Report: Data-Driven Strategies for Enhanced Customer Experience and Revenue Growth

Business Problem

In this rapidly evolving landscape of e-commerce, maintaining competitiveness and profitability requires a deep understanding of consumer behaviour and market trends. Prevalent challenges faced by e-commerce companies are optimizing product recommendations and sales strategies to enhance customer satisfaction and increase sales.

Objective

The objective of this data analysis project is to gain insight into the sales data to improve and optimise sales strategies and product recommendation. By leveraging historical transaction data, user behaviour patterns, and sales trend of different product line, we aim to provide recommendations on how to enhance shopping experience and driving revenue growth.

Dataset Description

The dataset is obtained from Kaggle and consists of real commercial data. The dataset has information of 100k orders from 2016 to 2018 made at multiple marketplaces in Brazil.

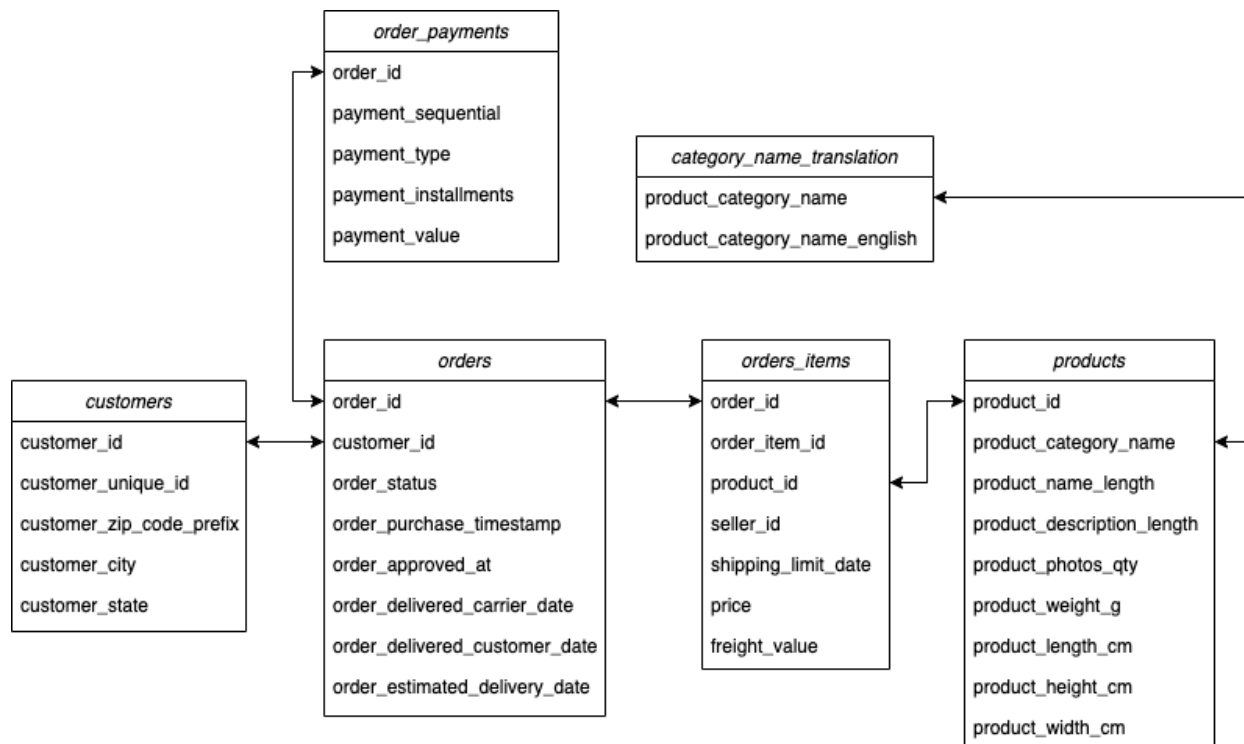The following schema in Figure 1 describes the relationship of the multiple datasets.

Figure 1

Data Analysis

How many unique cities and states are present in the dataset?

There are 4119 unique cities and 27 unique states present in the dataset.

