

Data-Driven Management Assignment

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Dataset: **Ev_18 & rep_18**

Word count: **2000**

Executive Summary

This analysis is based on the data from the last quarter extracted from the product database of a prominent electric vehicle (EV) retailer, we have gained valuable insights that directly impact revenue generation and strategic decision-making. Through exploration of different variables.

The findings reveal a normal performance of the company from the sales distribution, this also indicates the customer budgeting trends in the last quarter. Sedan models emerge as the most significant revenue contributor, emphasizing the importance of targeting marketing budget and promotional efforts. Surprisingly, we unravelled a negative relationship between marketing spend and sales, highlighting the need for a refined marketing strategy to maximize ROI and channel effectiveness.

TikTok emerges as the most effective marketing channel, which signifies opportunities for increased optimization. Additionally, the analysis pointed to the significance of single individuals to the company's revenue, along with the positive impact of the incentive systems, particularly among experienced sales representatives with MSc qualifications.

Despite the company's normal performance, the insights gained from the analysis necessitate the need for a sophisticated approach to revenue optimization. Therefore, we recommend expanding the company's products, fine-tuning marketing strategies, optimizing promotion and introducing a targeted incentive system.

By implementing these strategies, the company can leverage data-driven insights to drive revenue growth.

Background

In today's data-driven world, it is important for companies to maintain an edge by staying ahead with their data, as data stands as the cornerstone for fostering strategic initiative, which leads to the aim of this analysis, which is to identify the key factors that influence the revenue of a prominent electric-vehicle company and the strategies that can be adapted to fine-tune these factors for optimal revenue growth in the company.

Focusing on increasing total sales revenue provides comprehensive insights aligned with business objectives, actionable for improvement, and easily tracked and compared across time and regions, driving strategic initiatives for business growth in the electric vehicle market

The data for this analysis was extracted from the product database of the company and it is based on the last 12 months. In the process of getting valuable insight from the data, the following variables were used to measure the business question.

Purchase: The purchase value of the product in pounds, it was used to measure the company's revenue, which is our key performance indicator, it was used with other variables to achieve the analysis aim.

Product: This was used to measure the product that contributes significantly to the company's revenue.

Promotion: It was used to measure the impact of promotion on the revenue.

Campaign: To measure the most effective channel and to allocate marketing resources effectively.

Marketing: To analyze the effect of the money spent on marketing on the revenue generated.

Buyer: The segmentation of buyers using their profiles helps in the analysis of customers purchasing behaviour.

Qualification & Experience: These variables were used to measure the attributes of the sales rep to know how these attributes can affect sales and what needs to be improved or maintained

Commission: It reflects the incentive gained by each sales rep for a product they sell, this measures the effectiveness.

1. DATA PREPARATION AND VARIABLE DEFINITION

Data Restriction:

Two Tables were extracted from the product database, ev_18 & rep_18. To ensure quality and reliability some steps were taken. The two tables were joined using “left join”, we had **49320** observations and **14** variables.

Population: Data on customers' activities for the past 12 months

Sample: 5% random sample of the customer activities over the past quarter.

Outlier: Outliers were found in commission, campaign, promotions, products, buyer, and gender variables and it was removed to prevent them from affecting the data distribution.

Missing Values: The missing values were handled through exclusion.

New Variable Insertion: New variables were derived from existing data to enhance the analysis.

Number of Observations and Variables: After data restriction and cleaning we have **42125** observations and **13** variables.

Variable	Metric
Purchase	Continuous variable Sales in the last quarter, measured in £'s. mean 47500, median 47499, StandardDeviation 148.0
Products	Nominal categorical variable that indicates the products sold in the company with the values “Sedan”, “SUV” and “Sport”
Promotions	Nominal Categorical variable to indicate if a product was sold with a promotion or not with the values “yes” and “No”, changed to “Promo” and “Regular”
Campaign	Nominal Categorical variable that indicates the marketing channels for the product with the values “Fbook” “Twitter”, TikTok, and “Instagram”
Marketing	Continuous variable that indicates the marketing spend for a product in £'s. Mean 299.9, Median 299.9, StandardDeviation 22.5
Qualification	Ordinal categorical variable indicates the qualification of the rep with the values “Hnd”, “Bsc”, and “Msc”
Experience	Continuous categorical variable that indicates the years of experience
Commission	Continuous variable indicating the amount of commission received from a product in £'s. Mean 249.9, Median 249.9, StandardDeviation 25.3
Buyer	Nominal Categorical variable that indicates the consumer profile for the products purchased with values “single”, “couple”, and “family”).

