# How can the company increase its profitability by 20%

## Revenue Stream

1. **Sales fees**: Olist takes a **10%** cut on the product price (excl. freight) of each order delivered

2. **Subscription fees**: Olist charges **80 BRL** by month per seller.

## Costs

1. **IT costs**

$IT\_costs = \alpha * \sqrt{n\_sellers} + \beta * \sqrt{n\_products}$

```
cumulated IT costs = **500,000 BRL**
```

1. **Reputation costs**: *estimated* per order with bad reviews which takes the following values:

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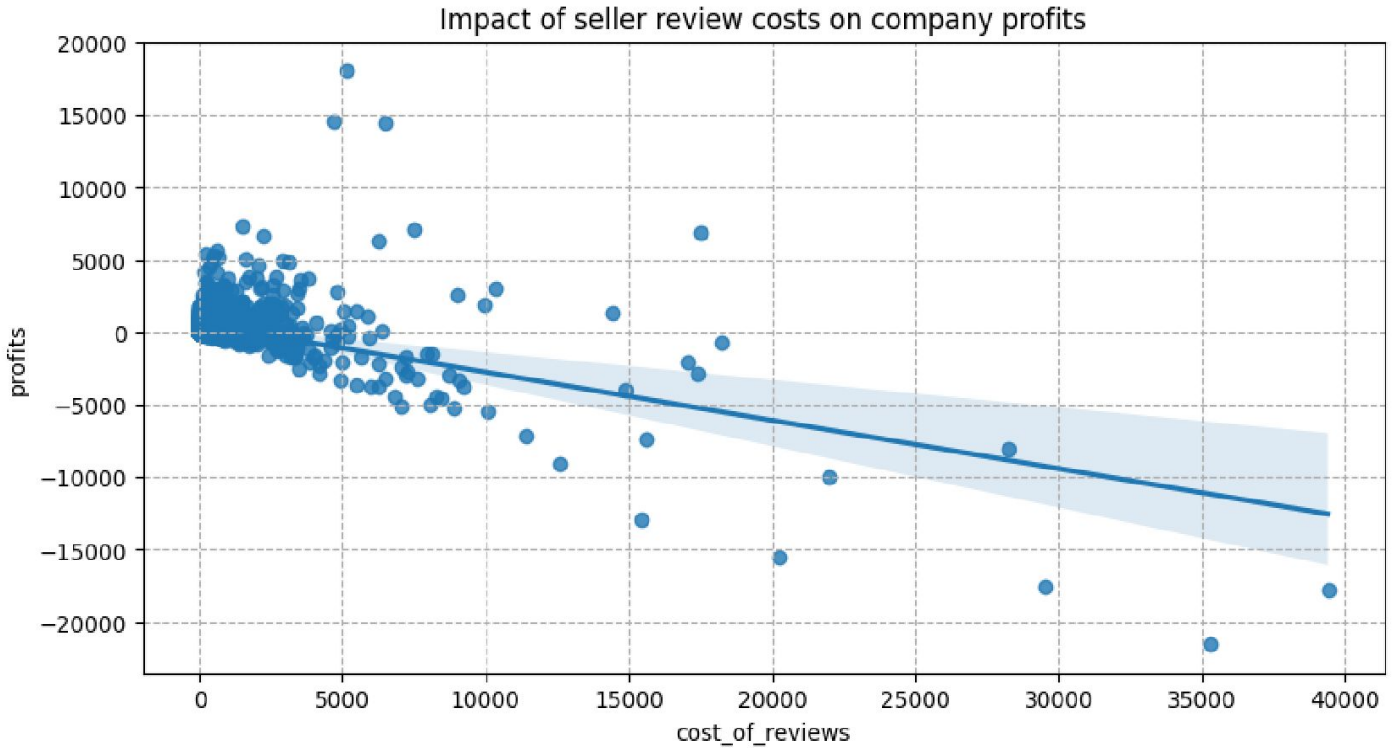
1 star: 100
2 stars: 50
3 stars: 40
4 stars: 0
5 stars: 0
```

# How does the review costs affect company profits?

- Olist profits and review costs have a inverse relationship.



# Removing an optimal number of underperforming sellers

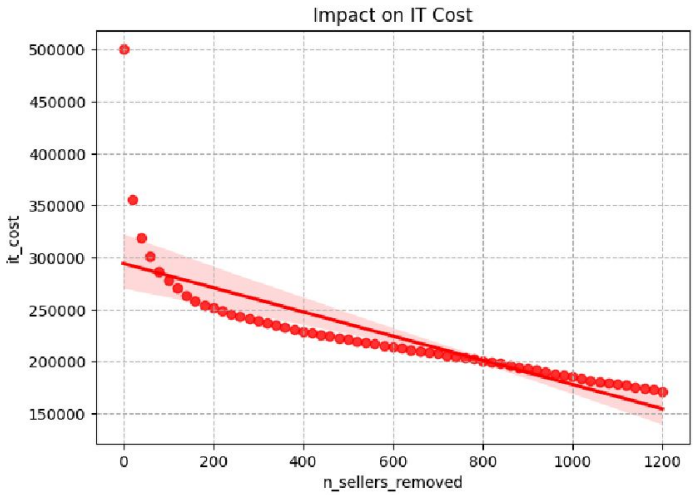