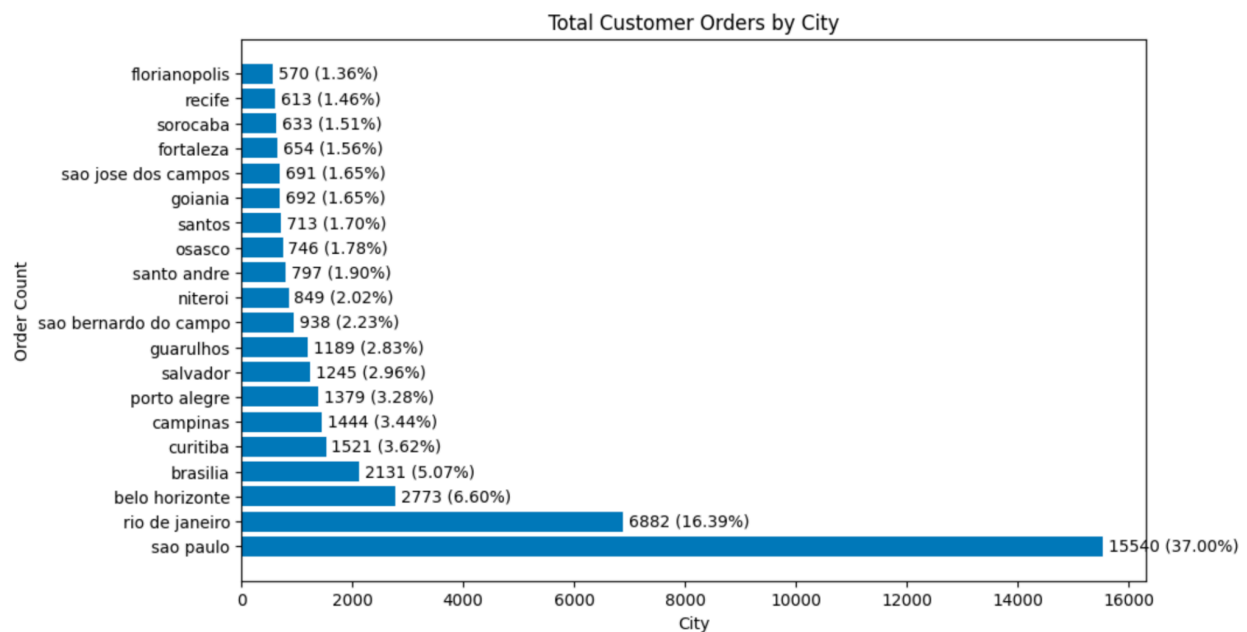## Which cities and states have the highest order count?

Figure 2

Based on Figure 2, it's evident that Sao Paulo, Rio de Janeiro, and Belo Horizonte are the top three cities with the highest order count. Sau Paulo, with 15,540 orders, accounting for 37%, significantly surpasses Rio de Janeiro, which follows with 6,882 orders. Followed by Belo Horizonte and Brasilia, which hold considerable amount of orders, indicating strong sales activity as well.

These 4 cities stand out as the cities with the highest order count, indicating a robust market presence and likely a high population density or economic activity compared to other cities. Despite Belo Horizonte and Brasilian not having the same order count level as the top 2 cities, they still exhibit strong presence in terms of sales activity, indicating a viable market for the company to target.
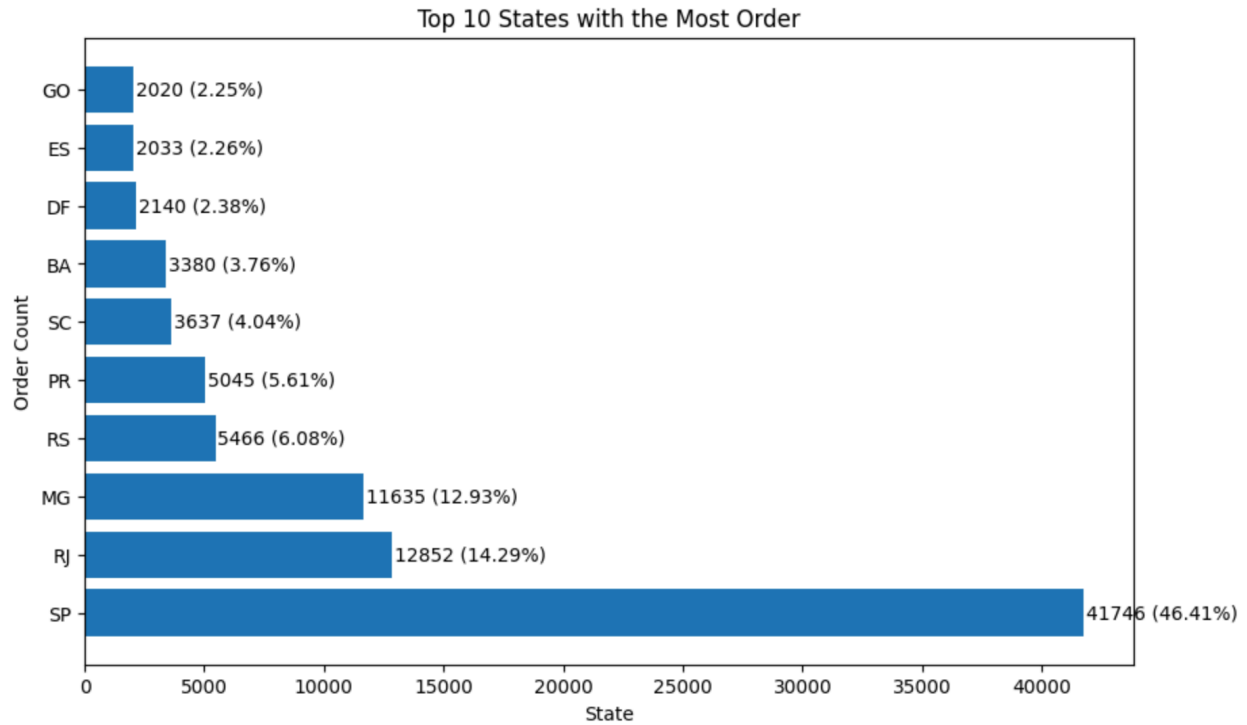
Figure 3

