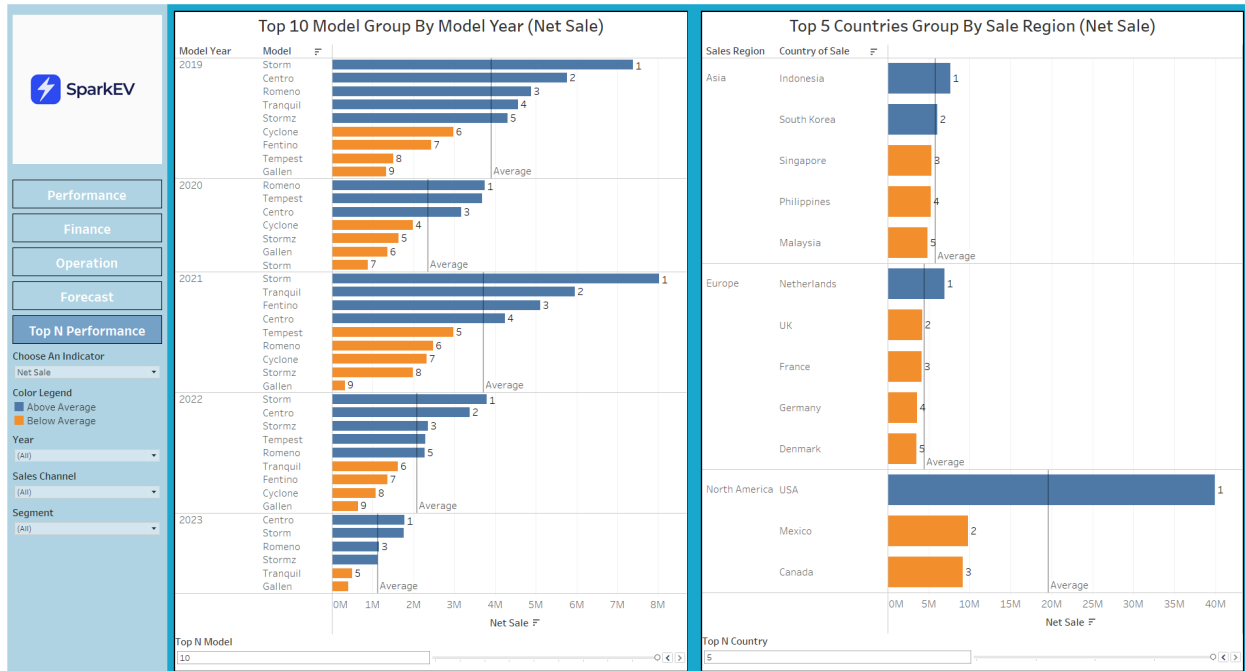
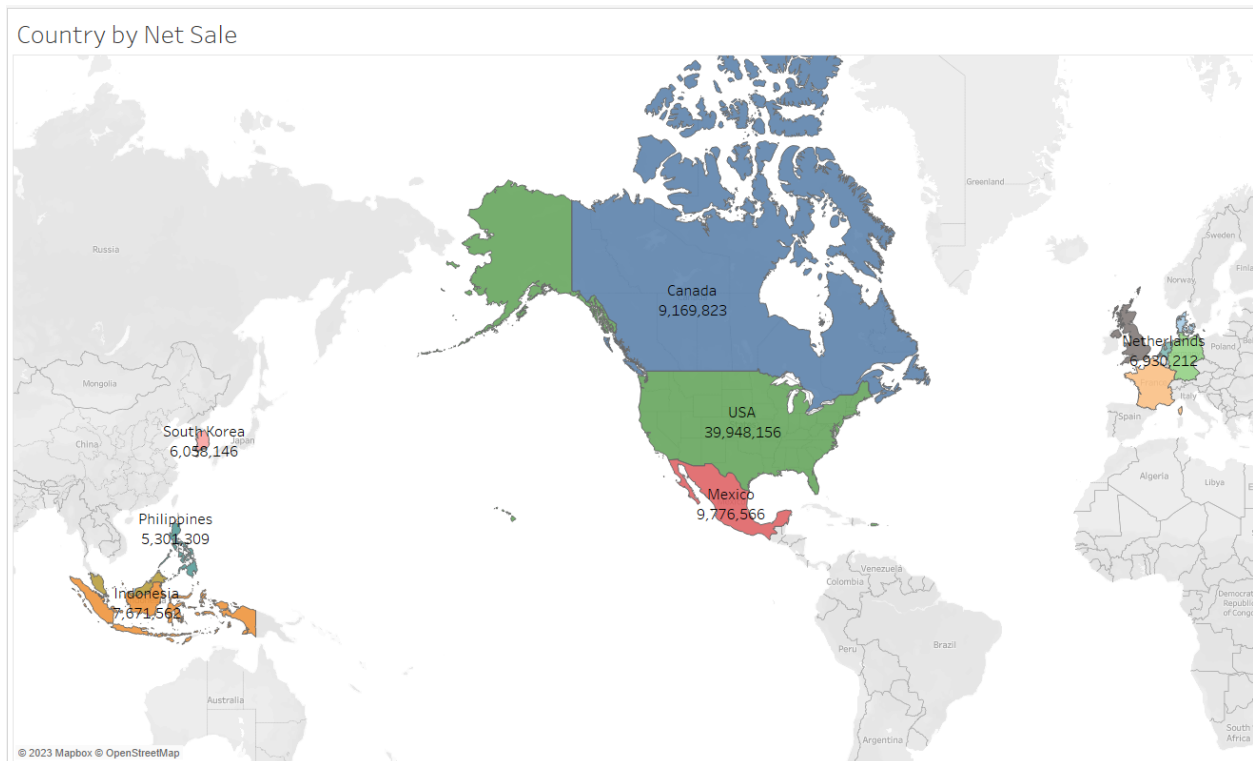
Figure 28: Top N Performance Dashboard**Figure 29: Country by Net Sale**

