

What influential factors in making longer lead time ?

How to optimize?

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OLIST BRAZILIAN E-COMMERCE



Overview

Target Audience:

Olist operation team

Outline:

- 1/ Olist's overall performance
- 2/ Delivery performance index
- 3/ Factors contribute to longer leadtime
- 4/ Recommendation & Evaluation

Dataset

6 tables

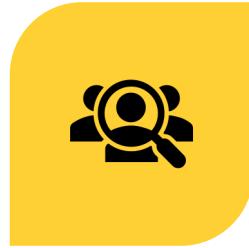
115609 rows & 40 columns

Time period 2016 - 2018

Olist overall performance



NUMBER OF ORDERS:
99441



NUMBER OF CUSTOMERS:
96096



NUMBER OF SELLERS:
3095

Number of order and seller grew each year, which increased 26%, 30% respectively from 2017 to 2018

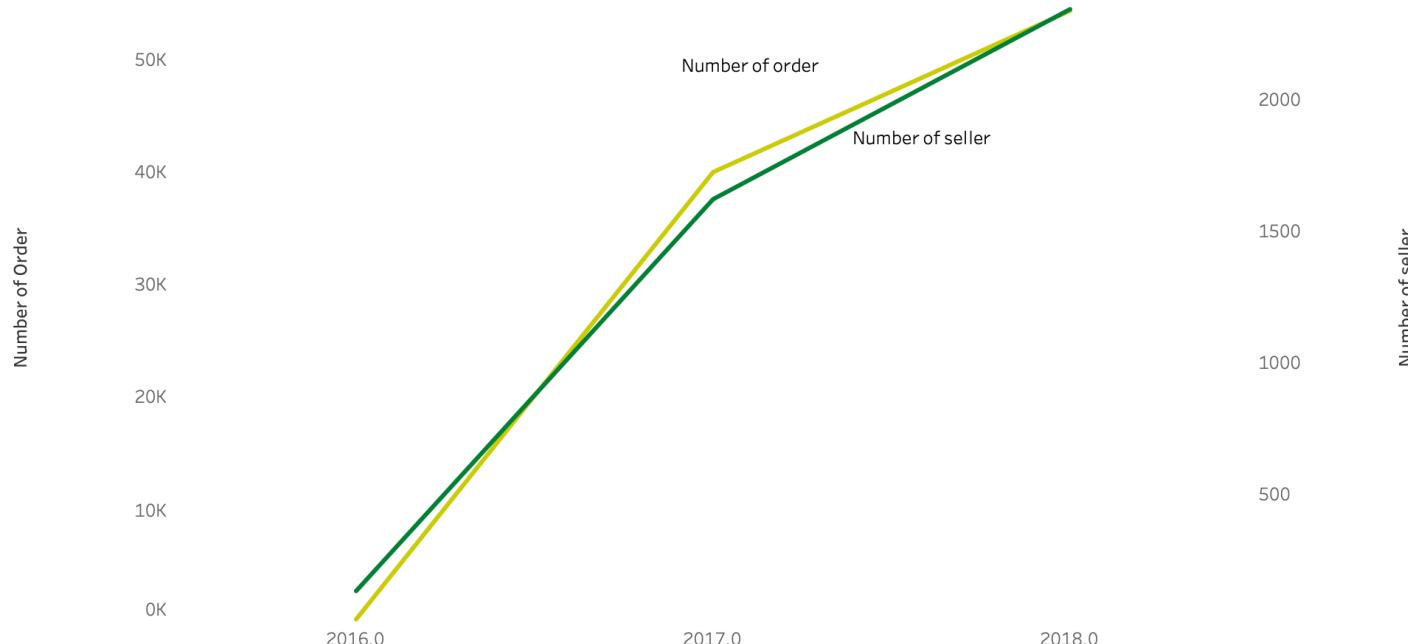


Figure 1: Number of orders & sellers over years

Total order value increased 32% from 2017 to 2018