Referring to Figure 3, it's evident that Sau Paulo (SP), Rio de Janeiro (RJ), and Minas Gerais (MG) are the top three states with the highest customer counts. SP leads significantly with 41,746 customers, accounting for 46.41%, followed by RJ with 12,852 customers, and MG with 11,635 customers. These observation suggest that these states serve as major hubs for the company, likely due to its large population and robust economic activity.

Strategies Recommended

1. Market Concentration: The top cities and states likely represent the primary markets for the company, therefore, concentrating resources and marketing efforts in these regions could yield higher returns fue to their larger customer bases and stronger sales potential.
2. Targeted Strategies: Develop tailored sales and marketing strategies specifically for the top 3 cities and states could capitalize on the existing market ominance in these areas. We could also do further analysis to understand the unique characteristics and preferences of customers in each city and state to develop tailored product offerings, pricing strategies, and promotional activities.
3. Expansion opportunities: Explore avenues to increase market penetration in areas with lower order counts can diversify the company's customer base and mitigate risks associated with overrealiance on a few key markets.

Can we identify any patterns in user engagement over time? (e.g., daily, weekly, seasonal)
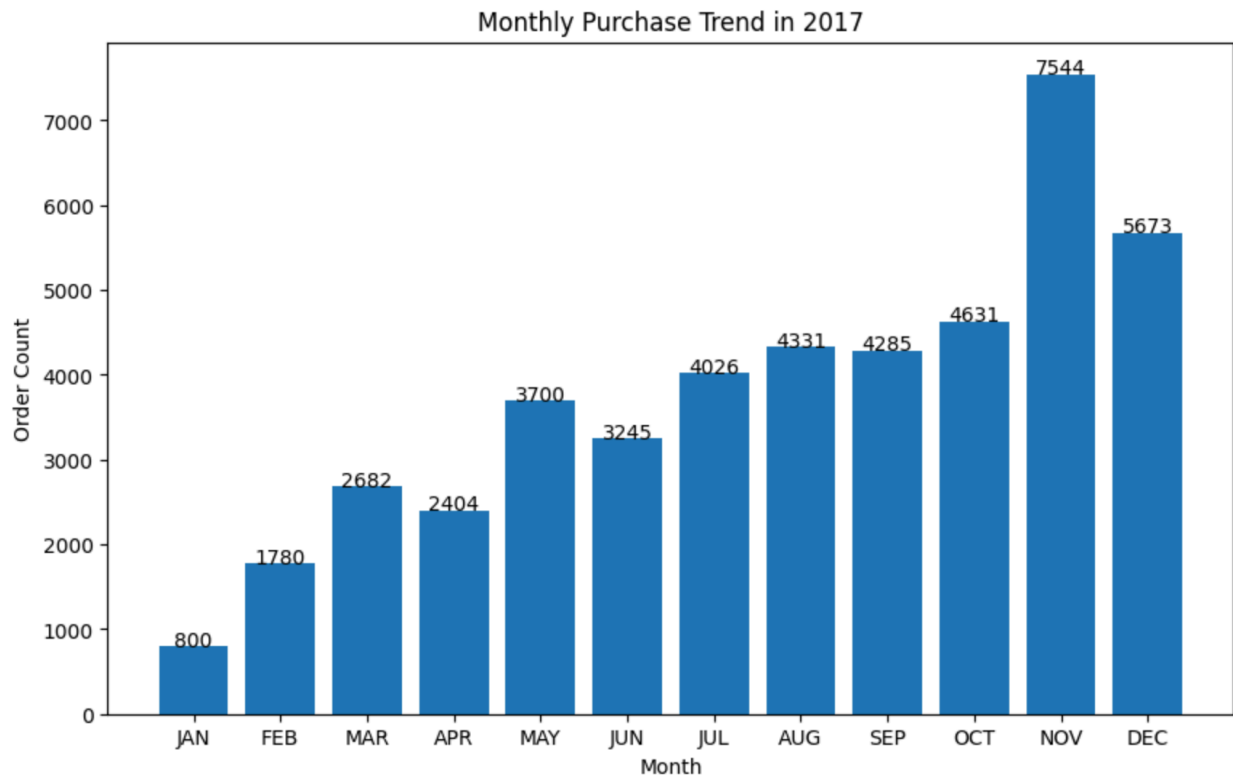
Monthly Purchase Trend