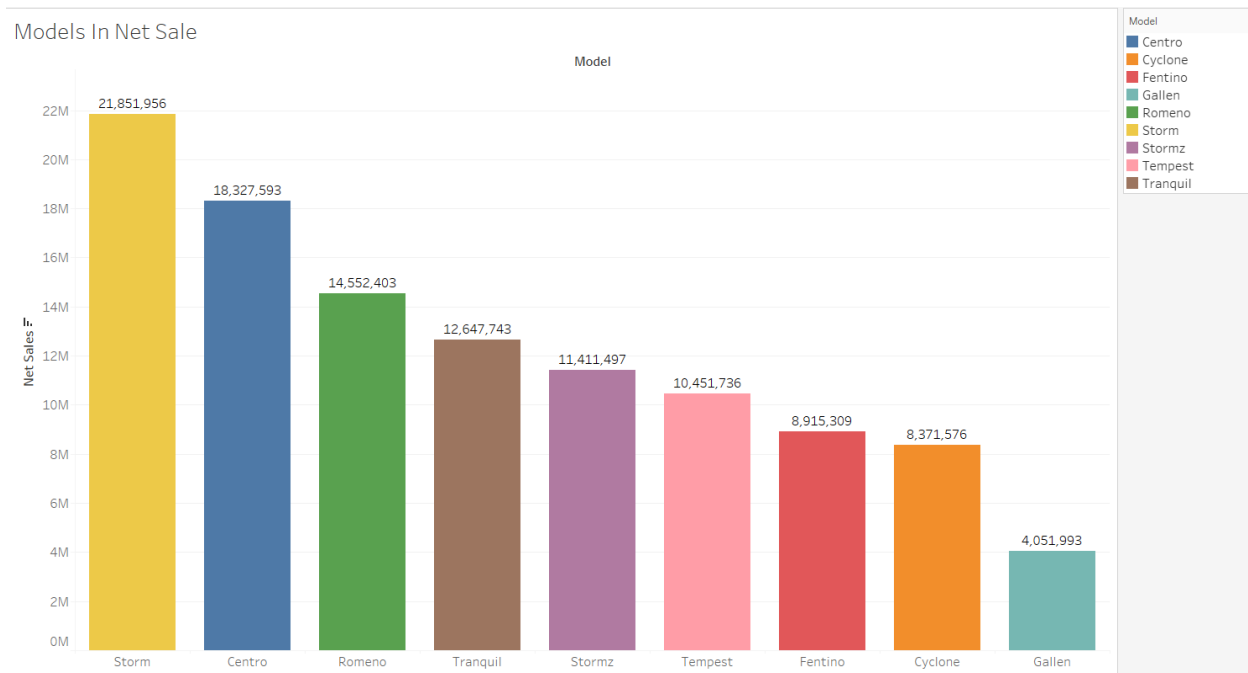
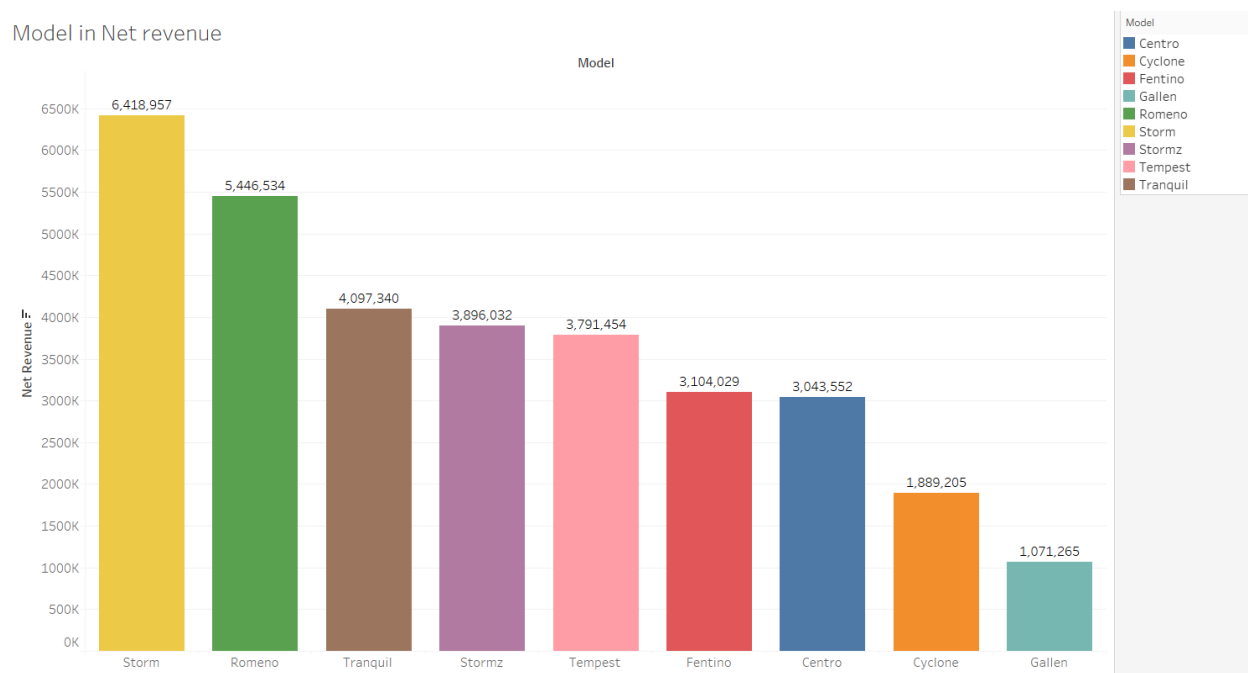
Figure 30: Model in Net Sale**Figure 31: Model in Net Revenue**