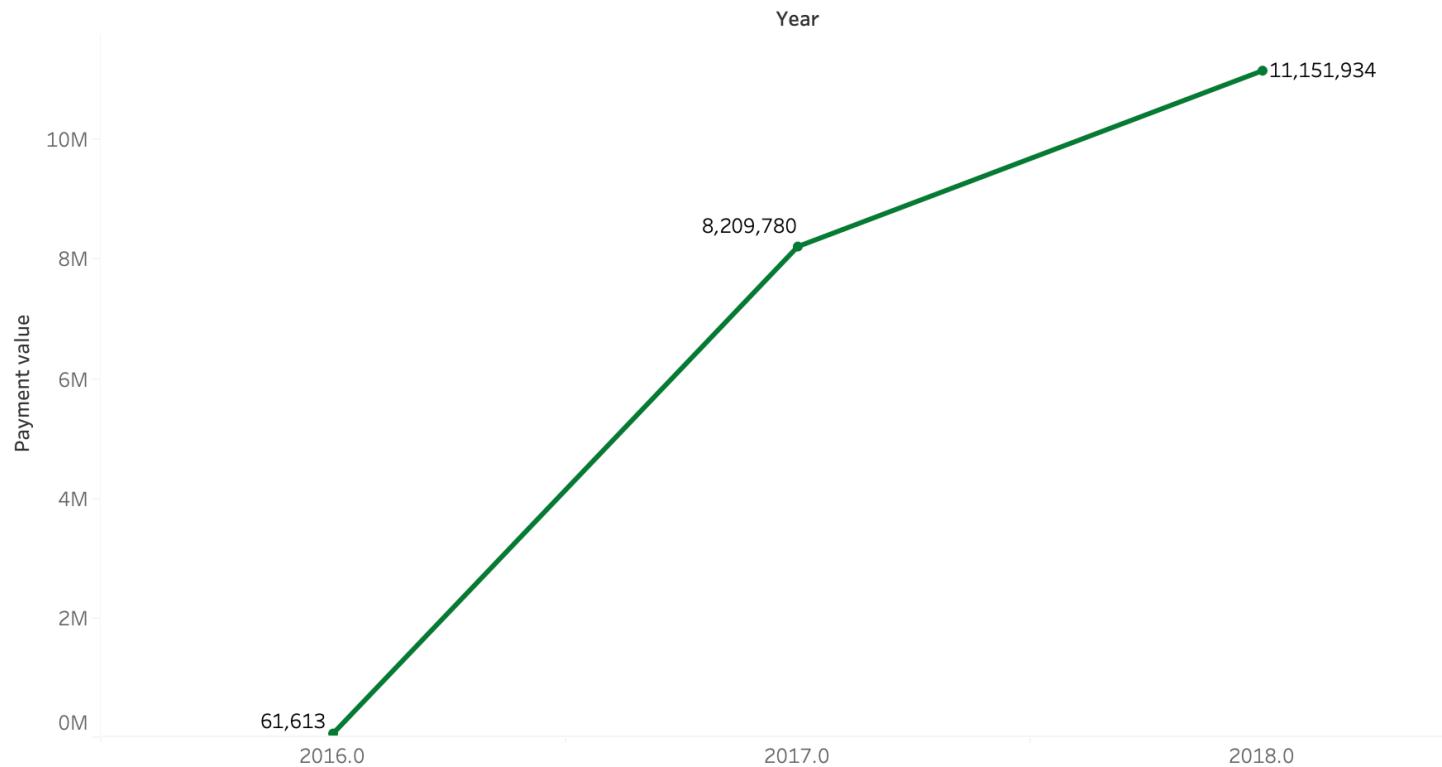


Figure 2: Number of orders value over years

Average review score decreased from 2017 to 2018

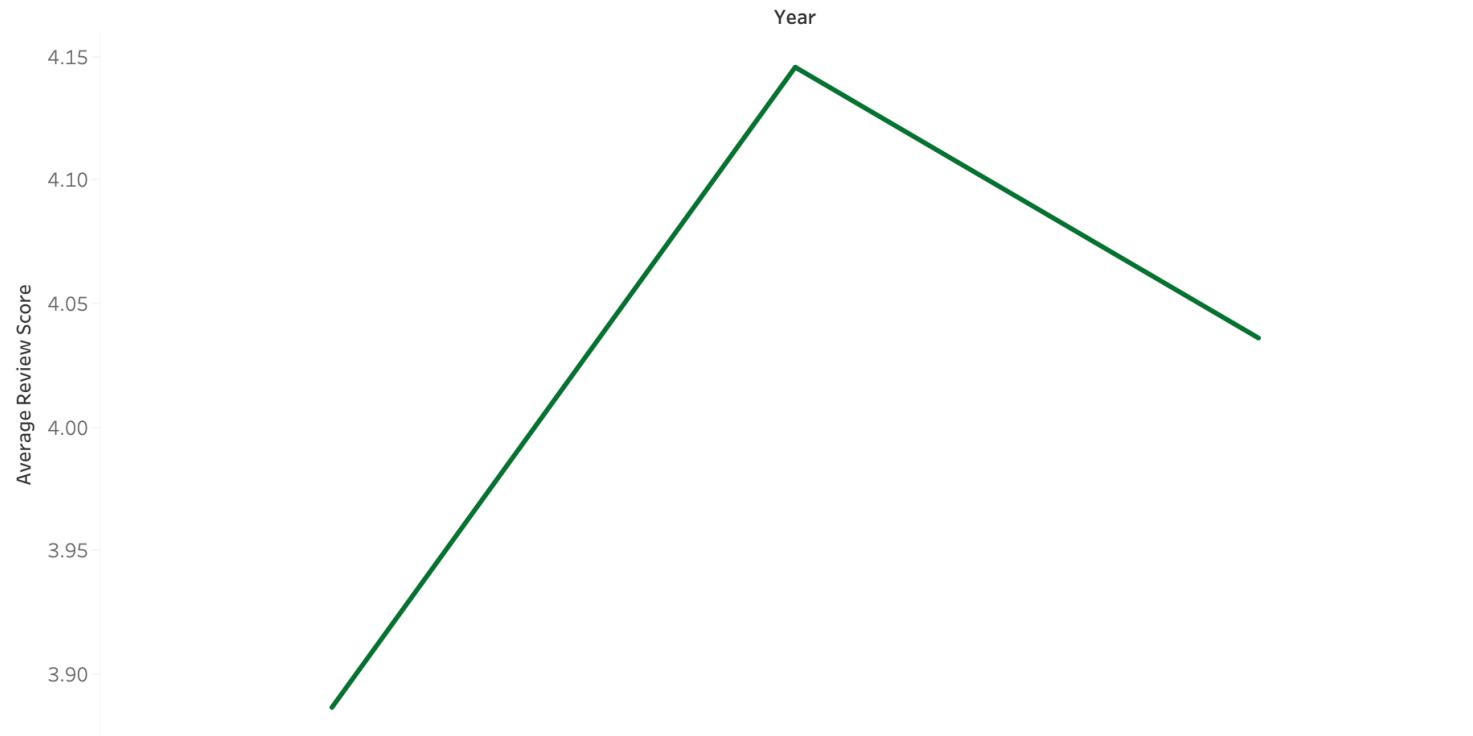


Figure 3: Average review score over years

Customer mostly mentioned about product quality and delivery process such as arrived, delivered, delivery, came, time.

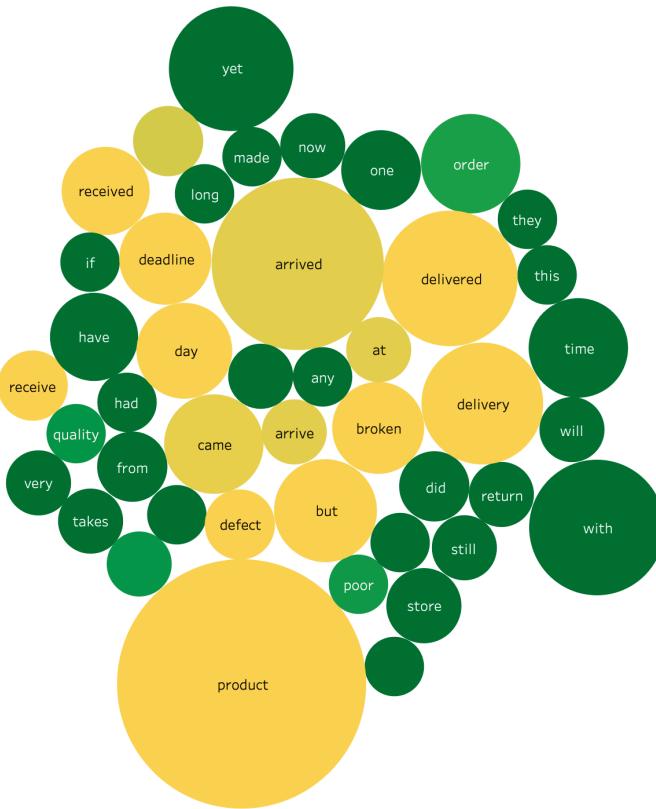


Figure 4: Top 100 bad reviews with score under 3

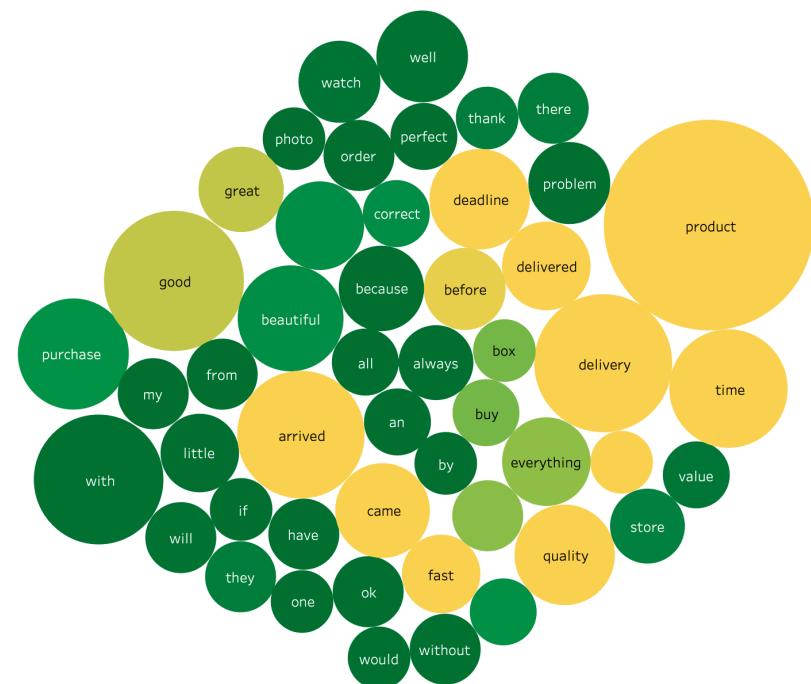


Figure 5: Top 100 good reviews with score higher than 4



Shipping performance index



Average lead time from purchase to delivery was 12 days

Late delivery accounted for 8%

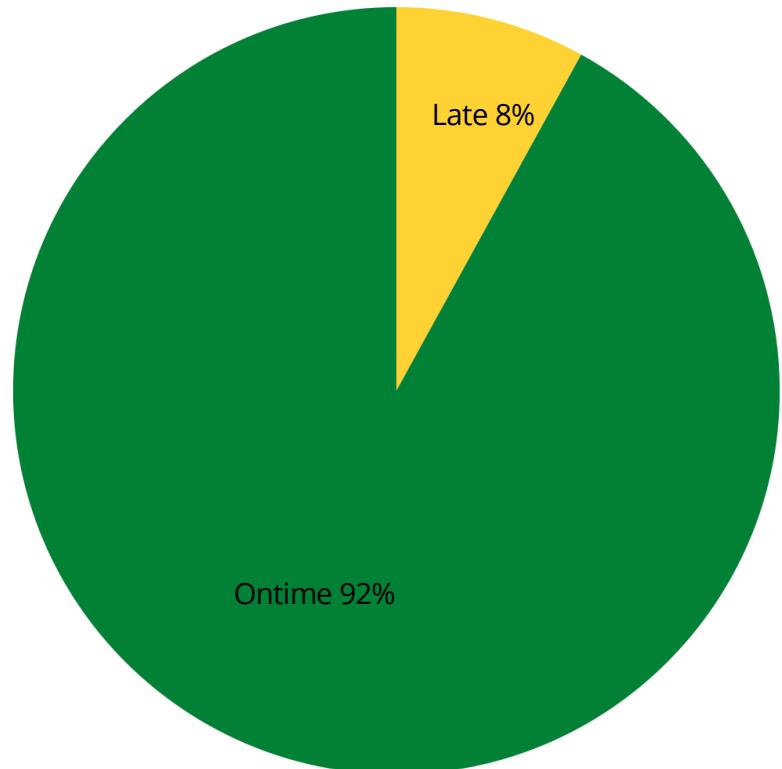


Figure 6: Late & On time delivery percentage

Whether late delivery is the main cause of customer satisfaction?