Figure 4

From the above Figure 4 we can note that the order count in general exhibits an increasing trend from January to November, with a significant spike in November, followed by a slight decrease in December. The notable pattern of increased order towards the end of the year, particularly from October to December, may be attributed to holiday shopping seasons such as Black Friday, Cyber Monday, Christmas and New Year. It is worth noting that although December typically represents a high-sales period due to holiday shopping, there's a relatively slight decrease in order count likely due to a shift in consumer behaviour after major promotional events.
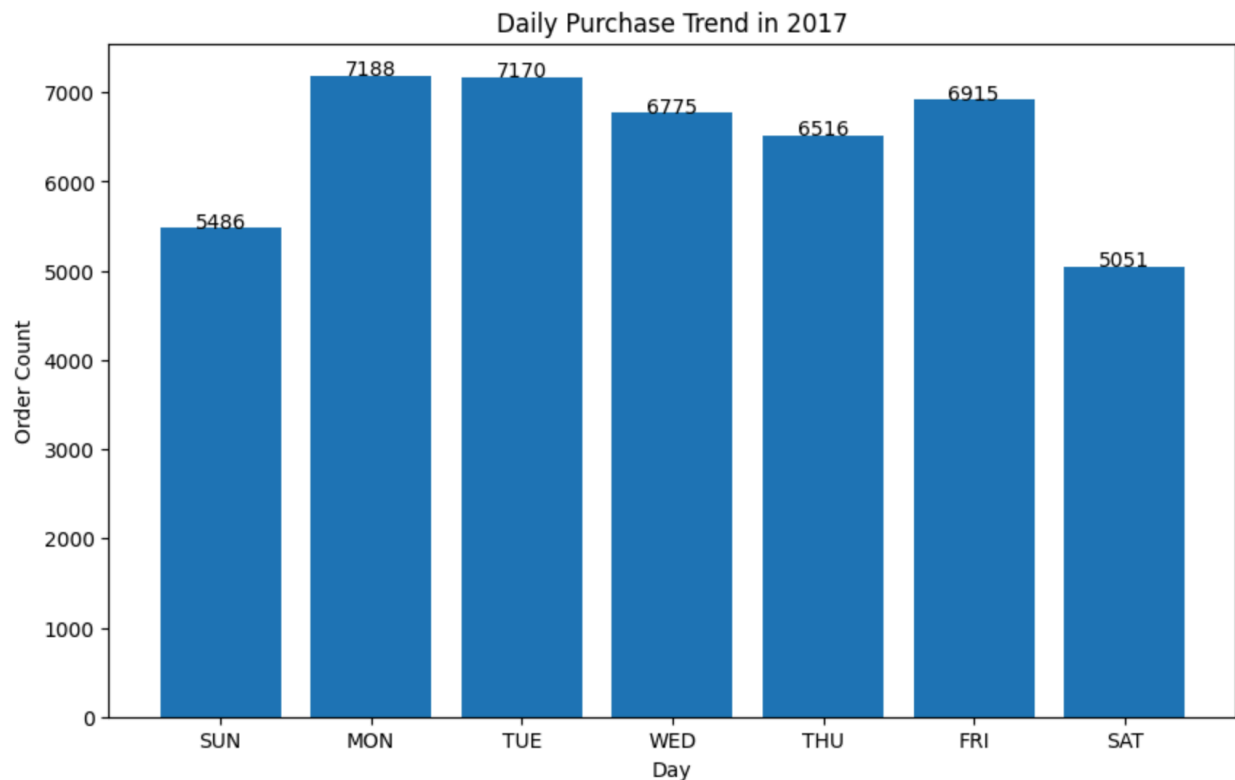
Daily Purchase Trend