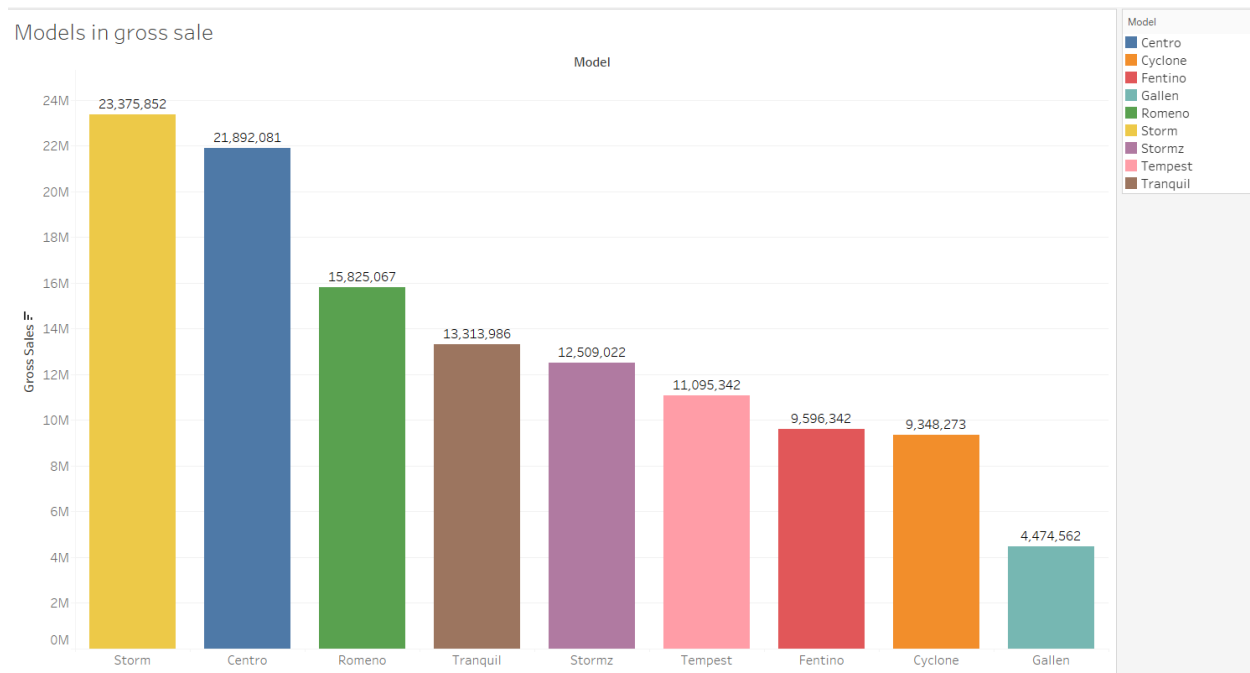
Figure 32: Model in Gross Sale**Figure 33: Net Sale by Sale channel**