Table 1 Variable Definition

2. Analysis

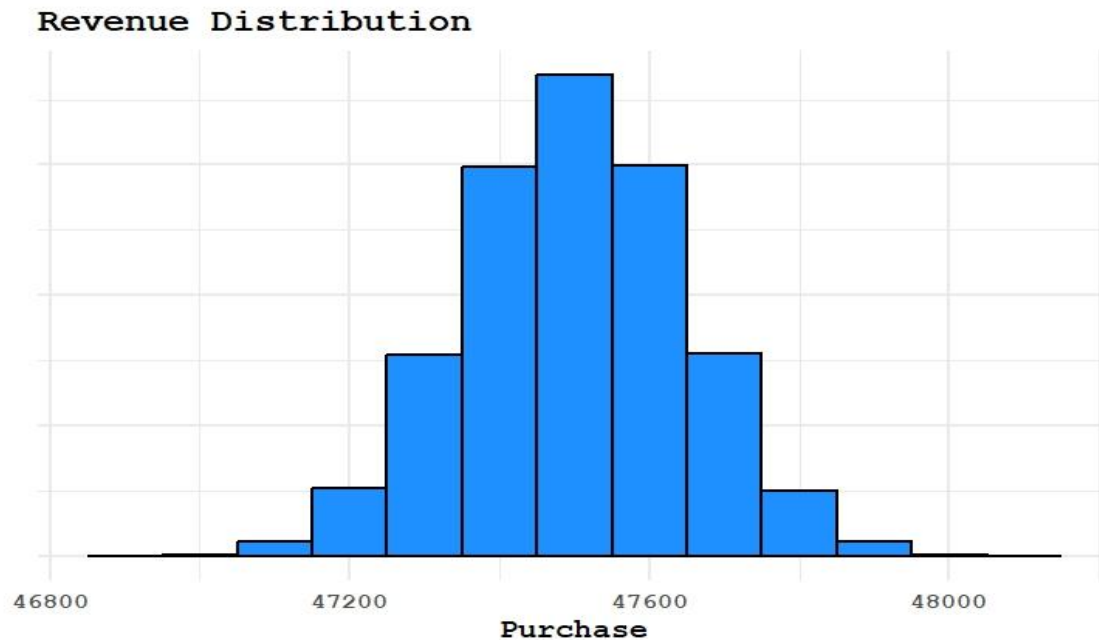


Figure 1

Interpretation:

In Figure 1 above the distribution of sales is normal with most values coming between £47,300 to £47,600 in the last quarter. There are no outliers.

Inference:

Based on the above, we can depict that the graph unravels a bell-shaped distribution indicating that the company's performance is moderate and we can tell that the majority of the customers made purchases ranging from **£47,300** to **£47,600**. There is a need to investigate further to know the factors that cause this and how we can improve the sales which will in turn increase the company's revenue we have to investigate by comparing purchase variables with other variables, we would like to know which product contributed most to the revenue.