Late shipment have review score lower over a half than on time shipment

Review score at 1 of late shipment was highest among other scores

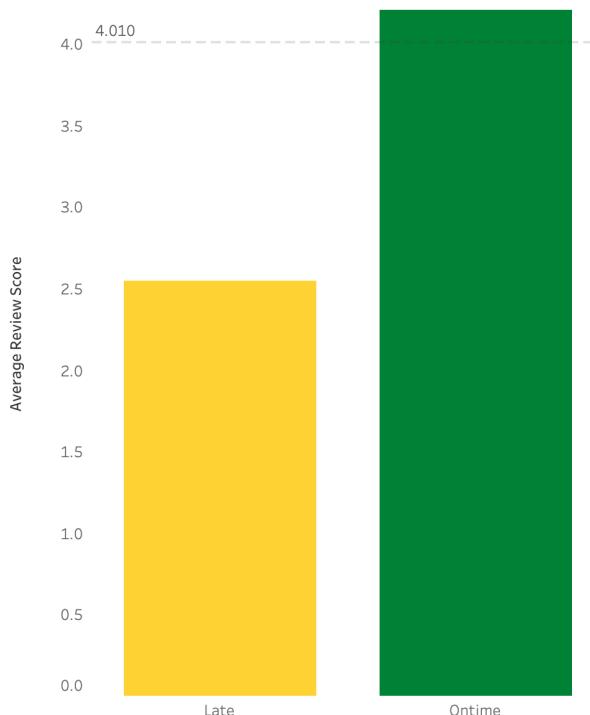


Figure 7: Late & On time average review score

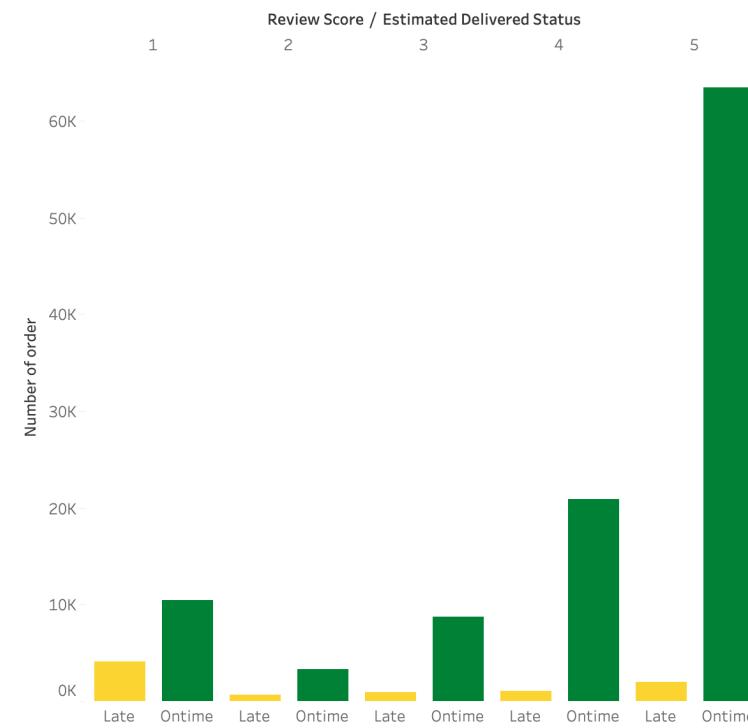


Figure 8: Late & On time review score distribution

Lead time of each process have correlation with review score

Longer lead time would have lower review score

→ Late delivery affect to customer satisfaction

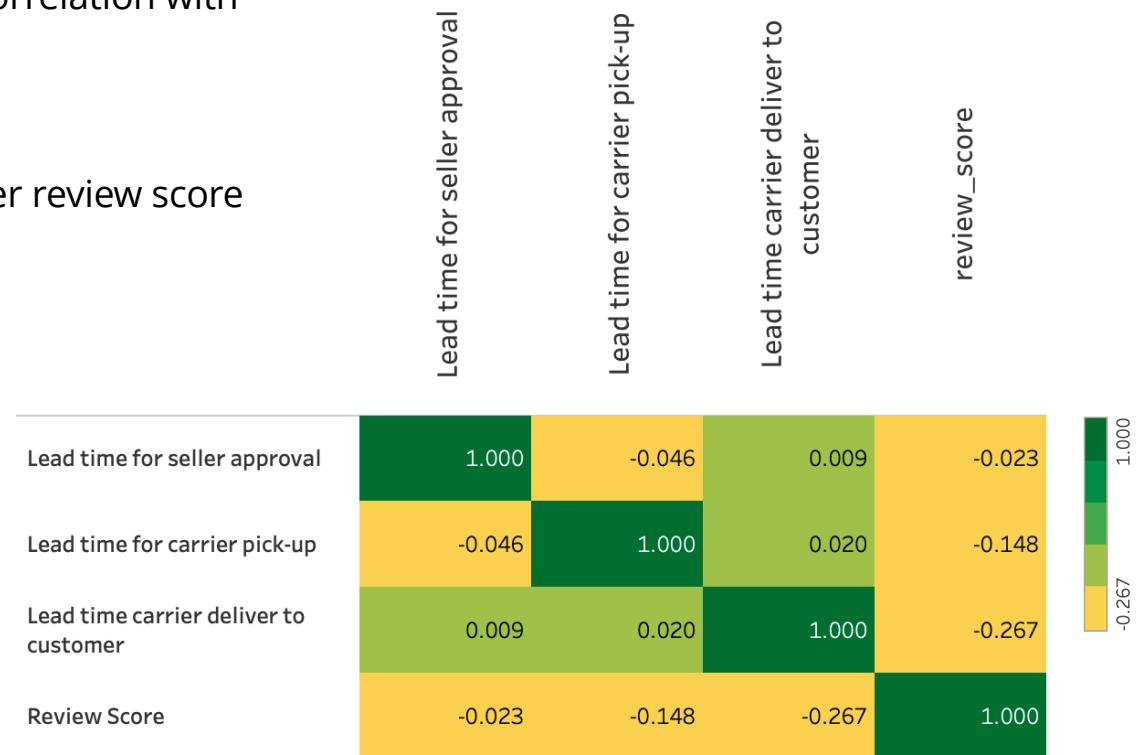


Figure 9: Correlation duration of each process and review score

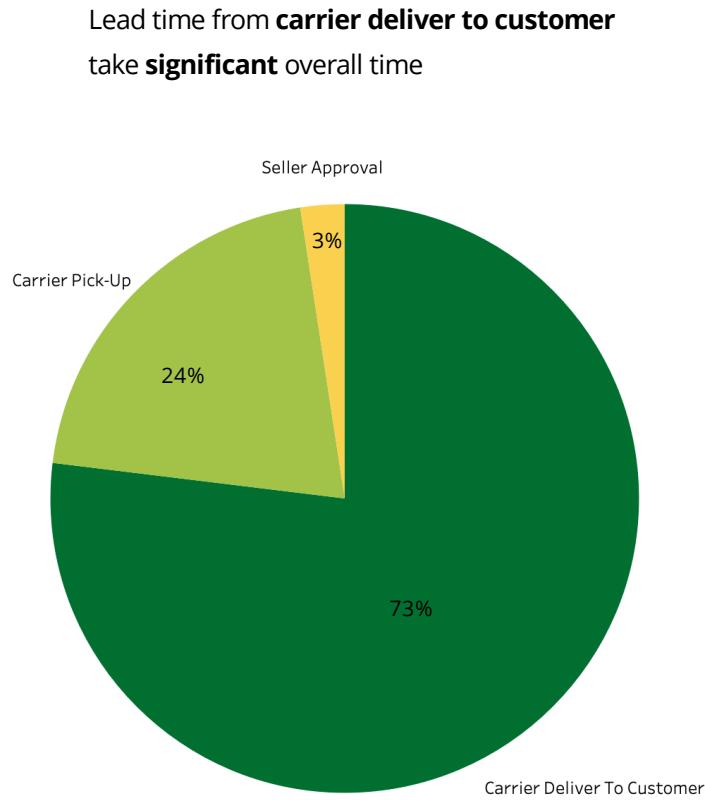


Figure 10: Lead time components

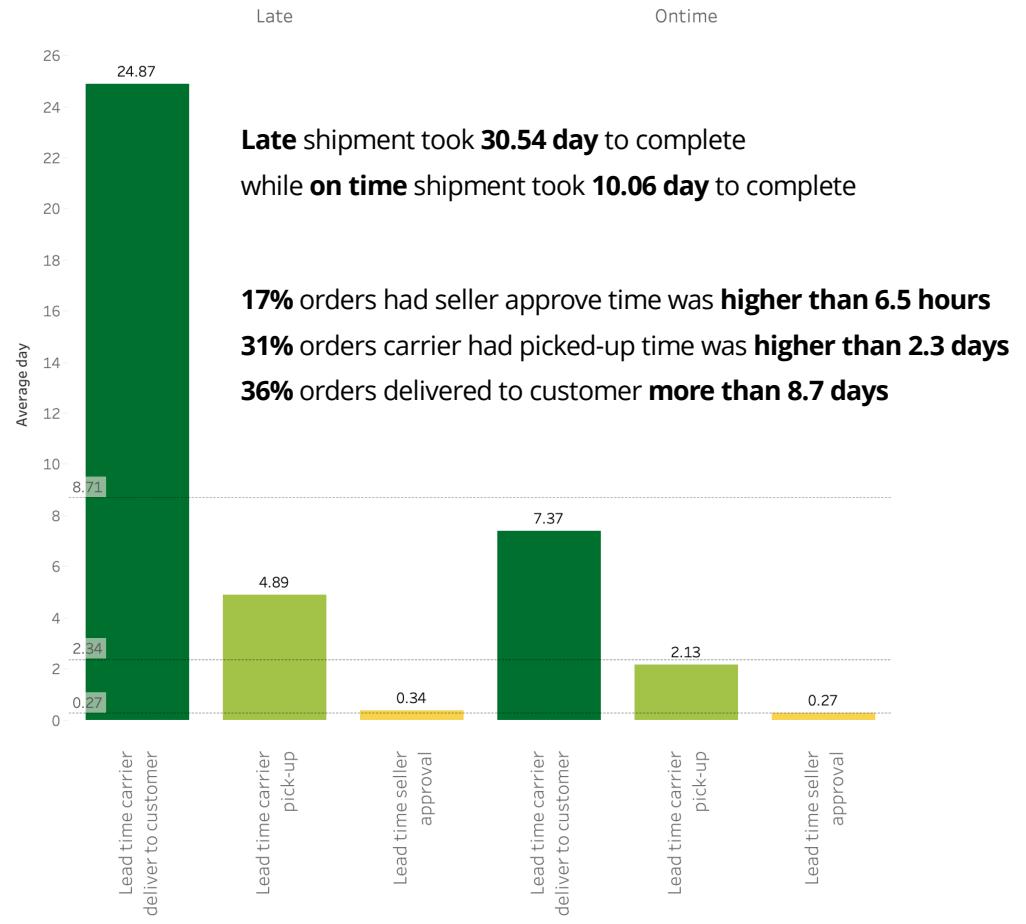


Figure 11: Average lead time of late & on time

Factors contribute to longer lead time

Order increasing from 03-2017, and
get its peak in 12-2017 and 04-2018

Lead time also went up when order
increased

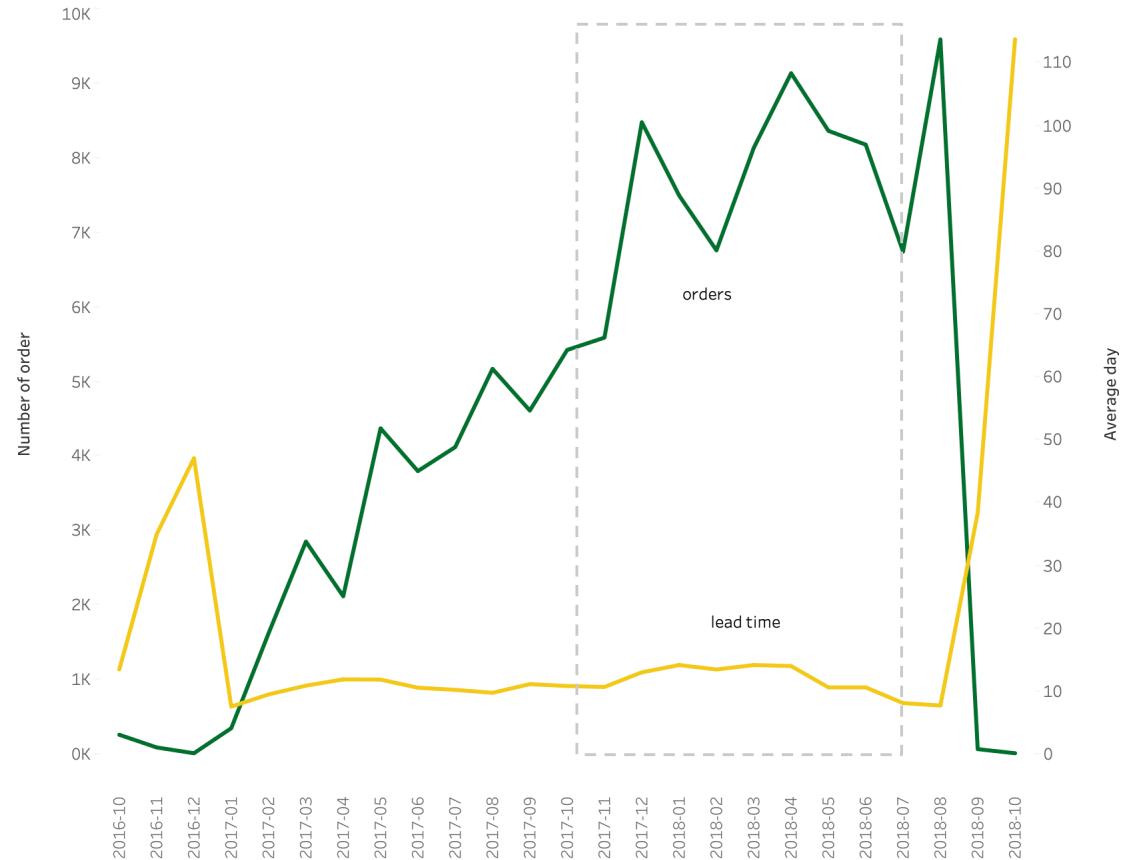


Figure 12: Comparison between number of order and lead time

Late ratio also went up
when order increase

The increasing of
number of orders,
Lead time also increase

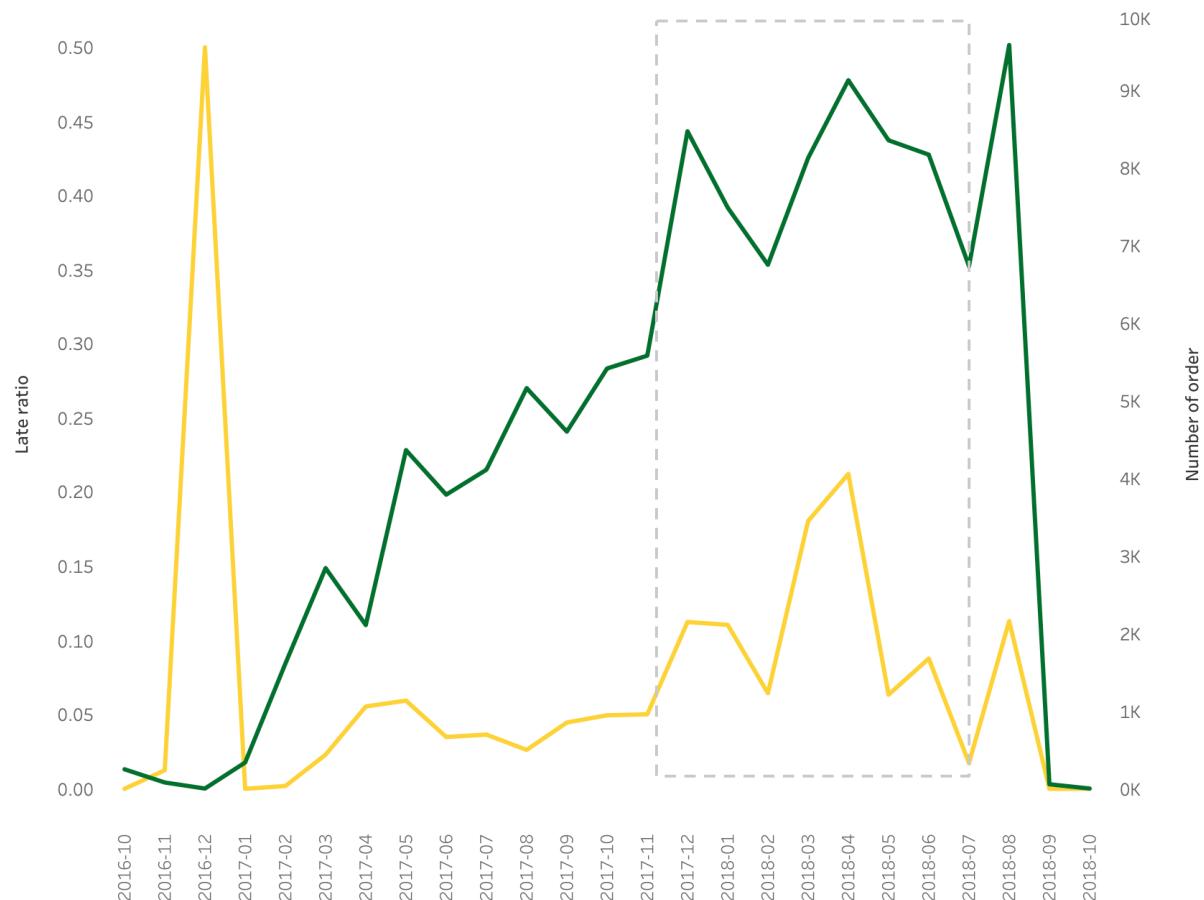


Figure 13: Comparison between number of order and late ratio

Lead time have correlation with product size, bigger product have longer lead time