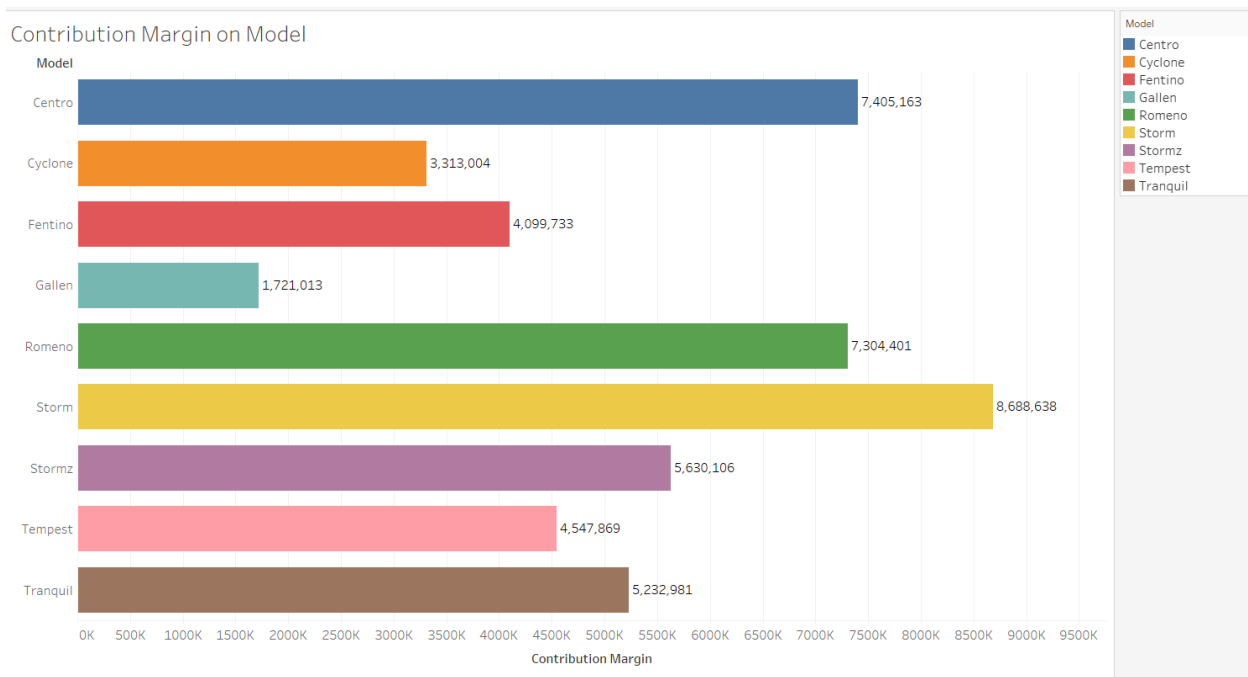
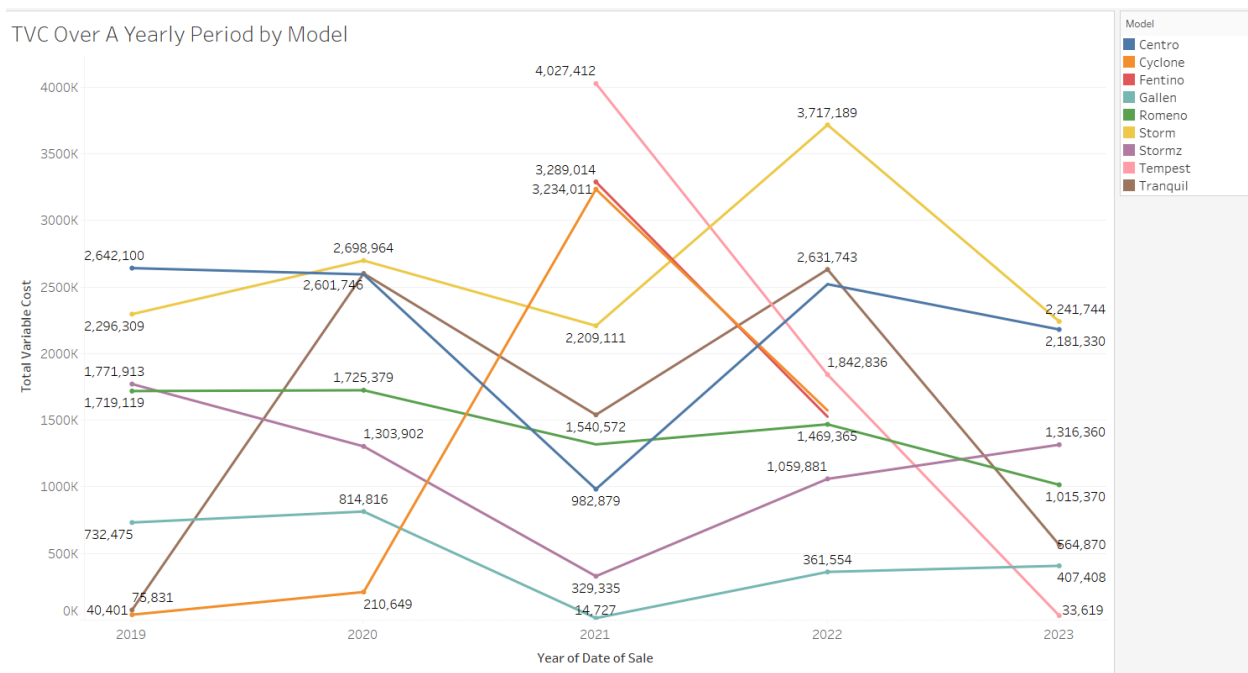