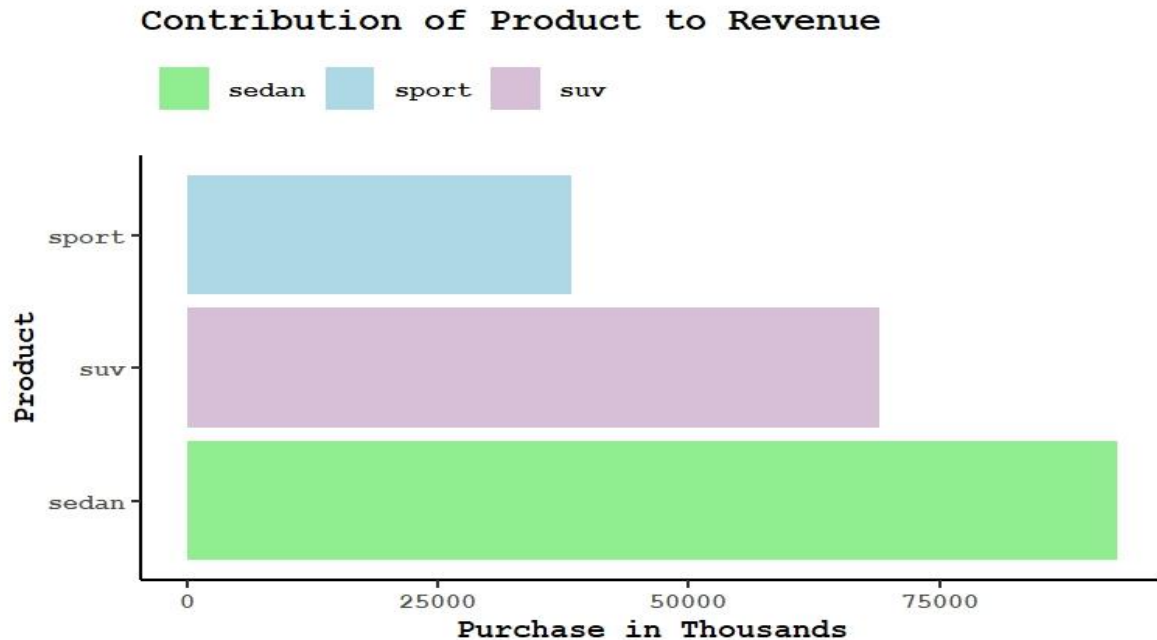


Figure2

Interpretation:

From the above Figure Sedan contributed **£92,664** in thousands, while SUV generated **£69,031** and Sport contributed **£38,395**.

Inference:

Based on the figure above we can infer that Sedan made the most substantial contribution of **47%** to the company's revenue in the last quarter, followed by SUV with **34%** and Sport models with **19%**. This indicates that sedan products have higher demand among customers compared to other products. This observation prompts further investigation into how effective marketing is on the revenue.

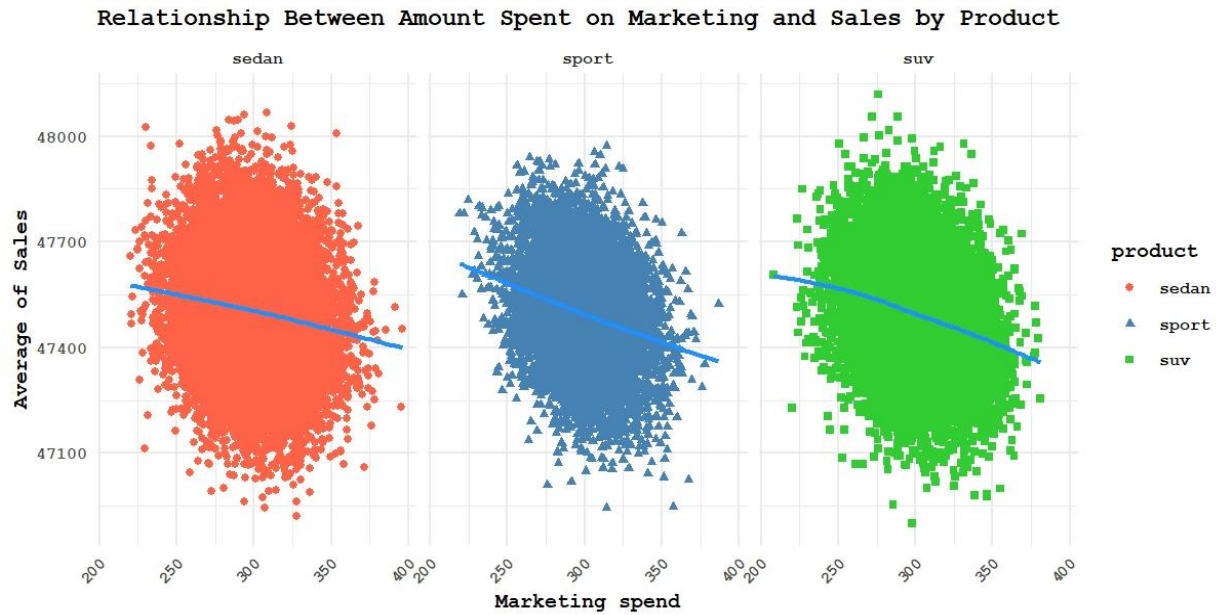


Figure3

Interpretation:

In the figure above, the relationship that exists between the variables is negative across all products. Purchase is the dependent variable affected by Marketing spend which is the independent variable.

