Olist Case Study

Matteo Calderan

Anna Chen

Aditya Jain

Professor Nathan Karst

MSB6310
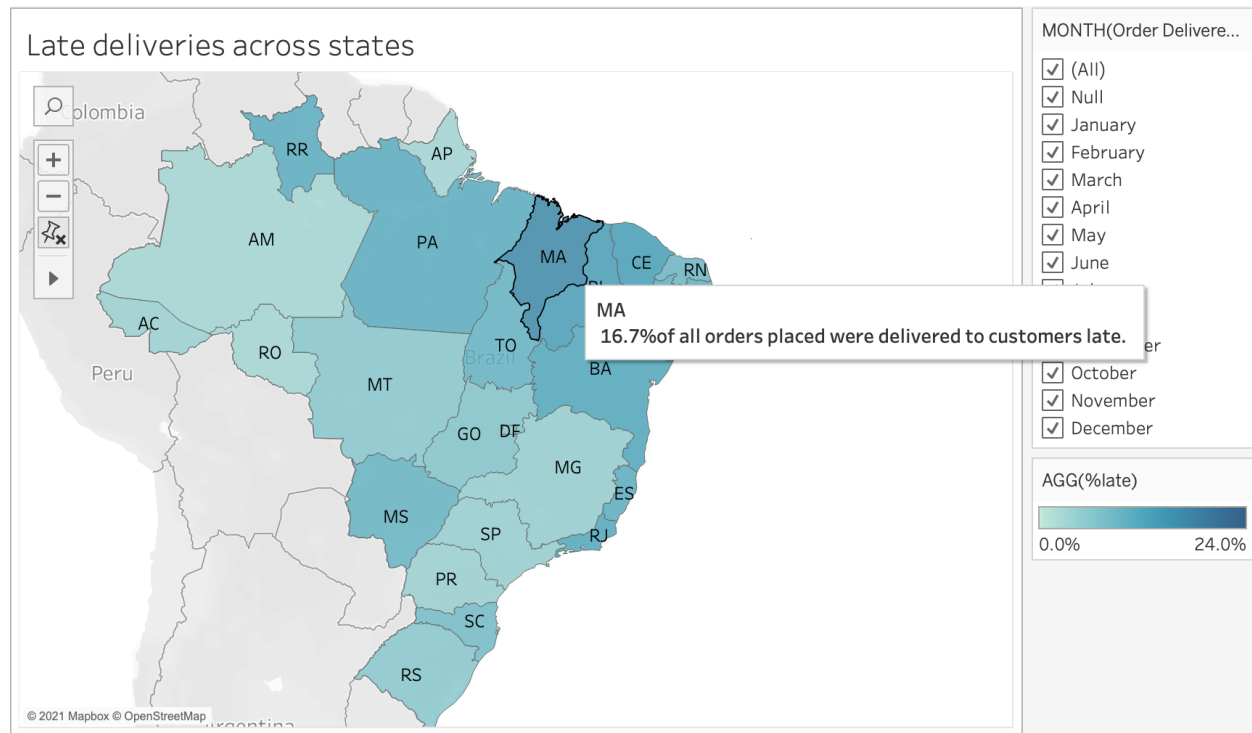
November 16, 2021

Introduction

Online shopping is becoming increasingly prevalent with burgeoning technological advancements and accessibility to electronic devices. The Brazilian eCommerce Marketplace Olist donated an official dataset with information of 100,000 orders from 2016 to 2018 made at multiple marketplaces in Brazil. This information included details regarding customers, sellers, payments, shipping, location, and so much more. The aim of this report is to take this compilation of data and derive several analytical insights to offer business recommendations to Olist. The report is broken down into three main sections. Firstly, we will investigate the prominence of late deliveries across Brazil. Then, we will examine the revenue generated across the Brazilian states throughout the three years. Finally, we will evaluate Olist's order sizes and determine how to increase them.