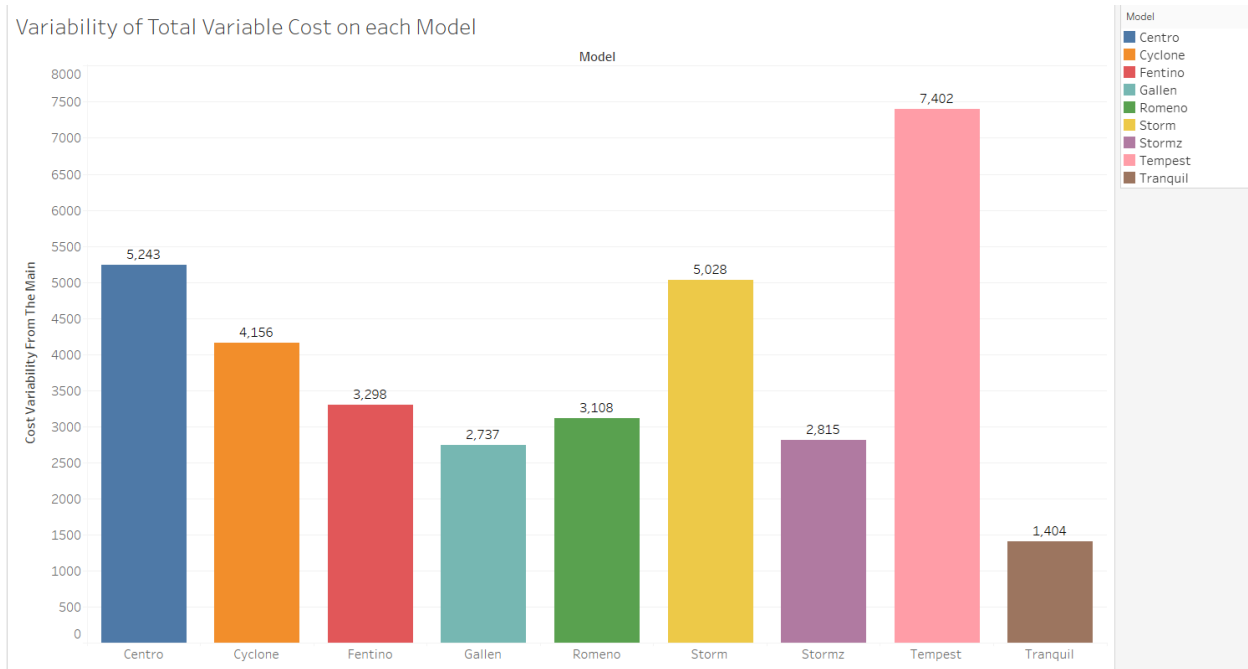
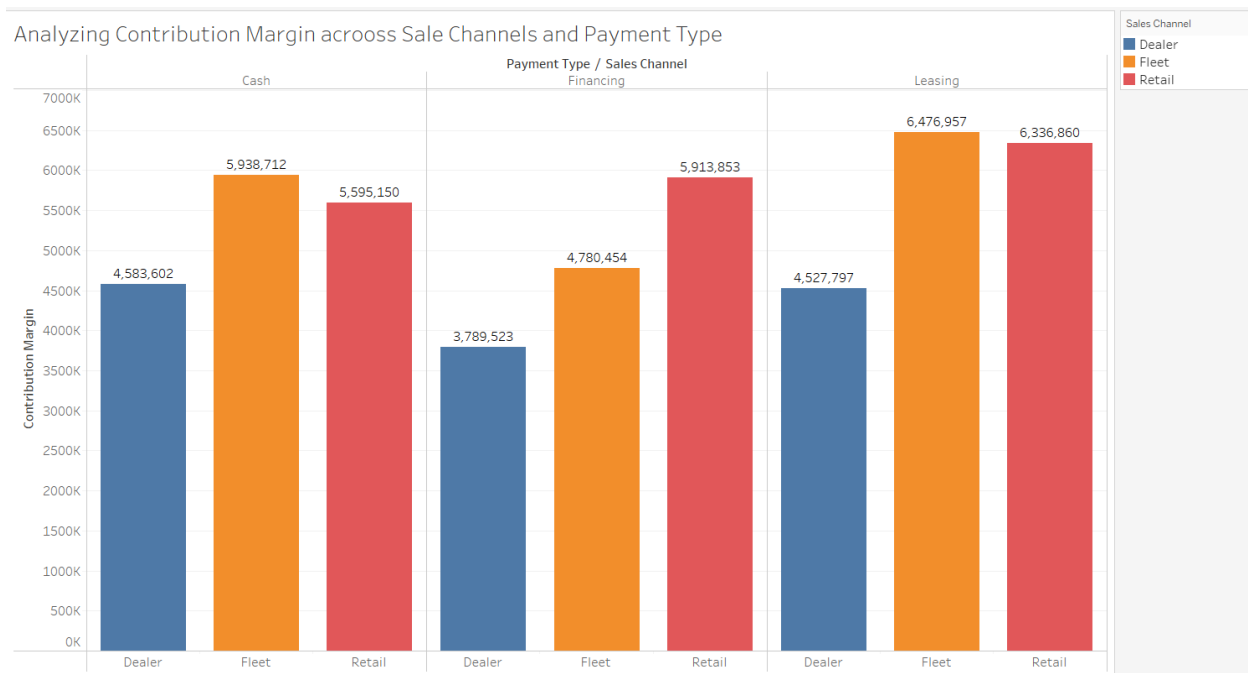
Figure 34: Contribution Margin on Model**Figure 35: Total Variable Cost over Year by Model**