Inference:

This infers that the higher the money spent on marketing the lower the sales generated, contrary to expectations. It suggests that increasing the marketing budget may not necessarily lead to a proportional increase in sales. Due to these unexpected findings, more investigation would be done across the marketing channels, we have to further investigate why this is happening using the impact of promotions on sales across various channels.

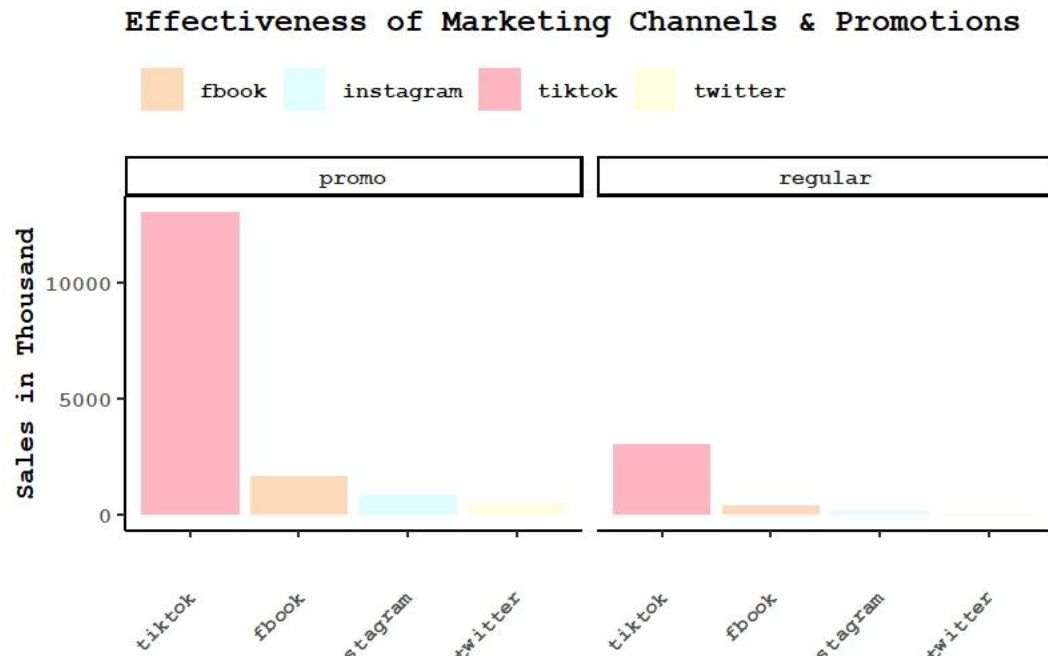


Figure 4

Interpretation:

Figure 4 illustrates that products sold on promotion in thousands in the last quarter generated **£16,158**, while those sold without achieved **£3,850**. Regarding marketing channels, TikTok generated **£16,142**, Facebook **£2,111**, Instagram **£1,125**, and Twitter **£630**.

Inference:

It can be deduced that the most effective marketing channel in the last quarter was TikTok, accounting for **81%** followed by Facebook at **11%**, Instagram at **5%**, and Twitter at **3%**. Notably, products sold on promotions generated **81%**, the regular ones **19%**. This highlights the importance of allocating resources to channels that yield more sales and working on the ones that don't.

This will lead us to the next one to know which marketing channel a particular profile prefers, and which contributed the most this last quarter. We will be using Purchase, Buyer, and Marketing channels to achieve this in the next visual.