Question 1

In order to maximize revenue, a company needs to know whether its supply chain is working efficiently since firms compete on analytics in order to gain a competitive advantage. Supply chain delays can cause firms to lose an unbridled amount of revenue. Hence, we thought of identifying states in Brazil that are fraught with late deliveries. Thus, our first business question is:

*In which states does Olist's delivery process need to improve?*

The objective of this visualization was to understand in which states or regions is Olist getting the most percentage of orders being delivered late. This would show management where they can improve on their delivery process or supply chain in order to preclude late deliveries and improve on their value chain. We have also added a filter to see in which months orders are being delayed. This information can be conveyed to the manager so that Olist can prepare for a swoon of orders and avoid bottlenecks that cause delays during peak months.

Late deliveries across states

MONTH(Order Delivere...

☑ (All)
☑ Null
☑ January
☑ February
☑ March
☑ April
☑ May
☑ June
...er
☑ October
☑ November
☑ December

MA
16.7% of all orders placed were delivered to customers late.

AGG(%late)

0.0% ——— 24.0%

Note: The visualization above shows the percentage of orders being delivered late across all states in Brazil over three years (2016-2018). The darker the shade of blue, the higher the percentage of orders being late. If you hover above the states, it will give you a percentage of late deliveries over three years. A word of caution that the total orders may vary across the states depending on the size, population and GDP per capita of the state, but we are simply showing the percentage of the total orders that were late across each state. The filter helps us see the percentage of late deliveries of a specific month across three years

Highlights

- Northeastern states had a higher percentage of late deliveries than states in the South and the West
- Interestingly, we would assume that the states located away from the port would have a higher percentage of late deliveries, but this was not the case
- Sergipe (SE), Alagoas (AL), Maranhão (MA) rank the highest with almost 15-20% of their orders being delivered late.
- As we go West, and to the South, the colour changes to a lighter shade of blue, which means that Olist does not need to focus its resources in those states to get the orders on time
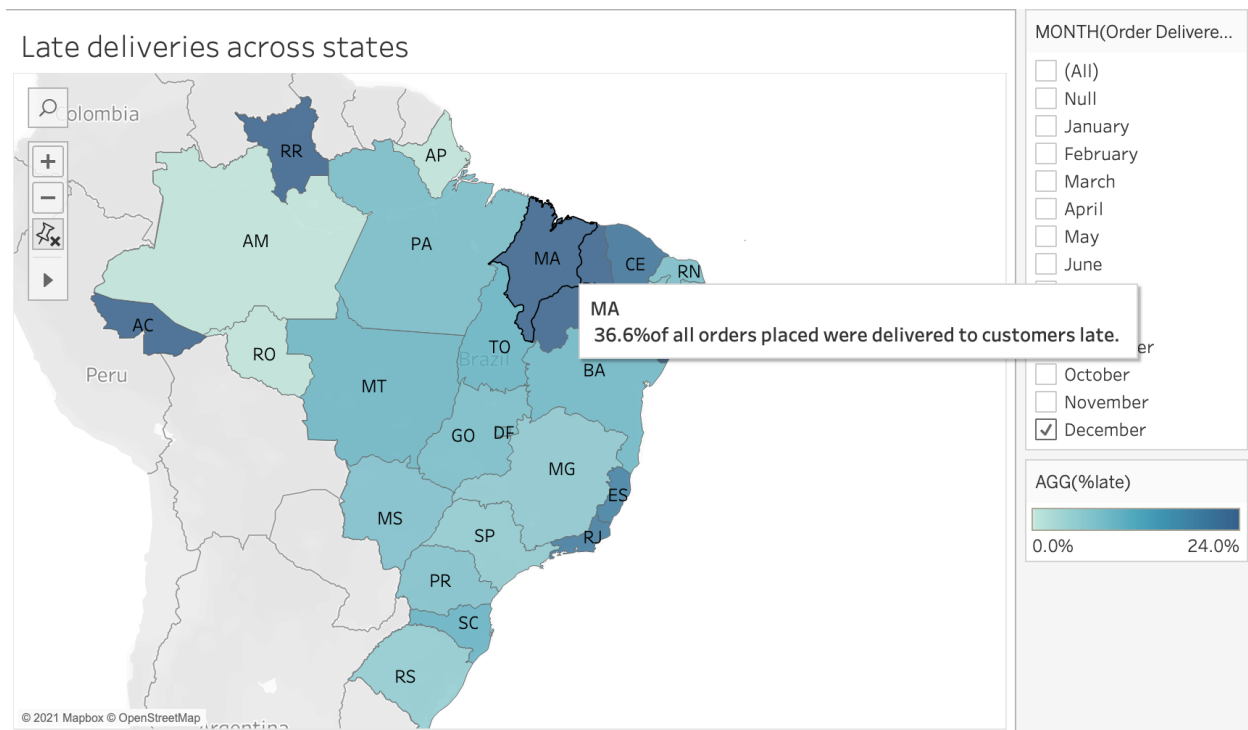
Note: This visualization shows the percentage of late deliveries in the month of December over the three years (2016-2018). For explanation purposes, only December was selected along with the state of Marhanão, but if you select May and June, you will see a high percentage of orders in the NorthEastern states being delivered late as well.