- to have a more efficient seller base while cutting on IT cost.
- to increase brand and buyer trust.

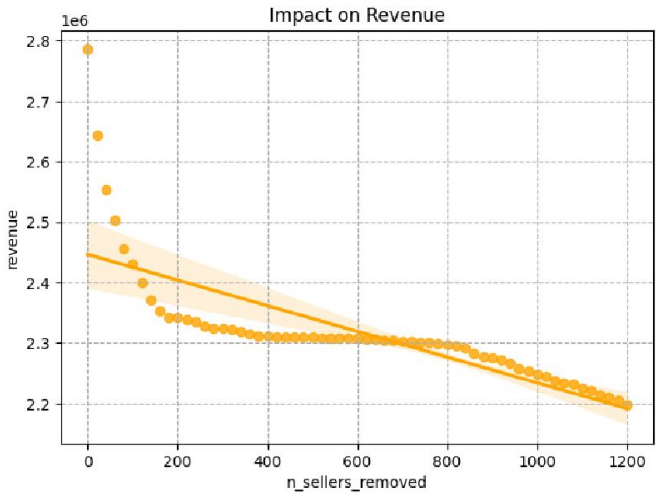
## IT costs are reduced by 50% when 200 - 400 sellers are removed

| | n_sellers_removed | revenue | it_cost |
|---|---|---|---|
| **0** | 0 | 2,785,818 | 500,000 |
| **5** | 100 | 2,430,356 | 278,386 |
| **10** | 200 | 2,341,666 | 251,422 |
| **15** | 300 | 2,324,256 | 239,015 |
| **20** | 400 | 2,310,912 | 228,974 |
| **25** | 500 | 2,309,354 | 221,158 |

| | n_sellers_removed | revenue | it_cost |
|---|---|---|---|
| **30** | 600 | 2,307,209 | 214,050 |
| **35** | 700 | 2,302,551 | 207,329 |
| **40** | 800 | 2,297,374 | 200,979 |
| **45** | 900 | 2,275,224 | 193,295 |
| **50** | 1,000 | 2,248,816 | 185,451 |

## We have the following trends for costs and revenues:




On an assumption that:

```
gross profit = revenue - accumulated cost of reviews/seller
```

| | n_sellers_removed | gross_profit | net_profit |
|---|---|---|---|
| **0** | 0 | 1,167,608 | 667,608 |
| **5** | 100 | 1,447,666 | 1,169,280 |
| **10** | 200 | 1,466,586 | 1,215,164 |
| **15** | 300 | 1,472,836 | 1,233,821 |
| **20** | 400 | 1,474,042 | 1,245,067 |

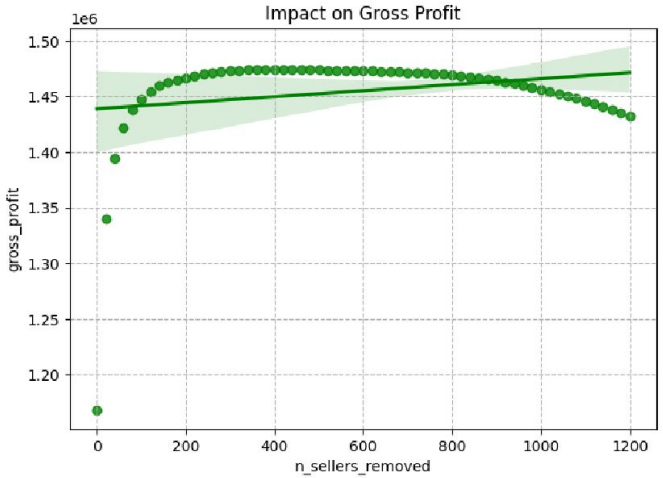
| | n_sellers_removed | gross_profit | net_profit |
|---|---|---|---|
| **25** | 500 | 1,473,684 | 1,252,526 |
| **30** | 600 | 1,472,899 | 1,258,850 |
| **35** | 700 | 1,471,541 | 1,264,212 |
| **40** | 800 | 1,469,194 | 1,268,215 |
| **45** | 900 | 1,464,434 | 1,271,139 |
| **50** | 1,000 | 1,456,436 | 1,270,985 |

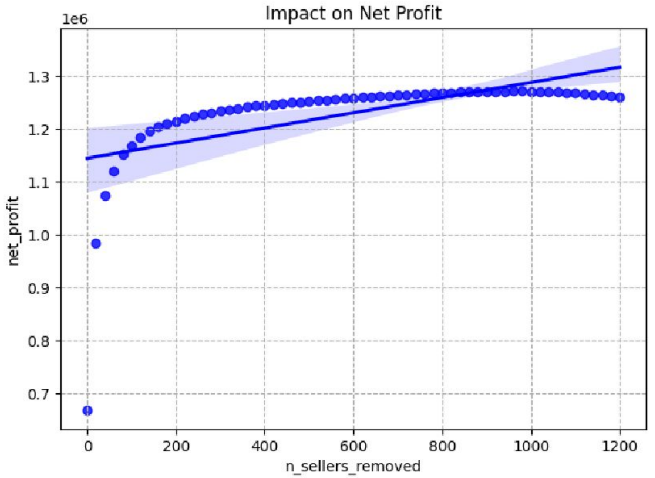
## How is the company's profitability?

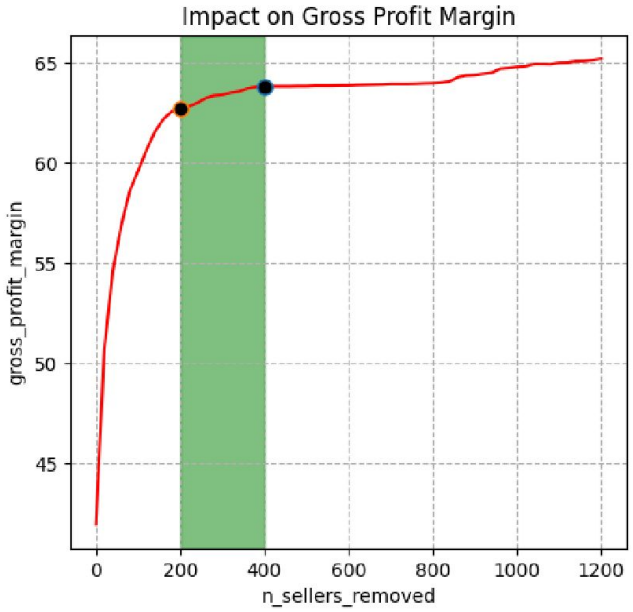
The number of sellers to remove and both net and gross profit margins have a proportional relationship.

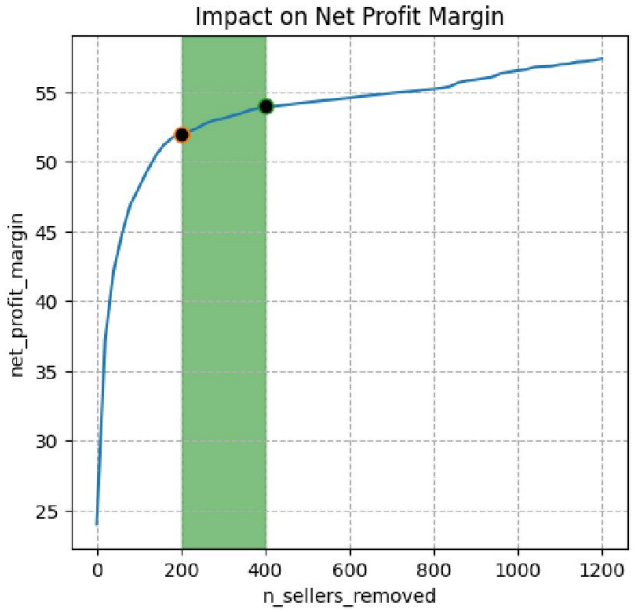
| | n_sellers_removed | gross_profit_margin | net_profit_margin |
|---|---|---|---|
| **0** | 0 | 41.91% | 23.96% |
| **5** | 100 | 59.57% | 48.11% |
| **10** | 200 | 62.63% | 51.89% |
| **15** | 300 | 63.37% | 53.08% |
| **20** | 400 | 63.79% | 53.88% |
| **25** | 500 | 63.81% | 54.24% |
| **30** | 600 | 63.84% | 54.56% |
| **35** | 700 | 63.91% | 54.9% |