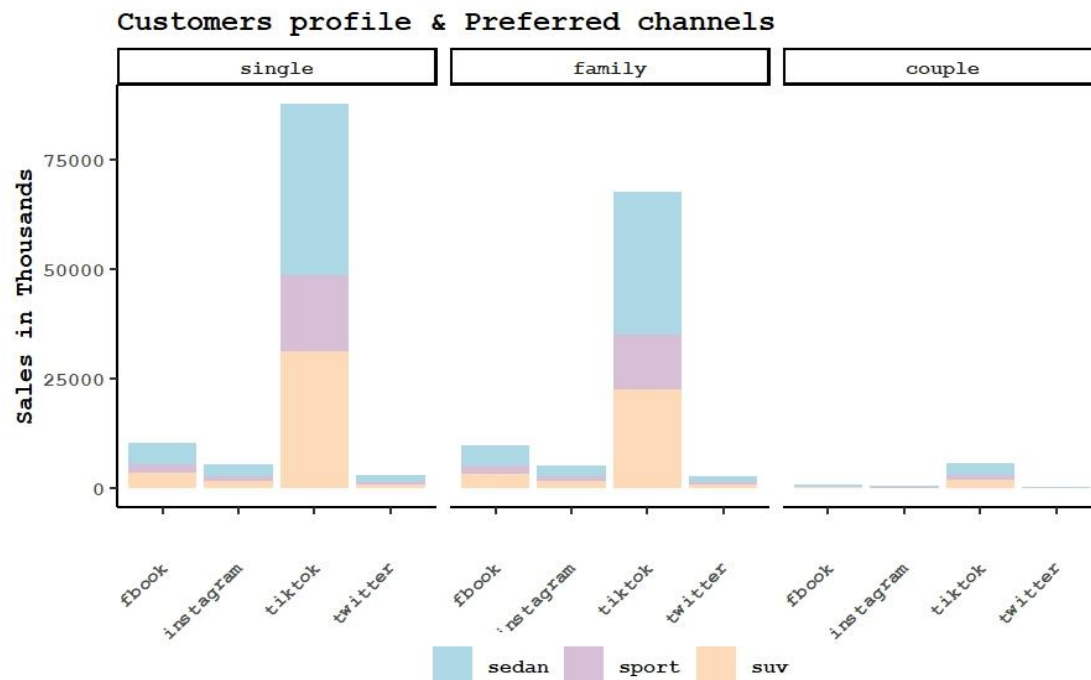


Figure 5

Interpretation:

The above figure depicts that single people contributed to the revenue in thousands with **£10,7123**, families **£85,552**, and couples **£7,416**. Single people who used Tiktok generated **£87,876**, Facebook **£10,518**, Instagram **£5,630**, Twitter **£3,097**.

Families profile on Tiktok generated **£67,779**, Facebook **£9,775**, Instagram **£5,111**, Twitter **£2,885**. Couples achieved Tiktok **£5,765**, Instagram **£509**, Facebook **£817**, Twitter **£323**.

Single-sedan £48,632, Single-SUV £37,754, Single-Sport £20,735

Family-sedan £40,748, Family-SUV £28,701, Family-sport £16,102

Couple-sedan £32,83, Couple-SUV £25,74, Couple-sport £1,558

Inference:

Based on the above it is evident that single individuals contributed most to the revenue in the past quarter with **54%**, followed by family at **42%** the least is couples at **4%**. and the most preferred channel is TikTok, the product they bought most is the Sedan, across all channels.

This shows the importance of aligning marketing channels with the preferences of different customer segments to increase sales. This will lead us to our next chart. This leads to investigating how the sales rep has made contributions to the company's revenue.