Highlights

- If we click on the filter and check specific months, we see that orders were mostly late during May, June and December. This could be because of peak time of summer and winter months, where customers are more likely to buy different products for various reasons

Business Implications

Olist should identify reasons for late deliveries in the Northeastern states. It is quintessential to know why deliveries are late as it would tell Olist where they should divert their resources. Since deliveries are mostly late in the summer and winter months, Olist should improve on the delivery process before summer and winter months to avoid late deliveries and potential losses in revenue. Repeated purchases are key to generating revenue and late deliveries could mean that customers would not repurchase from Olist. They should also keep a check on the supply chain analytics before the peak months in order to understand which part of the supply chain is being affected. Using supply chain analytics, they could determine the reason for late deliveries and tackle the problems in a timely manner.

Question 2

Understanding where the demand for a product or service is the highest is essential to any successful business as it allows the business to allocate resources and locate itself efficiently. In the case of an established eCommerce business, high-demand areas could be the company's main focus in terms of delivery and service enhancements. To help identify such areas for Olist, the second business question here is:

Which states in Brazil generate the most revenue for Olist?

We will start by taking a look at Olist's customer base and revenue by state:
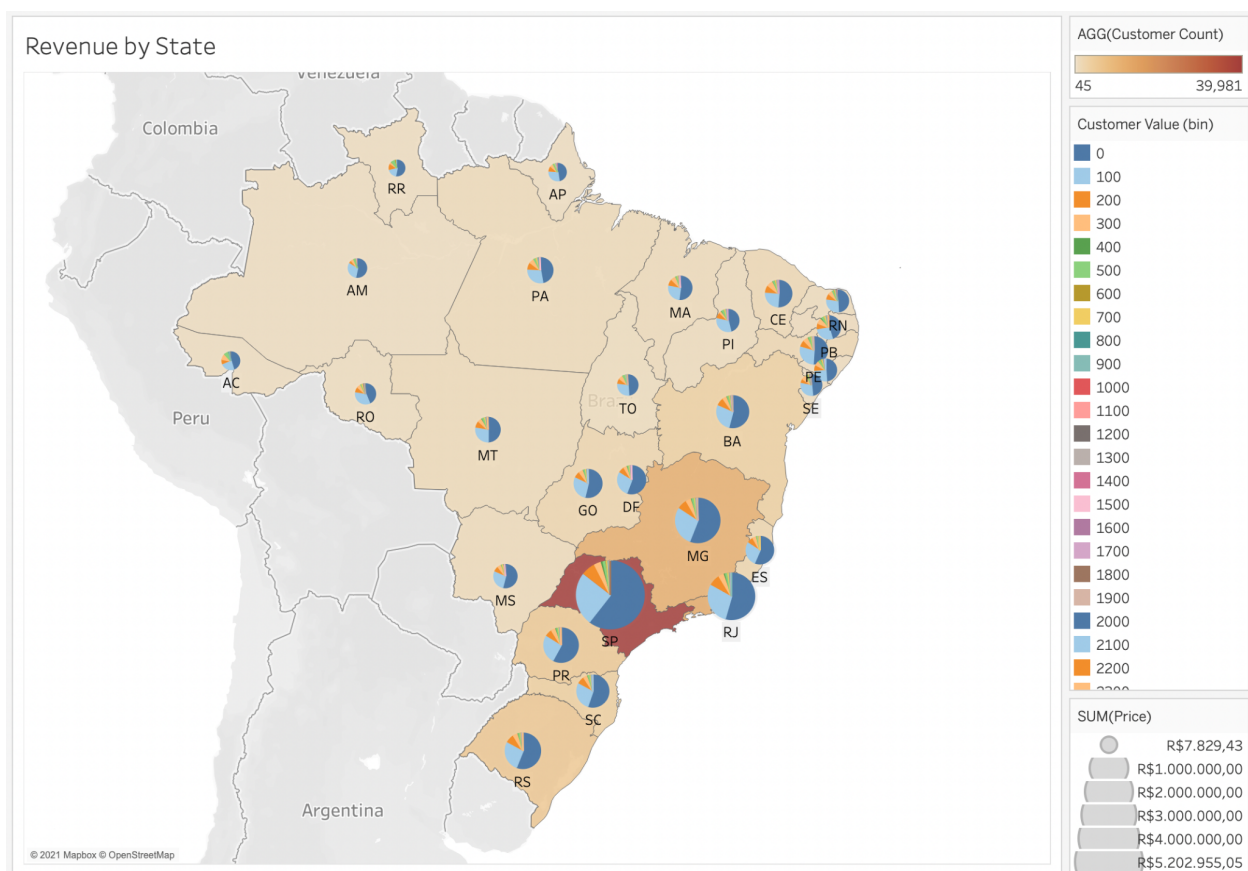
Note: This map shows total revenue generated by each state from all Olist orders between the years of 2016 and 2018, represented by the size of the pies for each state. The pieces of the pie charts are made up of ranges of a hundred Brazilian real spent in total by customers in those three years, with the numbers in the Customer Value key representing the starting point of the ranges, and the saturation of the states represents the number of customers in the state.