	Lead time seller approval	Lead time carrier pick-up	Lead time carrier deliver to customer	product_height_cm	product_length_cm	product_weight_Kg	product_width_cm
Lead time seller approval	1.000	-0.046	0.009	0.008	0.006	0.009	0.003
Lead time carrier pick-up	-0.046	1.000	0.020	0.136	0.090	0.147	0.056
Lead time carrier deliver to customer	0.009	0.020	1.000	0.018	0.035	0.030	0.020
Product Height Cm	0.008	0.136	0.018	1.000	0.191	0.582	0.276
Product Length Cm	0.006	0.090	0.035	0.191	1.000	0.462	0.534
Product Weight Kg	0.009	0.147	0.030	0.582	0.462	1.000	0.505
Product Width Cm	0.003	0.056	0.020	0.276	0.534	0.505	1.000

Figure 14: Correlation between lead time and product size



A photograph showing a white delivery truck with "INT'L MILE SERVICES" branding. A worker is using a red hand truck to move a large, light-colored object, possibly a piece of furniture, from the truck onto a paved driveway. Two orange traffic cones are placed on the street in front of the truck. In the background, there's a brick house with a lawn and some shrubs.

photo courtesy of J.B. Hunt Final Mile Delivery Services

With more consumers willing to purchase large, bulky items online they are finding retailers struggling to deliver. A report from Austin, Texas-based **uShip** found 21% of U.S. adults who have purchased a large item online in the past year said it was damaged when received.