Figure 36: Standard Deviation by Model**Figure 37: Contribution Margin By Sales Channel and Payment Type**

10.3. Dashboards and Visualisations Usage Guide

All the instructions on how to use the dashboards are included in the dashboard. Here are some noticeable features of the dashboard:

10.3.1. Filters and Tooltips

Users can select the filters in the navigation bar located on the left of the dashboard to filter the data (see Figure 38):

Figure 38: Filter

Select and apply filter

Segment
(All)

Sales Channel
(All)

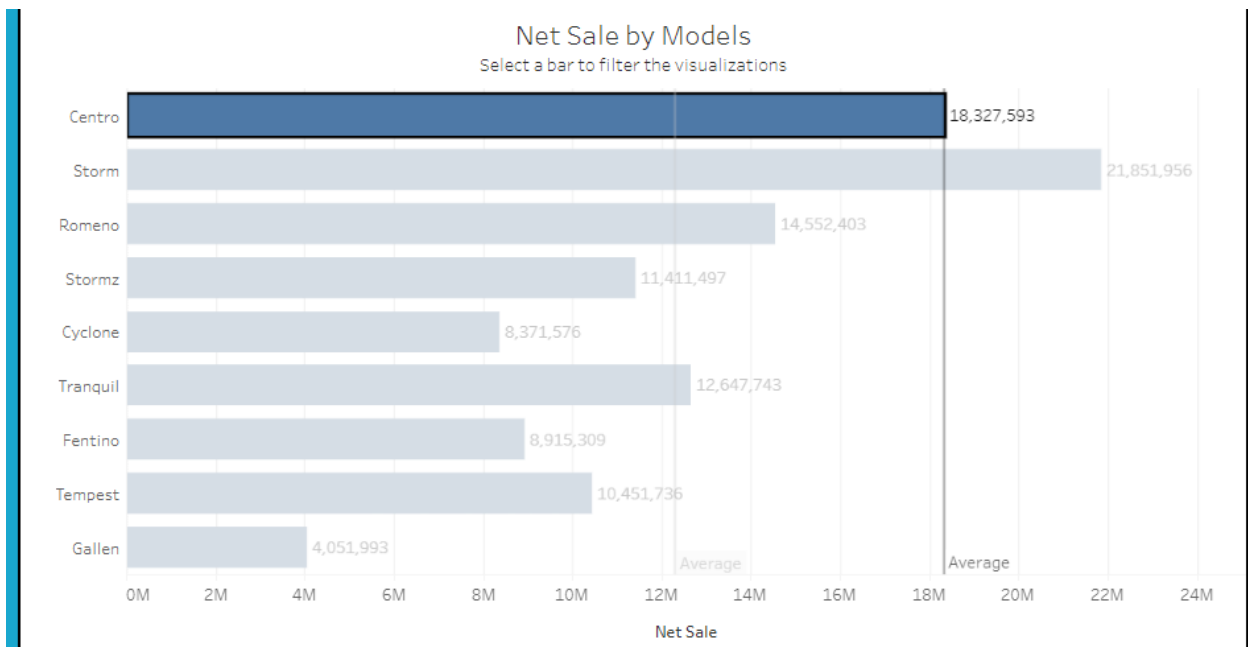
Year
All Year

Regional Director
(All)