olist

Highlights:

- State of São Paulo, Rio de Janeiro, and State of Minas Gerais are the top three revenue-generating states and hold the highest number of customers in Brazil for Olist

- State of São Paulo holds the greatest number of Olist customers (40,302) and generates the most revenue (R$5,202,955.05) of all states in Brazil

- As shown by the colors in the pie charts, the majority of customers have spent below $200 over the course of the three years.

- Outside of the top three states, state revenue was below 1 million Brazilian real

- Olist's customers are mostly centralized around the Southeast region

Business Implications

Olist's top three revenue-generating and customer-base states, State of São Paulo, Rio de Janeiro, and State of Minas Gerais, all surround one another which makes it easier for the company to focus on enhancements to the business. With the majority of Olist customers and revenue coming from the Southeast region of Brazil, building a warehouse in this region, especially in São Paulo, would be ideal as it is the location that reaches the most of its customers. Building a warehouse where sellers located farther away and nearby are able to ship and store products to reduce shipping costs while providing faster service to Olist customers would be beneficial all-around. If a customer placed an order with multiple items from different sellers, Olist would be able to ship out the products together from its warehouse. To ease and reduce shipping costs further, Olist could partner with a shipping company where the partner would pick up all outgoing packages at the end of each business day and offer Olist a wholesale price. Not only would this entice customers to purchase more frequently from Olist, but also entice sellers who have limited inventory space to offer a larger variety of products while easing their shipping and packaging frequencies. Ultimately, Olist as a company would generate more revenue from this, profit margins would be higher for sellers, and customers would receive their products quicker.
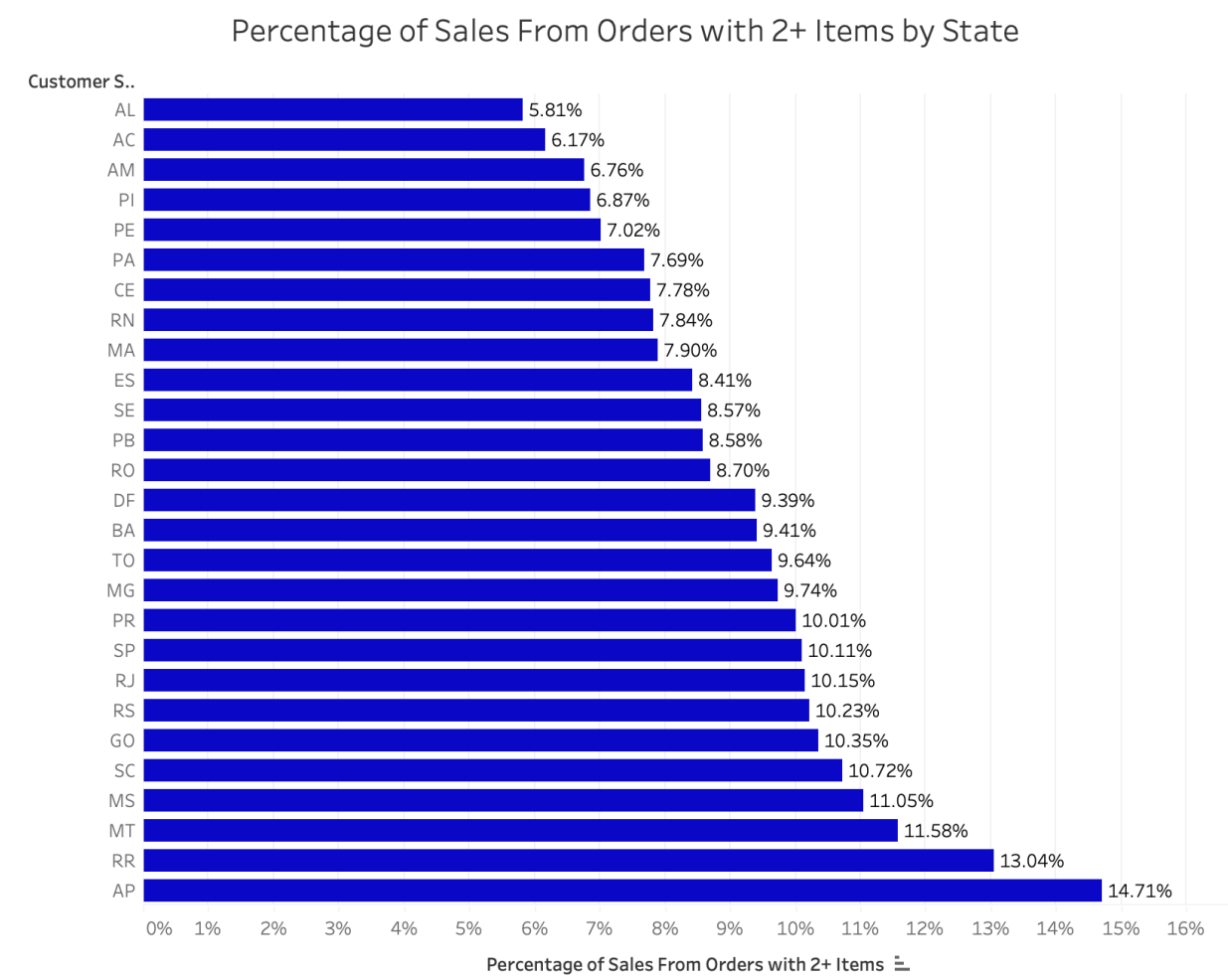
Question 3

Increasing multiple-item orders is a simple way of increasing revenue while increasing costs by a relatively less than proportional amount, hence a larger average profit margin when compared to multiple orders of individual items. A quick and simple example of this concept is comparing the profits of an order of two items versus the profits of the two items ordered separately: one transaction and its respective fees instead of two, one package for both items instead of two separate packages, etc.

A vast majority of 85% of orders on Olist are orders featuring only a single item, leaving 15% of orders with two or more individual goods. Looking at this proportion across Brazil's 26 States and 1 Federal District, it can be noted that these States have different proportions of sales from orders with a single item versus orders with multiple items. Regardless of makeup, Olist is noting minor proportions of multi-item orders across the nation. This leads to the following question:

How does Olist increase the proportion of multiple item orders across the country?