Another 15% said they never received the item. After making a purchase, 16% said they had to find their own transport for the oversized item delivery.

With more consumers willing to purchase large, bulky items online they are finding **retailers struggling to deliver**.

Source: <https://talkbusiness.net/2018/09/report-retailers-still-face-challenges-in-shipping-oversize-items-bought-online/>

SP have the highest number of orders and sellers, 42% customer orders, 71% seller
 However, customer orders spread for all states

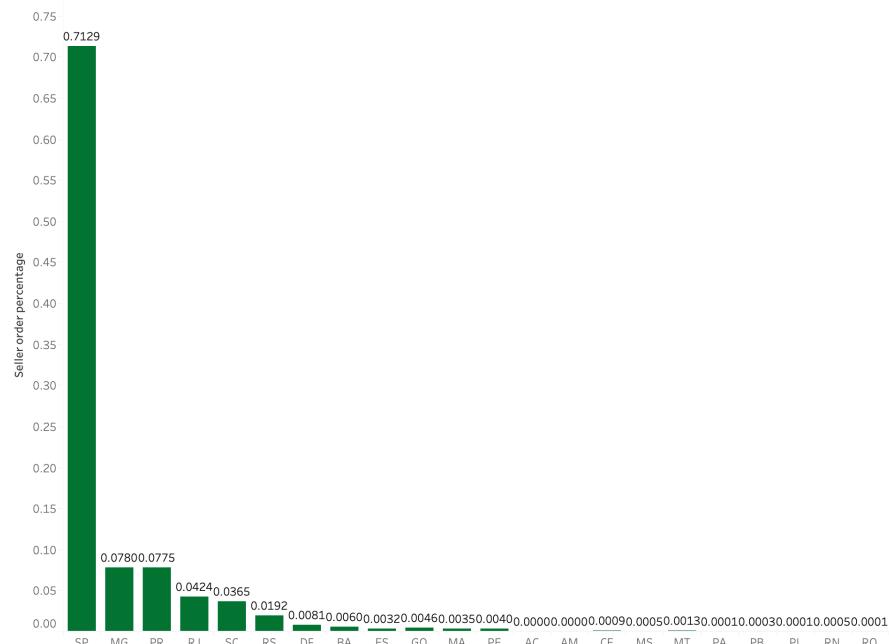


Figure 15: Seller order distribution

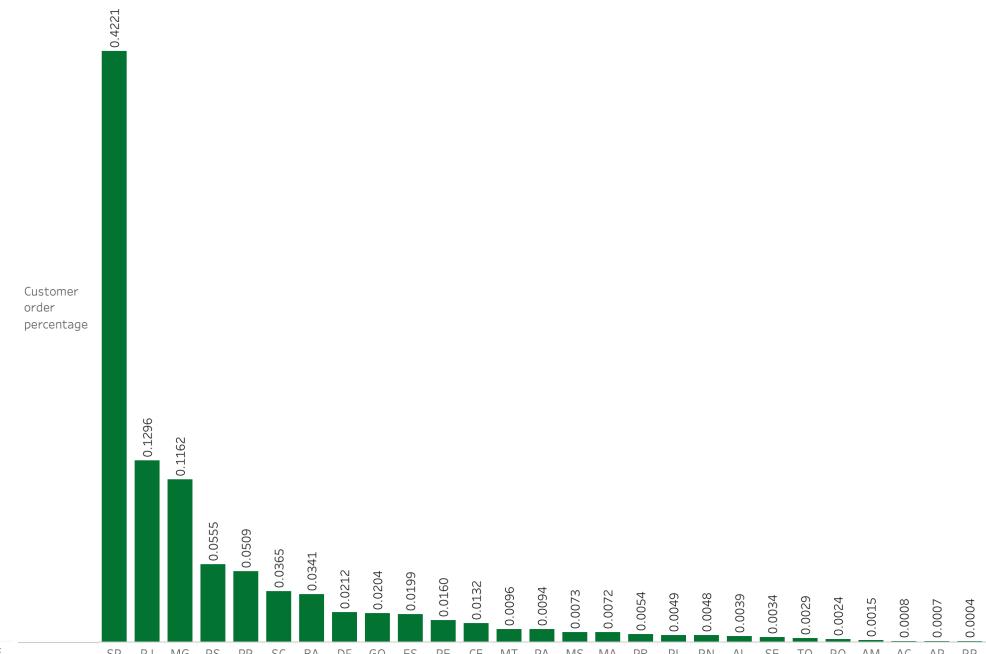


Figure 16: Customer order distribution

Cross state delivery accounted for 64% orders, 73% orders was late

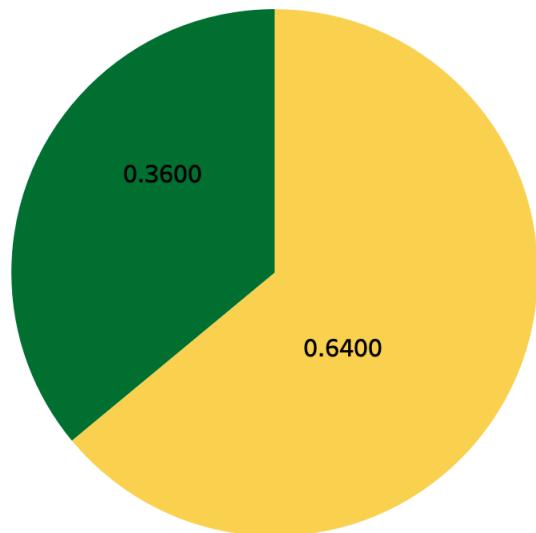


Figure 17: Cross state delivery percentage

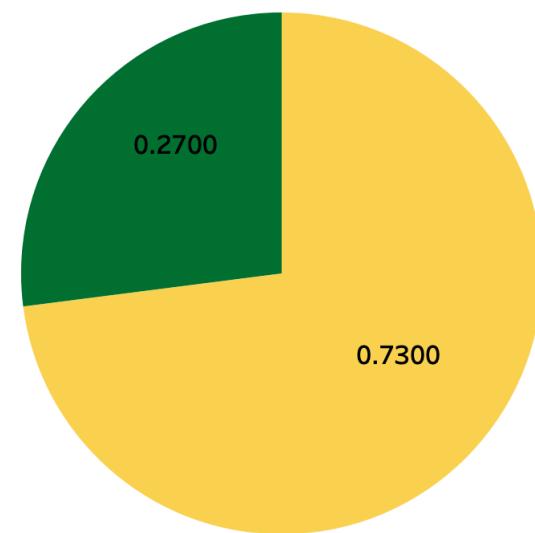


Figure 18: Cross state late delivery status percentage

Lead time for **cross state** delivery and **same state** have **the same average day** for stage **seller approval** and **carrier pick-up**

However, the average day of **cross state** was higher **2.5 times** than **same state**