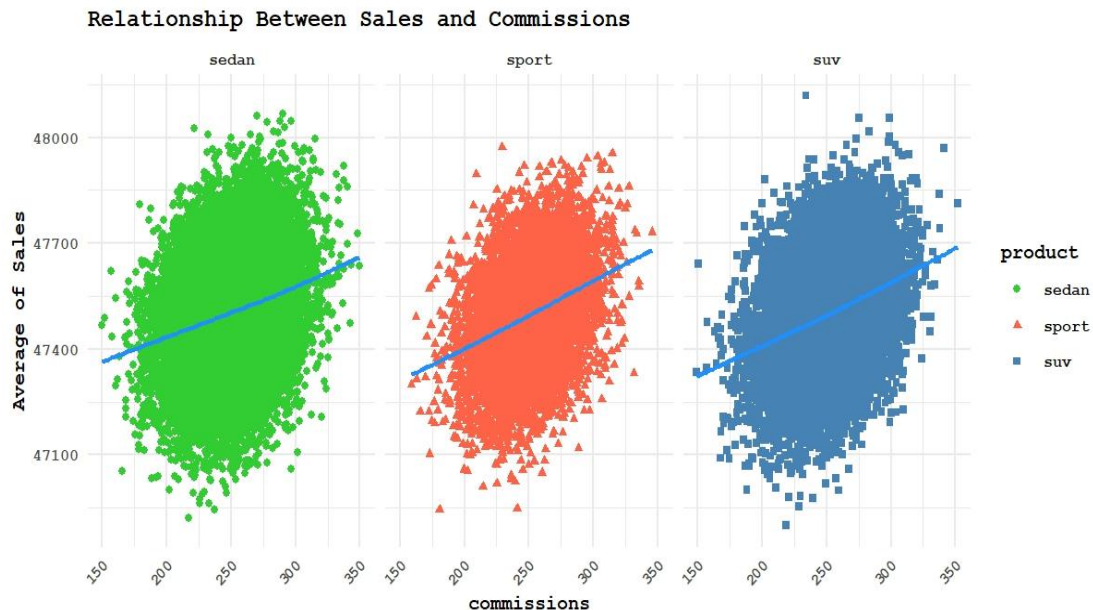


Figure 6

Interpretation:

There is a positive relationship between purchase and commission across all products.

Inference:

This implies that the higher the commission the higher the sales which shows that the sales representatives are performing well, this emphasizes the importance of incentivizing sales representatives as this drives more sales and increases the company's revenue. We want to investigate based on their attributes to know what needs improvement.



Figure 7

Interpretation:

Sales representatives that are veterans contributed **£105,195**, while Midtenure generated **£48,526**, and Rookies **£46,369** in thousands.

Msc Veteran drove **£69,781**, Bsc Veteran **£27,015**, Hnd Veteran **£8,399**.

Msc Midtenure **£31,786**, Bsc Midtenure **£6,455**, Hnd Midtenure **£10,284**.

Msc Rookie **£29,758**, Bsc Rookie **£16,610**, Hnd Rookie **Null**.

Inference:

We can tell from the above that sales representatives with over 20 years of experience contributed **53%**, Midtenure representatives **24%**, and Rookies **23%**. Veterans contribute the most to the company's revenue than others. This suggests that experience and high qualifications play a vital role in enhancing representatives' performance.

Through the exploration of the data to get meaningful insights using various variables, we have unravelled some insights. From discerning the normal distribution of sales to shedding light on customer budget trends in the past quarter, and overall company performance, to getting to know Sedan's dominance in driving sales, to even unravelling the unexpected negative relationship between marketing expenditure and sales, to identifying the prowess of Tiktok in the marketing channels and the significant role of promotions to sales. Delving deeper we discovered that single individuals contributed most last quarter, to finding out an incentive system drives sales, especially among representatives with more experience and qualification. While the company's performance appears stable on the surface, the findings so far necessitate the need for a more sophisticated approach which propels us towards giving strategic recommendations aimed at optimizing factors that drive sales.

3. Recommendations

1. Expanding Products: As seen in Figure 2 the company only has 3 products, this shows the company has limited offerings, expanding the products would give customers a variety of options to choose from, and a survey can be conducted to see the products customers would like them to be added, this will increase the company's revenue.
2. Fine-Tuning Marketing Strategies: Given the negative relationship between money spent on marketing and sales as seen in Figure 3, It is important to re-strategize and optimize ways to increase sales through effective marketing across all marketing platforms, especially does that are not doing so well, and to increase the sales for those that are doing well.
 - Strategically schedule your advertisement to peak usage time across the marketing channels, particularly Tiktok which has proven to drive sales.
 - Hire a social media manager who can optimize the platforms to get the value of the money spent.
 - Leverage the influence of popular personalities as brand influencers.
3. Promotion Optimization: As shown in Figure 4 the products sold on promotions drive sales more than the products sold without it, this should be capitalized on, by refining the tactics to suit customers' preferences for products, especially for sedans which have shown higher demand value.
4. Targeted Incentive System: This system has proven to be effective this is proven in Figure 6, the company should introduce a target system, a sales representative who meets specific targets will receive rewards, such as supporting their educational advancement to the master's level, as depicted on figure 7 that those with higher qualification performs better

than those making this a strategic investment as those that were sponsored would drive more sales which would in turn increase the company's revenue.

5. Hiring Process: Hire more sales representatives with more experience and qualifications as seen in Figure 7 they drive more sales.