To start, we'll look at a state-by-state breakdown of percentage of total sales that come from orders with two or more items:
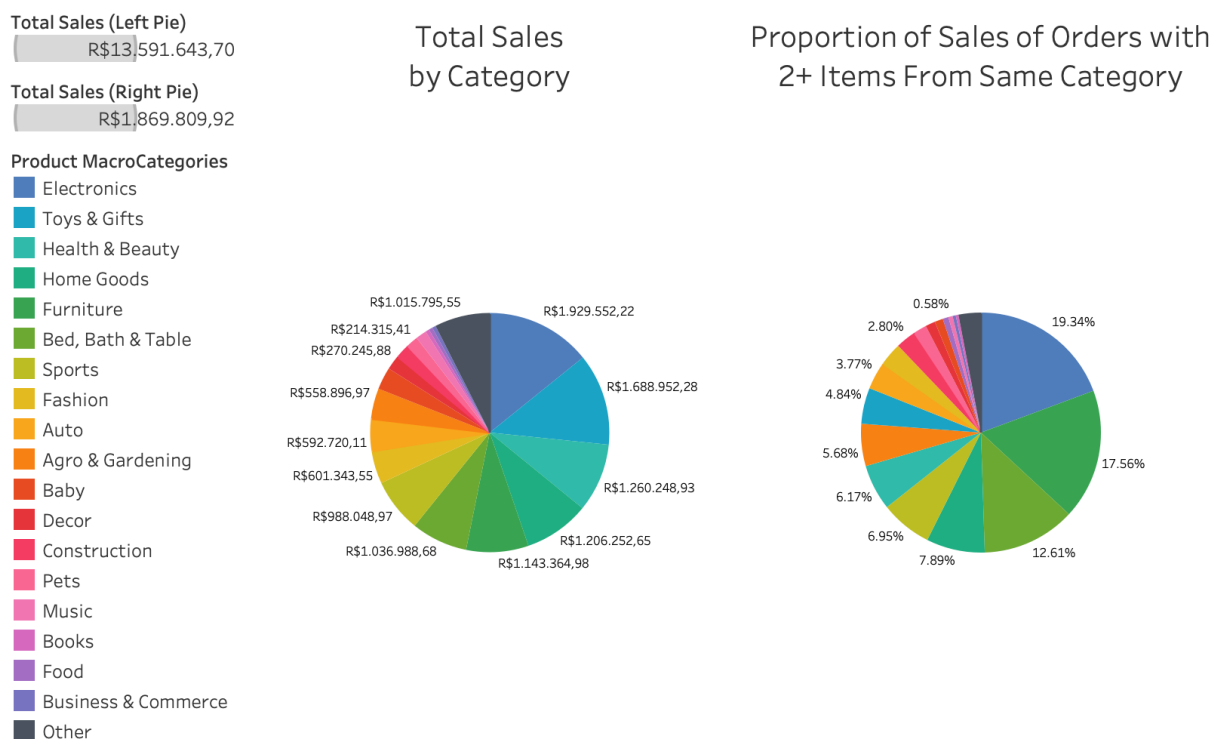
Percentage of Sales From Orders with 2+ Items by State

Customer S..

State	Percentage
AL	5.81%
AC	6.17%
AM	6.76%
PI	6.87%
PE	7.02%
PA	7.69%
CE	7.78%
RN	7.84%
MA	7.90%
ES	8.41%
SE	8.57%
PB	8.58%
RO	8.70%
DF	9.39%
BA	9.41%
TO	9.64%
MG	9.74%
PR	10.01%
SP	10.11%
RJ	10.15%
RS	10.23%
GO	10.35%
SC	10.72%
MS	11.05%
MT	11.58%
RR	13.04%
AP	14.71%

0% 1% 2% 3% 4% 5% 6% 7% 8% 9% 10% 11% 12% 13% 14% 15% 16%

Percentage of Sales From Orders with 2+ Items

Note: This histogram shows the percentage of total sales that come from orders with 2+ items by State, ordered from least to greatest.

Highlights

- For more than ¾ of Brazil's States, orders with multiple items make up 10% of total sales or less

- Only *Amapá* and *Roraima* have (relatively) high proportions of multiple item order sales

- There is a considerate spread of proportions of sales from multi-item sales from the smallest (*Alagoas*) at 5.81% to the largest (*Amapá*) at 14.71% — a difference of nearly 900 basis points

In an effort to distinguish the makeup of these orders, it was discovered that of those 15% of multi-item orders, only 1% are made up of items from separate product categories; the remaining 14% (or 93% of

orders with two or more items) are orders where the items purchased were from the same product categories. Here is are two breakdowns of sales by product category to further assess this occurrence:

Total Sales (Left Pie)
R$13.591.643,70

Total Sales (Right Pie)
R$1.869.809,92

Product MacroCategories
- Electronics
- Toys & Gifts
- Health & Beauty
- Home Goods
- Furniture
- Bed, Bath & Table
- Sports
- Fashion
- Auto
- Agro & Gardening
- Baby
- Decor
- Construction
- Pets
- Music
- Books
- Food
- Business & Commerce
- Other

Total Sales by Category

Proportion of Sales of Orders with 2+ Items From Same Category

Note: The size of the left pie represents the total sales by product category (total noted in legend) and its slices show the makeup of total sales by product categories, ordered by largest share of total sales to smallest, and their respective nominal total sale amounts. The pie on the right represents all orders of 2+ items from the same category, which make up ~14% of all orders (left pie). The size of the right pie represents the total sales of orders with 2+ items from the same category (total noted in legend) and its slices show the makeup of that total by product categories, ordered by largest share of total sales to smallest, and their respective proportions of said total.

Highlights

- Half of all sales from orders with 2+ items from the same product category come from *Electronics*, *Furniture*, and *Bed Bath & Table*

- *Toys & Gifts*, which is the second largest category in terms of total sales, is only the 8th largest for orders with 2+ items from the same product category, a decrease of proportion of sales from 12.43% to 4.84%

- The top 7 product categories making up ~75% of sales from orders with 2+ items from the same product category, in order, are: *Electronics*, *Furniture*, *Bed Bath & Table*, *Home Goods*, *Sports*, *Health & Beauty*, and *Agro & Gardening*

Business Implications

Looking deeper into the "2+ items from the same product category" order sales data of Olist, we found that only a few product categories make up a majority of those sales, a greater concentration of categories than in overall sales. Due to this, an opportunity to boost sales across Brazil is made apparent.

In an effort to boost same order sales revenue in regions with low rates of multiple-item orders, or nationwide as well, Olist should create marketing campaigns offering limited time offer deals where customers are incentivized to buy two or more products of the same category at a time in an effort to increase basket size. More specifically, Olist should focus on offering these deals for product categories with the largest share of multi-item order revenue, such as *Electronics*, *Furniture*, and *Bed Bath & Table*, as they are the categories in which customers are already used to buying many items in tandem. Also, their large revenue share means an increase of revenue of 25% for products in *Electronics* thanks to such a campaign, for example, would result in an increase of total revenue by about R$90,000, much greater than a similar increase in proportion of revenue for a category such as *Fashion*. One exception to this rule would be to focus these campaigns also on *Toys & Gifts*, as it makes up only a small share of revenue in multi-item orders but a much larger share of total revenue. Olist should also use these campaigns to increase revenue in the States that have the smallest proportions of orders with multiple items, such as *AL*, *AC*, *AM*, and many more, as they are the States with the most ground to catch up in terms of orders with multiple items. As a side benefit, by increasing the quantity of multi-item orders in States with low proportions of said orders, Olist should realize increased revenue from those States, even without increasing the number of customers there.

These incentives could be in the form of discounts on the second and subsequent items purchased, vouchers for multiple item purchases, or free/discounted shipping expenses on multi-item orders. The option of a free/discounted shipping cost on a basket-size-basis rather than an order-value-basis could be a permanent feature on Olist's marketplace as well, increasing the future frequency of customers opting to increase the quantities of their future orders. Additionally, shifting customers to buy multiple items at once rather than several separate orders also is more environmentally friendly, a tag that the Olist can leverage to increase firm value and goodwill along with improving the public's perception of the firm on a moral basis.

These measures, along with any other campaigns of similar scope, will increase basket size and, thus, the gross amount and proportion of multi-item orders both in the short term (length of campaign offerings) and the long term, as customers should shift their buying habits thanks to recurring deals and permanent features such as free/discounted shipping on multiple item orders. Since the profit

margins on multiple item orders are on average greater, increasing basket size and, subsequently, average order value (AOV) should be one of Olist's priorities as an eCommerce marketplace.

Conclusion

We believe that by minimizing the percentage of late deliveries, building a warehouse near top revenue-generating areas, and incentivizing multi-item orders, Olist has the potential to increase its revenue and profits greatly. Through these initiatives, the customer experience will be improved and the company's customer base will grow. In tandem with Olist's vast array of product categories, this is the ideal place for online shoppers to shop.