Figure 5

The order count fluctuates across different days of the week as observed from Figure 5, with Mondays exhibiting the highest order count, followed closely by Tuesdays and Fridays. Saturdays consistently have the lowest order count among all days of the week. The chart shows a notable pattern of higher order counts at the beginning of the week, gradually decreasing towards the weekends. There is a surge of purchasing activity at the start of the week, and lower consumer engagements during weekends.
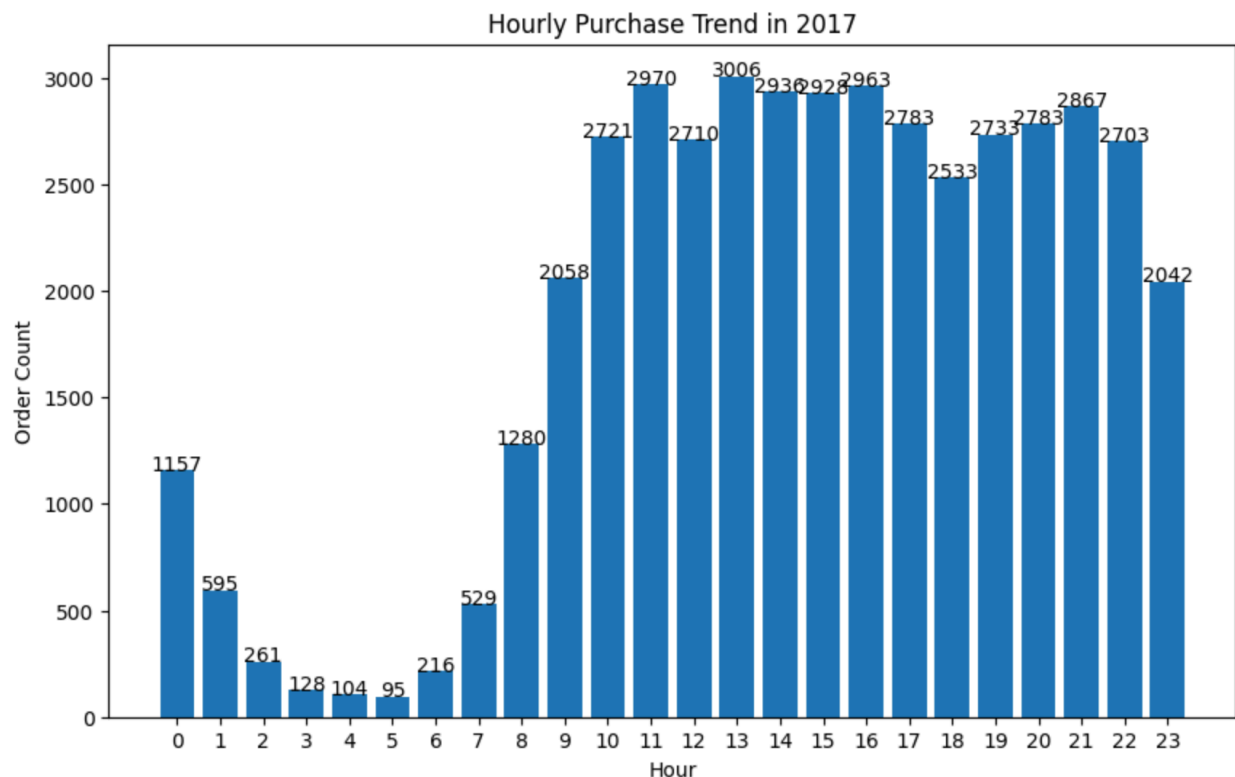
Hourly Purchase Trend

Figure 6

Based on Figure 6, we can observe that the order count fluctuates significantly throughout the day, however, there is a significant increase starting from early morning, peaking at mid-morning and early afternoon, then gradually decreasing towards late evening and night. The highest order counts are observed between 9AM and 11AM, peaking at 10AM, possibly corresponding to work breaks or morning routines. Another peak in order count occurs around 1PM to 3PM, suggesting purchasing activities during lunch breaks or leisure time. Overnight hours from midnight to 6AM have significantly reduced shopping activity. There is also a minor dip in order count between 4PM and 6PM, which may suggest a slowdown in shopping activity as the day progresses.