4. Limitation

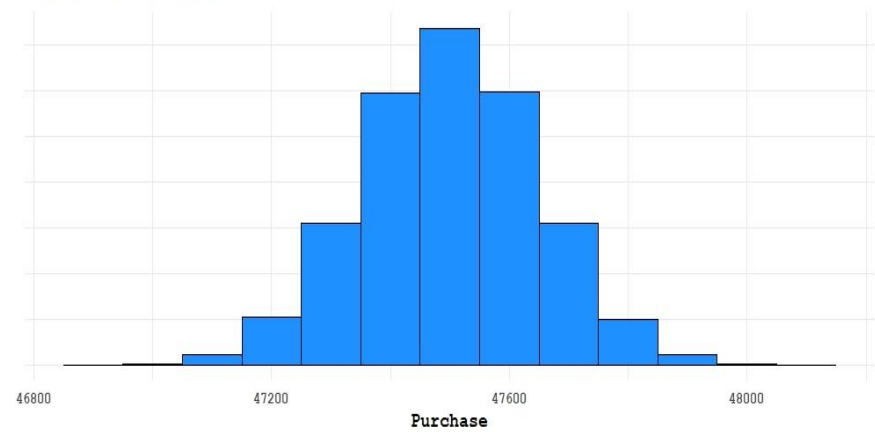
1. The data does not include anything on the customer feedback or analysis which could provide valuable insights into customer satisfaction, and preferences. Including customer reviews or surveys could discover hidden confounding factors influencing sales performance which is what we use in measuring revenue here, and it could help to tailor our marketing strategies accordingly.
2. Geographic Analysis: In the description, we can tell that the company's presence across different regions, however, there is no data on this, we could use this to compare revenue generation across regions to know the high-performing regions, the dynamic across regions and how geographical factors affect purchase behaviour among regions.
3. Promotion type was not specific, it is not clear whether it is based on discounts, special offers and so on, to be able to recommend the most effective one.

5. Conclusions

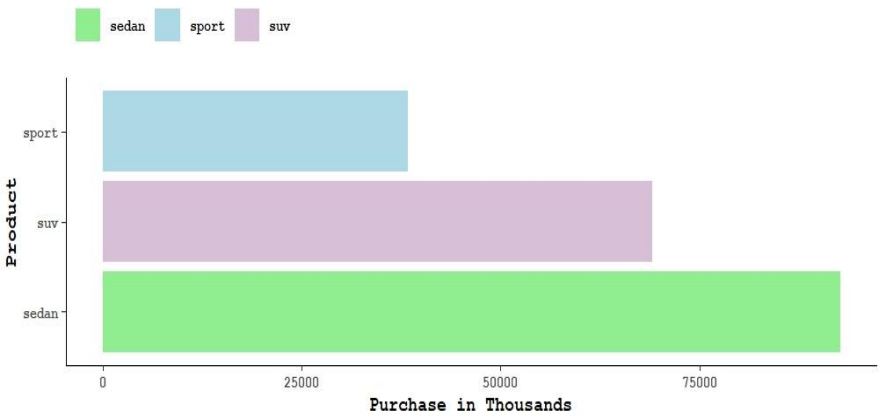
By implementing the strategies above, the company can leverage data-driven insights to allocate marketing budget appropriately to drive revenue growth

Dashboard

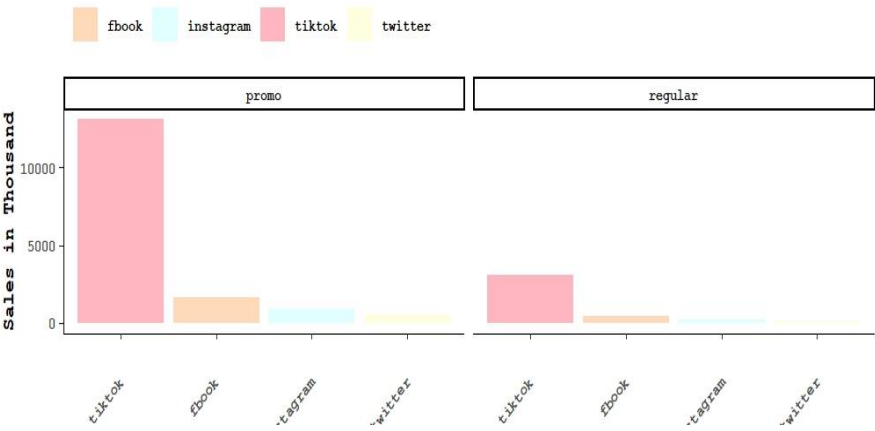
Revenue Distribution



Contribution of Product to Revenue



Effectiveness of Marketing Channels & Promotions



Sales by Experience & Qualification