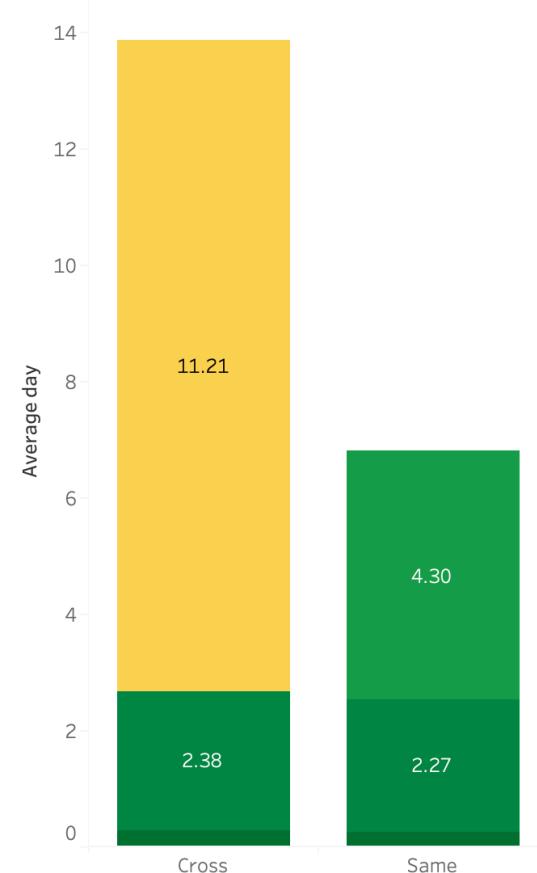


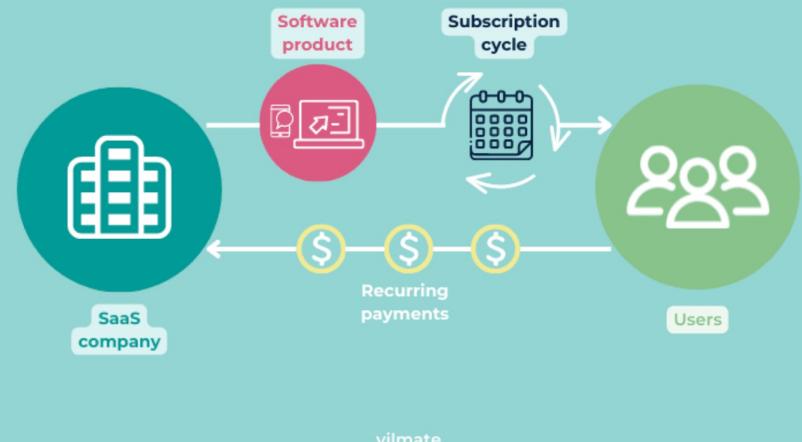
Figure 19: Lead time of cross state and same state

Olist operates as a SaaS (*Software as a Service*) technology company since 2015.

It offers a marketplace solution (*of e-commerce segment*) to shopkeepers of all sizes (*and for most segments*) to increase their sales

⇒ Product sold and packed by seller

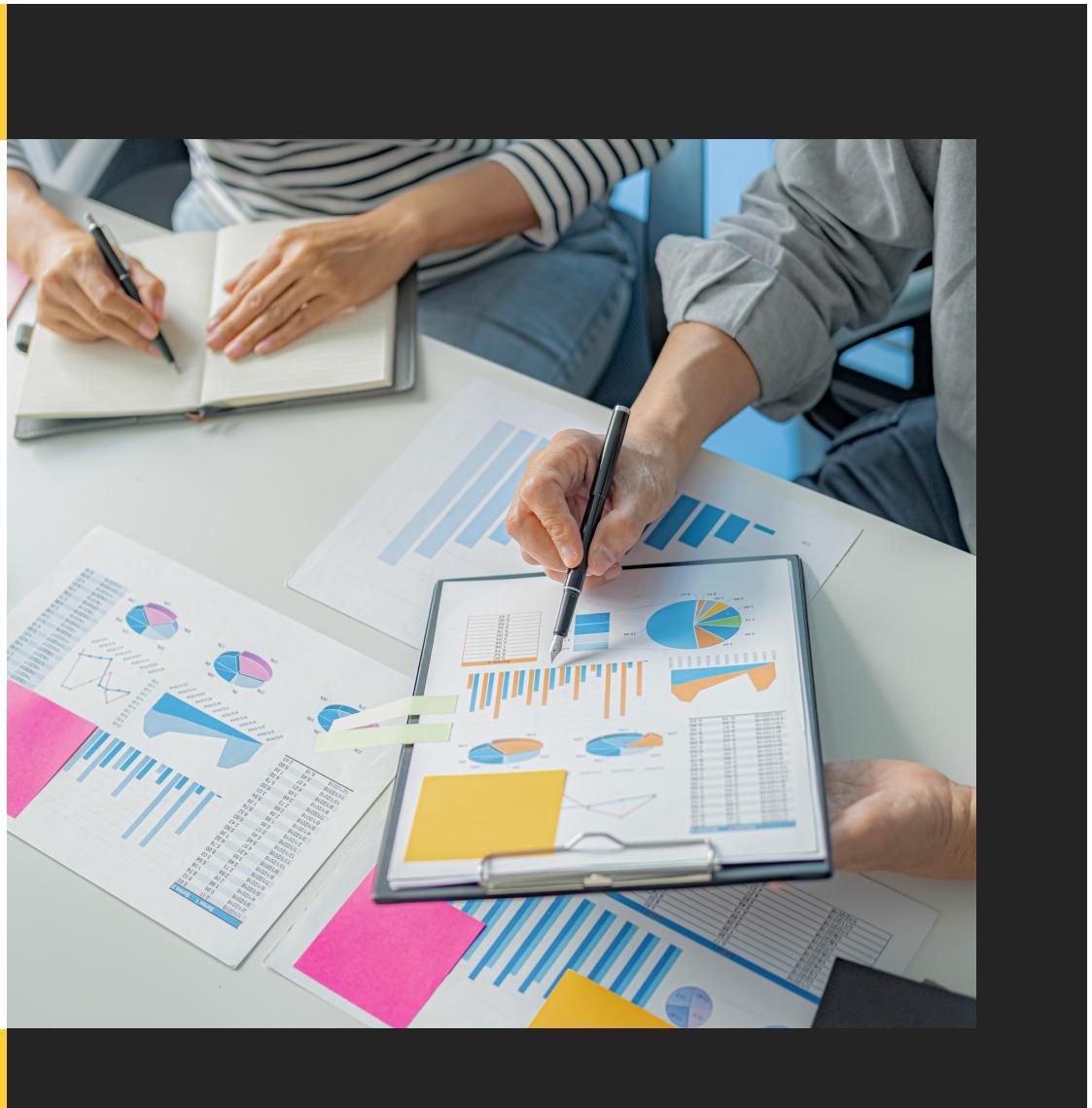
SAAS BUSINESS MODEL EXPLAINED



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CONCLUSION

- 7% late delivery
- Even with small proportion, **late delivery affects to customer satisfaction**
- On average, **lead time of late shipment took 30.54 day to complete**
- **The increasing in number in peak season** of orders made **lead-time also increased**
- **Oversize products** have longer lead time
- **Cross state delivery** is the main reason of longer lead-time



RECOMMENDATION

Sale forecast



Sale forecast for peak season, day and time which can improve overall lead time

Build up management system



Help seller to manage their category, and oversize cargo

Place warehouses



To minimize the distance of cross state delivery

Sale forecasts

- Efficiently allocate resources for future growth
- Help seller can fill order immediately to improve approval time
- Better arrangement for oversize cargo



Sale forecasts

Olist can pay attention to below periods to have accurate forecast

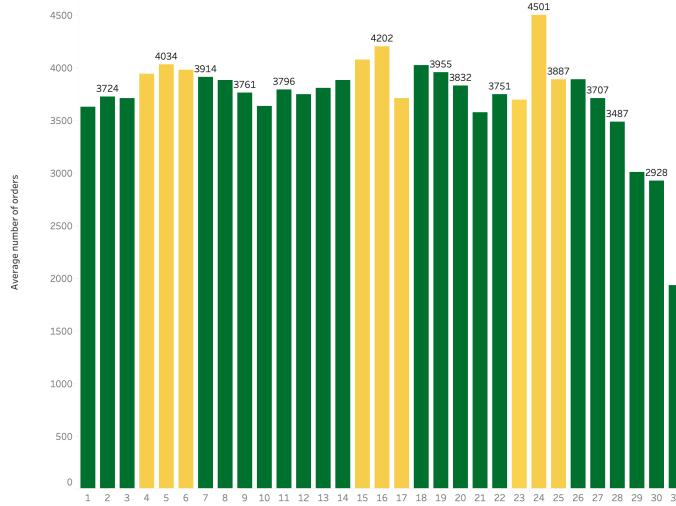


Figure 20: Average order per day of month

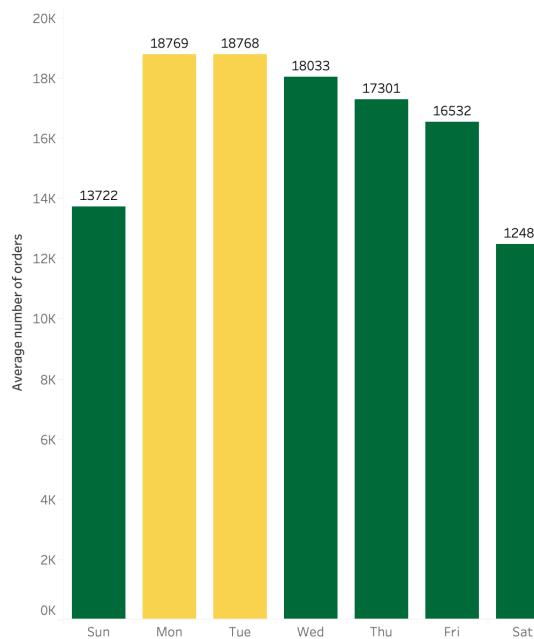


Figure 22: Average order per day of week

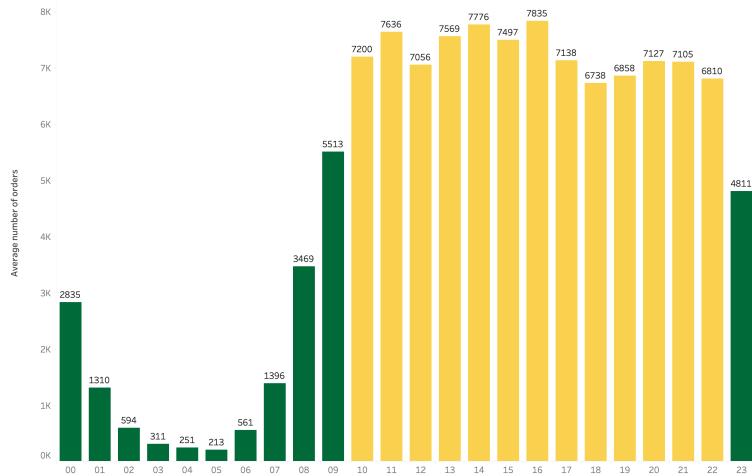


Figure 21: Average order per hour of day

Olist have high number of orders on:

- **24th of each month** which made up for **3.9%**
- **Monday and Tuesday** accounted for **16.2%**
- and **72.9% purchases** normally created **on PM time** with from **10AM - 22PM**

Build up management system

QUÁ TRÌNH THỰC HIỆN ĐƠN HÀNG TẬP TRUNG

Một hệ thống quản lý đơn hàng cho toàn bộ hoạt động kinh doanh của bạn

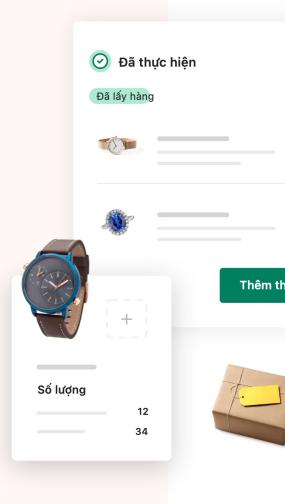
Giao sản phẩm đến đúng nơi nhờ kho hàng, đơn hàng, quá trình thực hiện và vận chuyển được sắp xếp hợp lý.

Quản lý và thực hiện đơn hàng
Giao đơn hàng đến đúng nơi sớm hơn nhờ phương thức thực hiện hiệu quả cho bạn.

Quản lý hàng tồn kho
Tiết kiệm thời gian và tiền bạc nhờ công cụ hỗ trợ bạn quản lý, giám sát và di chuyển hàng trong kho qua nhiều địa điểm.

Vận chuyển và giao hàng
Sử dụng các tùy chọn vận chuyển có giá cả phải chăng để giao đơn hàng trên toàn cầu.

Trả hàng và hoàn tiền
Cung cấp niềm tin của khách hàng thông qua quá trình trả hàng, hoàn tiền không phiền toái và dễ quản lý.



THÔNG TIN CHUYÊN SÂU VỀ THƯƠNG MẠI ĐIỆN TỬ

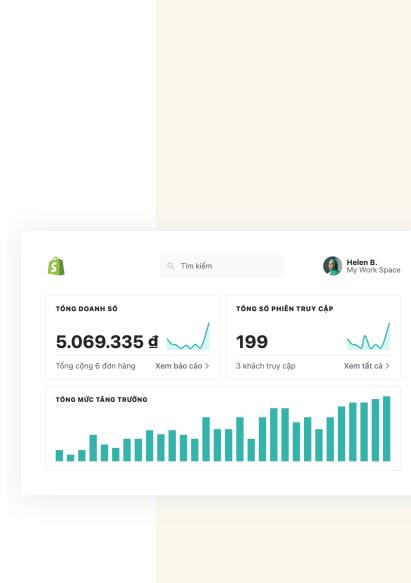
Bạn càng hiểu biết, bạn càng phát triển

Khai phá tiềm năng của cửa hàng thông qua số liệu phân tích quan trọng được tích hợp để giúp nâng cao sức mạnh.

Kiểm soát công việc
Nhìn được bức tranh toàn cảnh rõ ràng hơn. Bạn có thể tiếp cận hàng chục loại số liệu hoạt động chính của doanh nghiệp.

Thông tin chuyên sâu về tình hình hiện tại
Khám phá tình trạng hoạt động ngay trên màn hình mà bạn thực hiện công việc. Phát hiện xu hướng, trực quan hóa hiệu suất và điểm then chốt – tất cả từ cùng một màn hình nơi bạn thực hiện các tác vụ của mình.

Phân tích trực tiếp
Truy cập tổng quan chi tiết về cách cửa hàng của bạn đang hoạt động trong mọi thời điểm. Theo dõi lưu lượng truy cập, phạm vi tiếp cận, đơn hàng và doanh thu – tất cả theo thời gian thực.

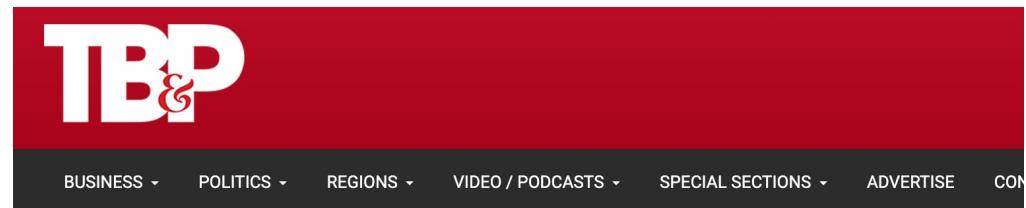


Olist could liaise with Shopify to build up a management system to facilitate seller management

- ❖ Help seller's management on categories and choose delivery services accordance with customer requirement
- ❖ Understand the future trend

Build up management system

- The report found **28% of respondents** would be **happy with proactive updates** on the progress of their shipment rather than having to **research it themselves**. About one in four said they would like to **see more choice in how the item is delivered**.



own transport for the oversized item delivery.

The report indicates the retail industry has yet to solve the challenge of shipping oversize products such as sofas, appliances, mattresses, treadmills or kayaks. The uShip report found 11% said they fought with customer service during the delivery process and 11% report wasting an entire day tracking down the shipment. There were 15% who said they missed work while waiting for a delivery and 13% said they kept the item, even if damaged, because the return process was too complicated.

With these reported issues, 28% said they are hesitant to buy an oversized item online because of the shipping uncertainties. Logistics firm uShip said the problem is fixable. The report found 28% of respondents would be happy with proactive updates on the progress of their shipment rather than having to research it themselves. About one in four said they would like to see more choice in how the item is delivered. About one in five said the process would be improved by having the oversized item directly delivered to their home.



We have insights.
 Arkansas
BlueCross BlueShield
an independent licensee of the Blue Cross and Blue Shield Association

Placing warehouses

- Product is always fulfilled and ready for delivery which can improve overall lead time
- Olist could generate more profit from warehouse services offering for seller