Strategies Recommended

1. Promotions and marketing campaigns can be strategically timed to coincide with these peak periods to maximize visibility and engagement, For example, email campaigns or social media posts can be scheduled during peak shopping hours to reach targeted customers when they are most likely to make purchases.
2. We can focus on engaging with customers during peak days and hours by providing personalized recommendations, offering promotions or implementing live chat support, which caan enhance the shopping experience and drive sales.

3. Improving operational efficiency by adjusting staffing schedules and optimizing logistics based on anticipated order volumes during peak and off-peak periods can lead to cost savings and better customer service.

How many unique product lines does the dataset have?

The dataset contains 73 unique product lines, which reflect on the diversity of range of offerings available to customers.

What are the most popular categories on the platform?
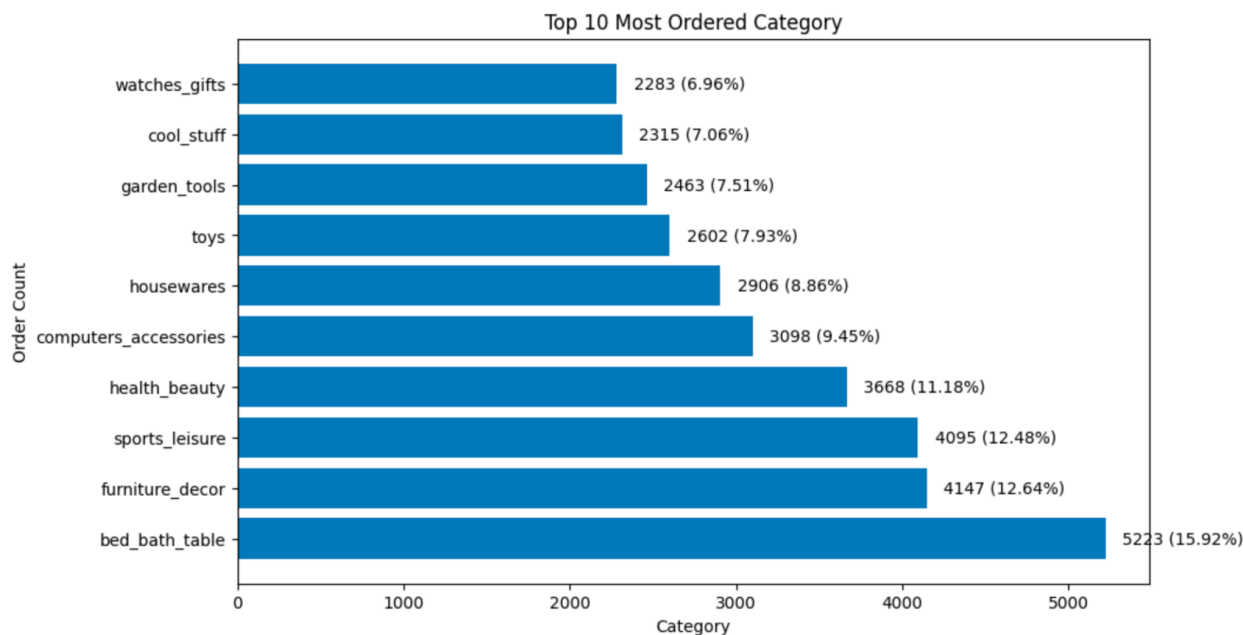

Top 10 Most Ordered Category

Figure 7

Figure 7 shows the top 10 most popular categories on the platform. Bed & Bath Table, Furniture & Decor, and Sports & Leisure emerge as the top three product categories by order count. Health & Beauty, Computer & Accessories, and Housewares also exhibit strong performance.

Strategies recommended

1. The distribution of order counts across different product categories provides insights into the varying levels of demand. Resource allocation, inventory managements, and marketing efforts should be focused on the popular product categories. This may include adjusting inventory levels, expanding product offerings, or discontinuing products with low demands.
2. Tailoring marketing campaigns and promotional activities to focus on popular product categories can increase engagement and drive sales. Targeted marketing messages and promotions can be focused on the top 10 categories to encourage purchasing behavior.