| **40** | 800 | 63.95% | 55.2% |
| **45** | 900 | 64.36% | 55.87% |
| **50** | 1000 | 64.76% | 56.52% |

## We have the following trends for profits:



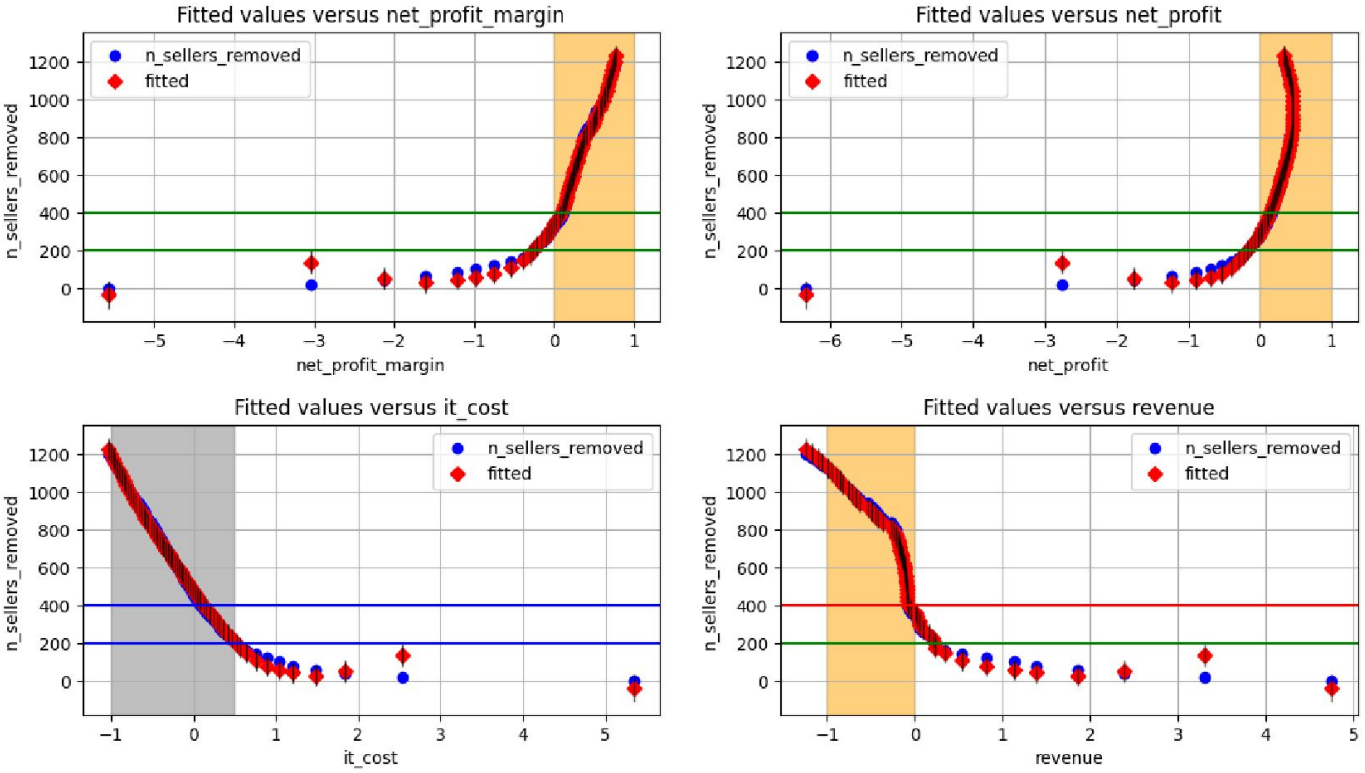



# How do we determine the optimal number of sellers to remove?

Using an ols model to check the relationship between the number of removed sellers relative to:

- Net profit margin
- IT cost
- Net profit
- Revenue




Positive impacts

> As the number of sellers to remove increases, the **IT cost decreases** which **increases the net profit** resulting to **higher net profit margin**.

Trade-off

> As the number of sellers to remove increases, the revenue starts to gradually decrease. However, the **significant drop in revenue** will start when the number of sellers removed goes **beyond 400**.

# Conclusion

The fastest way to increase profit is to cut the costs. However, the optimal number to remove should only be within the range of **200 - 400 sellers** to avoid a significant decrease in overall revenue while still maintaining a fairly high profitability of **50%**.

Removing more than the suggested number would result in a **substantial decrease in revenue**.

# Recommendation:

Establishing a **quarterly threshold for accumulated seller review costs** and impplementing a **penalty fee** if they pass the maximum amount.