Placing warehouses

After applying K-Mean to define 4 main warehouses according to orders distance

Mostly warehouse will place in the eastern of Brazil

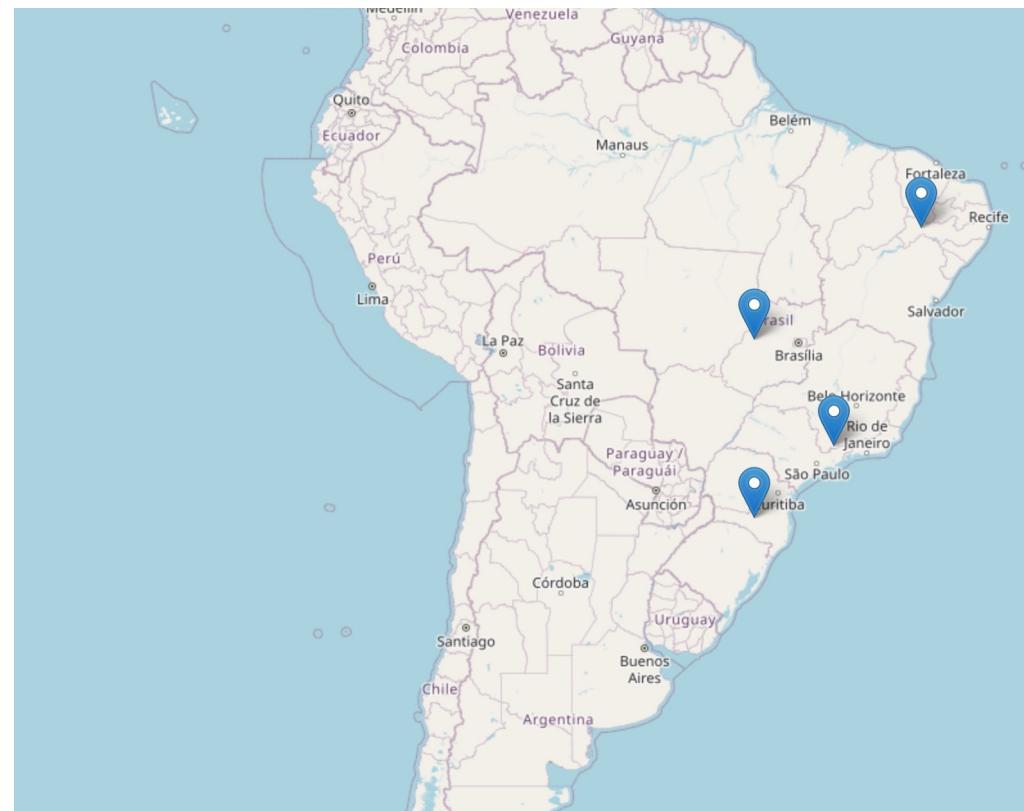


Figure 23: Warehouse location determined by K-means

Placing warehouses

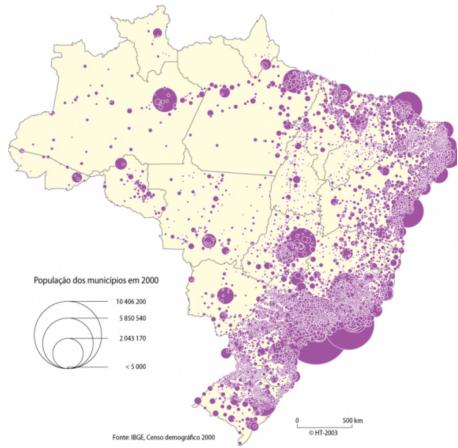


Figure 24: Brazil population distribution

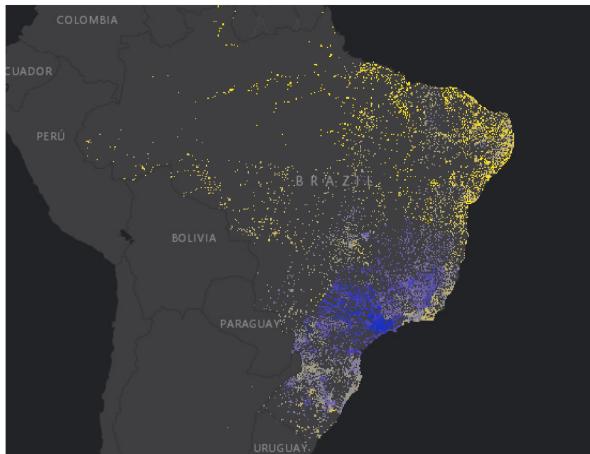


Figure 25: Average lead time by orders

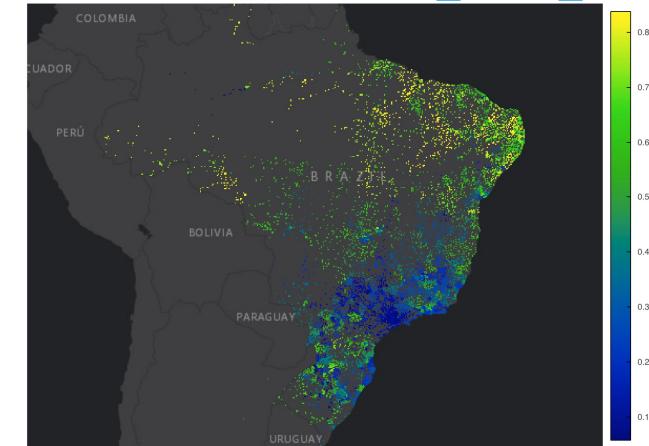
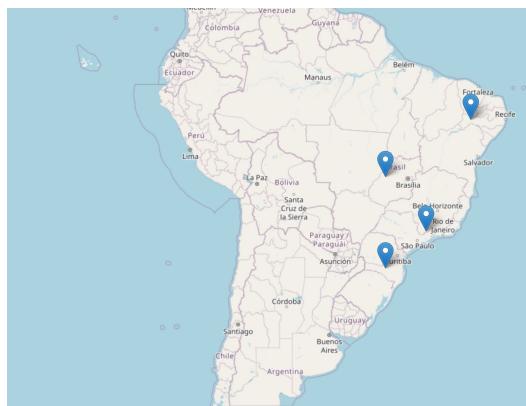


Figure 26: Average freight value by orders



Help to reduce leadtime for insterstate customer
Reduce freight value per order
Serve customer in major cities better

Placing warehouses

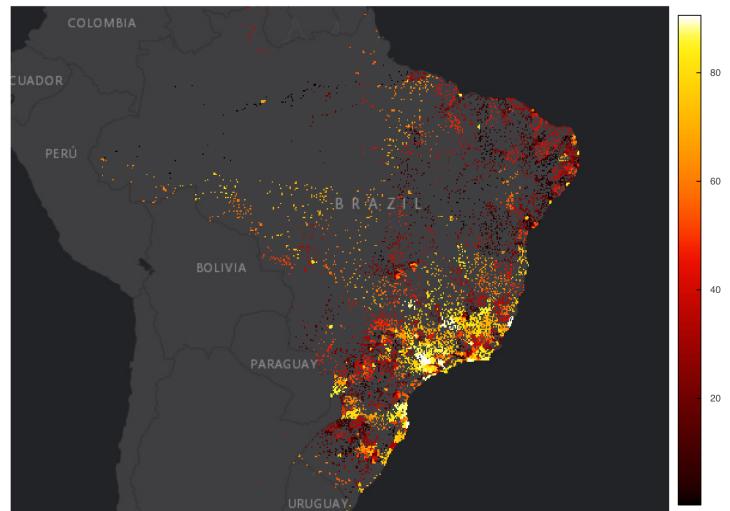
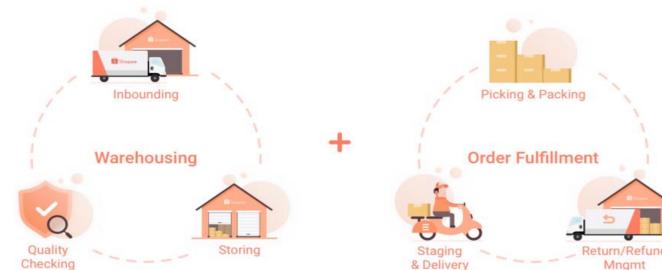
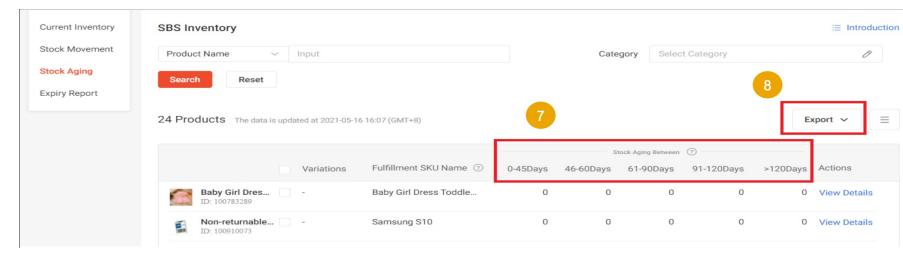


Figure 27: Average payment value by orders



Olist can increase revenue by warehousing services such as fulfillment, renting (example Shopee)

Placing warehouses



SMART STORAGE SOLUTIONS

WE ARE
WHEREVER
YOUR
WAREHOUSE
IS

We have offices in
20 countries

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Pallet racks operated by reach trucks (£)

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Amount from previous year		2,297,400	2,513,400	2,729,400	2,945,400	3,476,400	3,692,400
Forklift operator	216,000	216,000	216,000	216,000	216,000	216,000	216,000
Forklifts	315,000				315,000		
Racks	312,000						
Civil works (ware.+disp.)	1,454,400						
Sum total	2,297,400	2,513,400	2,729,400	3,476,400	3,476,400	3,692,400	3,908,400

Automated warehouse with double-depth stacker cranes (£)

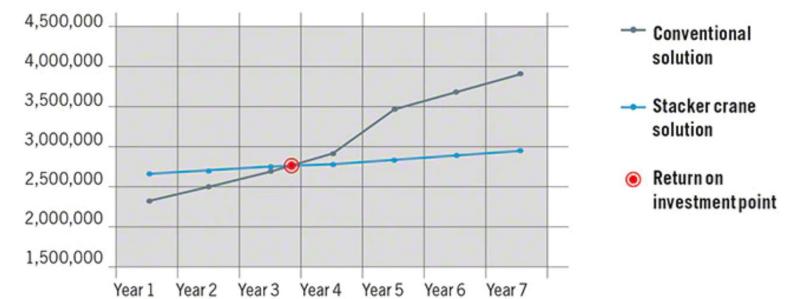
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Amount from previous year		2,672,926	2,720,926	2,768,926	2,816,926	2,864,926	2,912,926
Forklift operators	48,000	48,000	48,000	48,000	48,000	48,000	48,000
Stacker cranes	855,000						
Racks	760,000						
Civil works (ware.+ disp.)	1,099,926						
Sum total	2,672,926	2,720,926	2,768,926	2,816,926	2,864,926	2,912,926	2,960,926

- Olist can consider to build Automated warehouse

Example:

MECALUX

The returns on investment point would be in year four. From this point on, it would mean a differential profit for the rest of the useful life of the new warehouse.





Thank you!