3. Categories with relatively lower order counts suggest potential growth areas. We can explore strategies to stimulate demand in these categories through product innovation, targeted marketing strategies, or partnership with suppliers and distributors.

How many unique methods of payment are there?

The dataset contains a total of 5 unique payment methods, including credit card, boleto, voucher, and debit card.

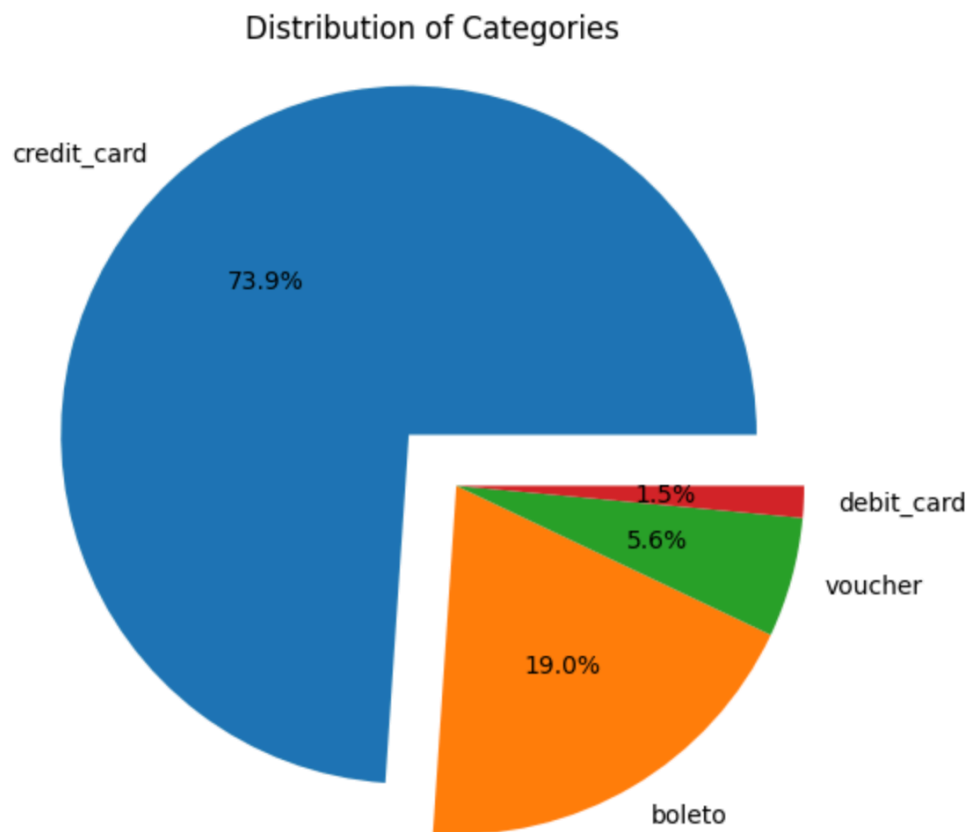## What are the preferred types of payment?

Distribution of Categories

Figure 8

As reflected on Figure 8, credit card is the most widely used payment method, with 76, 795 transactions recorded. Followed by boleto, accounting for 19, 784 transactions. Voucher and debit card transactions are relatively lower, with 5,775 and 1,529 transactions respectively.