Manufacturing Director
(All)

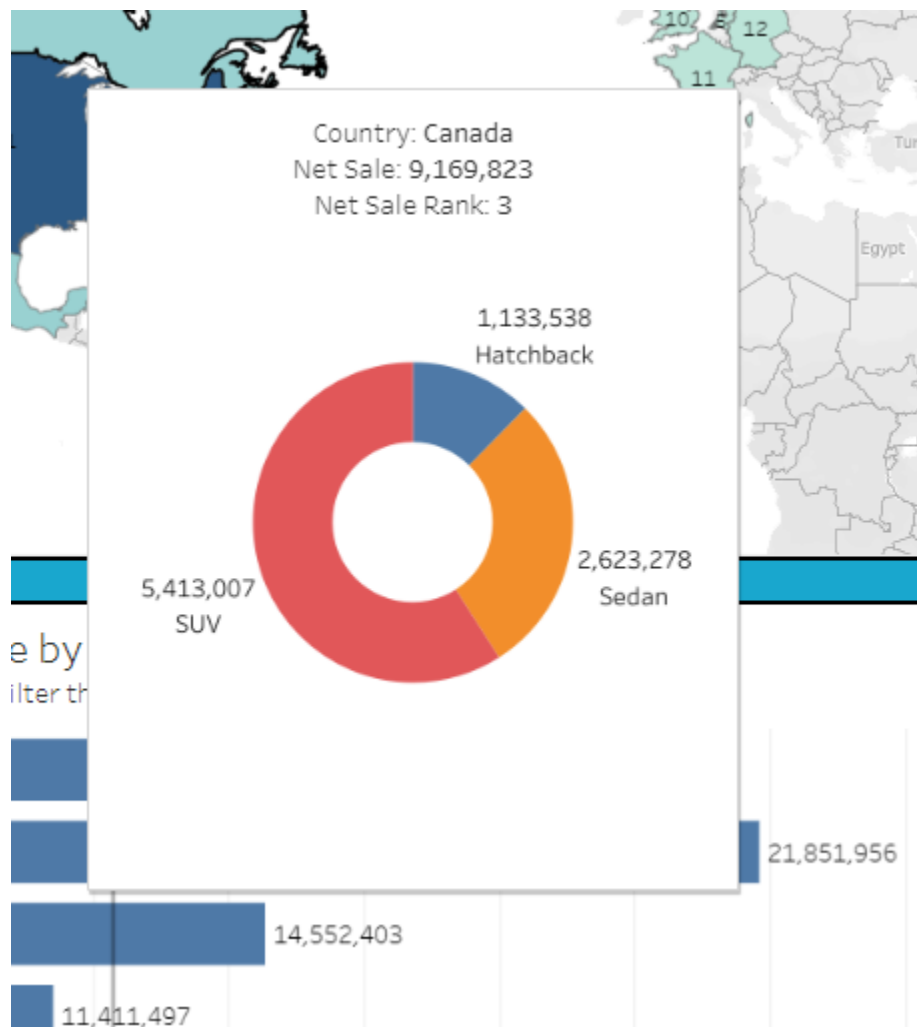
Some visualisations can be used as a filter in the dashboard (see Figure 39):

Figure 39: Using a visualisation as a filter



Users can see the tooltips of the visualisations for some additional information (see Figure 40):

Figure 40: Tooltip



10.3.2. Parameter

Users can change the parameter to see their desired visualisations (see Figure 41)

Figure 41: Parameter

Choose an indicator

Net Sale ▼