Strategies Recommended

1. Given the popularity of credit cards, offering promotions, discounts, or loyalty rewards may be considered to incentivize credit card usage and increase customer engagement. Likewise, targeted marketing campaigns or incentives may be implemented to encourage greeted adoption of less commonly used payment methods.
2. Ensuring secure payment processing is essential for transactions involving sensitive financial information. Offering secure payment options and implementing robust fraud prevention measures can enhance customer confidence and mitigate risks associated with online payments.
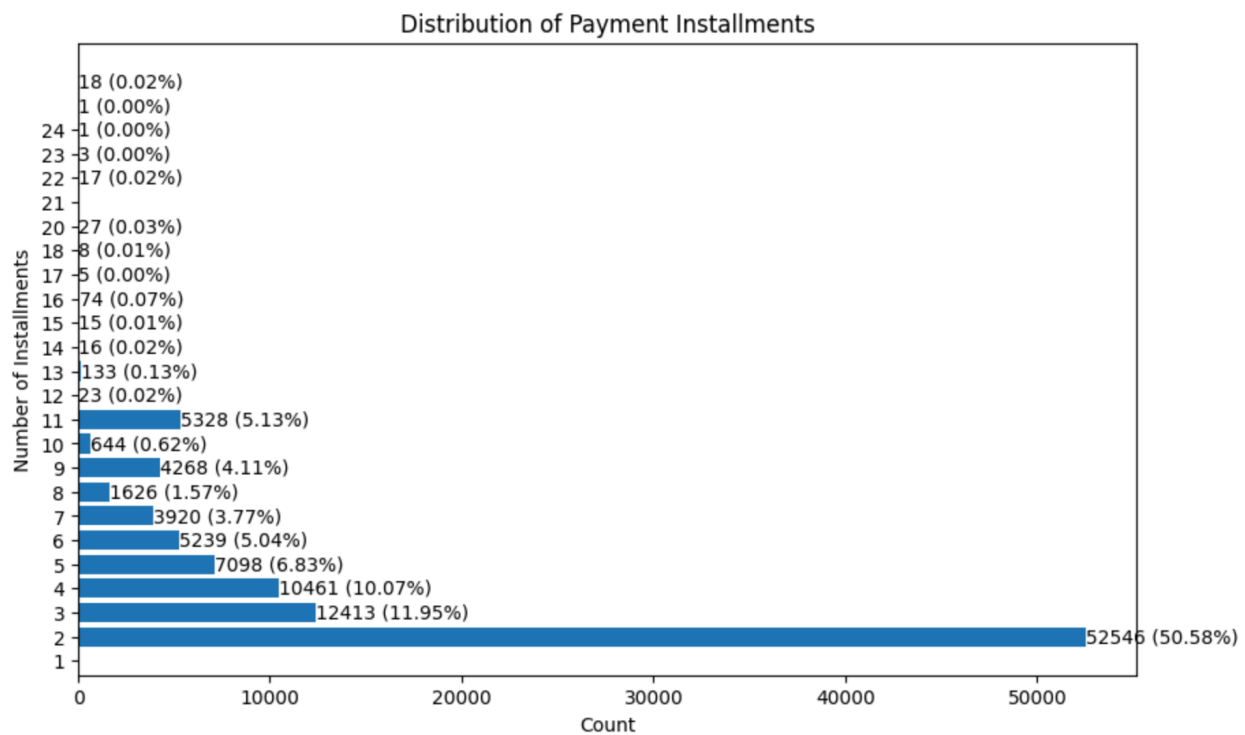
Do customers prefer installment plans?

Figure 9

The dataset includes payment transactions with installment plans ranging from 1 to 24 installments. Figure 9 shows the distribution of payment installments on the platform. As indicated, the majority of transactions involve a single installment, with 52,546 transactions intotal for this payment scheme. As the number of installments increases, the count of transactions generally decreases, indicating that short installment plans are more common. Even though the figure suggest that customers prefer to make one-time payments rather than opting for installment plans, there is still significant usage of longer installment plans, particularly up to 10 installments.

Strategies Recommended

1. We can leverage the popularity of single installments and shorter installment plans by offering promotions, discounts, or incentives for customers who choose these payment options. Promoting flexible installment plans with a moderate number of installments, such as 2 to 5,, may also appeal to customers who are seeking to spread out the cost or larger purchases.
2. Although single installments are most prevalent, the availability of installment plans across various durations provides ustomes with flexibility in managing their finances and making purchases according to their individual preferences and circumstances. Continue to offer a variety of installment options can cater to diverse customer needs and enhance overall satisfaction with the purchasing process.

Conclusion

In conclusion, this report aims to utilize data-driven strategies in enhancing customer experience and driving revenue growth in the e-commerce landscape. Key findings from the analysis reveal actionable recommendations aimed at addressing prevalent challenges faced by e-commerce companies, such as optimizing product recommendations, sales strategies, and payment processing. Strategies recommended include market concentration in high-performing regions, targeted marketing efforts tailored to specific cities and states, and expansion opportunities in potential markets.

Moreover, insights into user engagement patterns over time, including monthly, daily, and hourly purchase trends, offer valuable opportunities for businesses to optimize promotional activities, enhance customer engagement, and improve operational efficiency. The analysis also sheds light on popular product categories and preferred payment methods, highlighting opportunities for resource allocation, inventory management, marketing initiatives, and payment security measures.

Overall, this report emphasizes the importance of data-driven decision-making highlights the potential for businesses to gain a competitive edge by leveraging insights derived from comprehensive data analysis. By implementing the recommended strategies and insights, businesses can position themselves for sustained growth, enhanced customer satisfaction, and continued success in the world of e-commerce.