

Analytical Insights and Recommendations for Yellevate

Problem

Yellevate has been dealing with client disputes for the past few years. The company defines **disputes as customers who are dissatisfied with the company's services and refuse to pay for them**. And the initial identified problems with Yellevate's client were nearly **20% of disputes ended in loss** and almost **5% average annual revenue loss**.

Thus, Company executives determined that in order to understand more details surrounding the issue, our analytical team must gather the following information:

1. The processing time in which invoices are settled.
2. The processing time for Yellevate to settle disputes.
3. Percentage of disputes received by the company that were lost.
4. Percentage of revenue from lost disputes.
5. The country where the company reached the highest losses.

Purpose

The purpose of this analytical research is to identify the causes of these problems. And specifically, come up with recommended strategies to solve them.

Methodology

The analytical research involved the use of Analytical tools: Excel and Postgresql to wrangle the dataset.

Before data analysis, the dataset was first identified. The table provided by the company (Yellevate) was in CSV format; it consisted of information about their transaction with their clients (invoice number, invoice date, due date, and invoice amount) including their basic information which is their situated country and customer id. The disputed column shows when a client has issued a dispute on service rendered where a value of "1" means the customer disputed the invoice; "0" means they did not. In "dispute lost" column "1" means the company lost the dispute and the dispute was resolved in favor of the customer, and the customer does not have to pay the invoice; "0" means the customer did not win the dispute, and they are legally required to pay the full invoice amount, it either means that Yellevate won the dispute, or there was no dispute in the first place. *(The column names are listed with their value types and definitions in the appendix).*

After the table has been cleaned and structured, the data is then analyzed through tables, charts, Pivot Table and Pivot Chart in Excel. Outliers were identified through SQL queries by computing for the mean, standard deviation, and z-score of the dataset.

Findings

Before we dig in to the data it is assumed that Yellevate did a good job on their part. It is the clients that are using technicalities to escape their financial obligations. Following these assumptions, the goal of this analysis is to find the clients who are costing Yellevate the most revenue losses (due to dispute losses).

Using the five main questions from the executives as our guide, we started our analysis.

Figure 1. 1 Average Settling Days, Disputed vs All Invoices

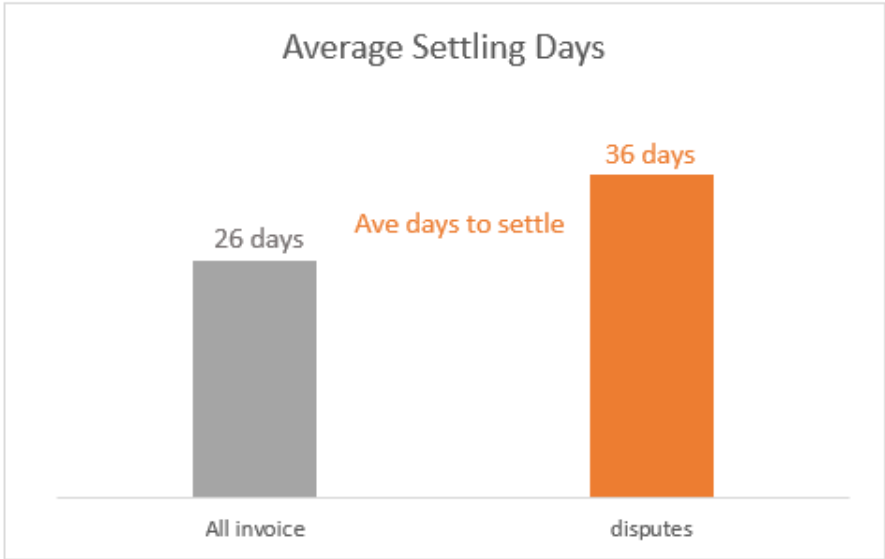
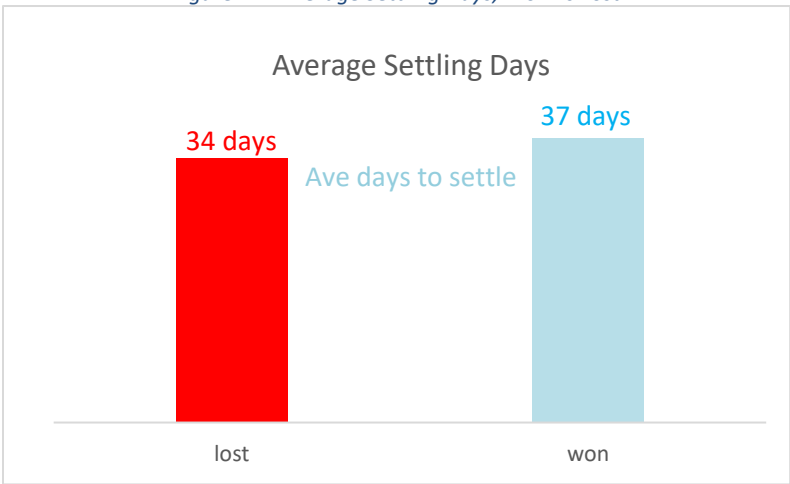


Figure 1.1 shows that the average time to settle all invoices and disputes are 26 days and 36 days, respectively. The average amount of time needed to resolve a client dispute is 38.46% longer than the normal amount of time that they have to settle invoices. This percentage was taken within the days of dispute from the total invoice days.

Figure 1. 2 Average Settling Days, Won vs Lost



For the average of days to settle in dispute (lost and won), it typically takes 3 additional days to resolve won issues for these disputes as shown in figure 1.2.

Having said these disputes, we now come to our investigation that is centered on the clients, to identify those who cannot be trusted and are seriously hurting the business.

Figure 2. 1 Dispute distribution, Lost vs Won

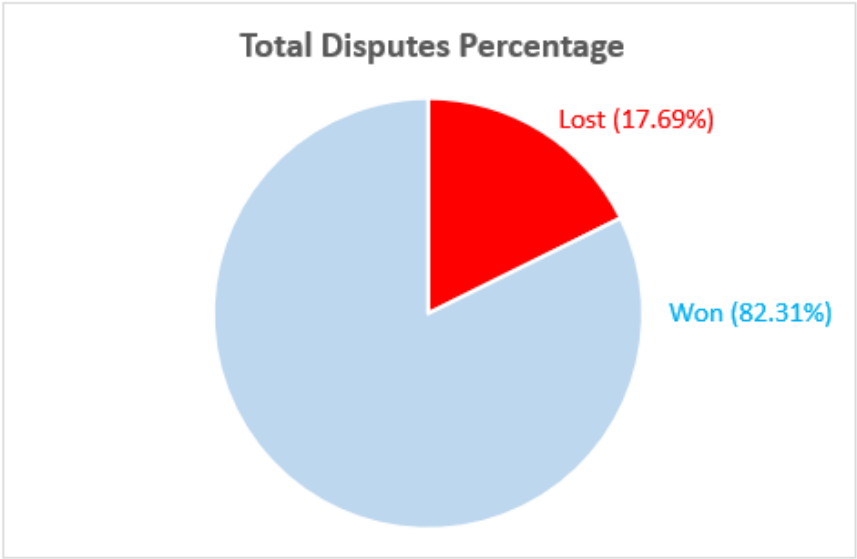
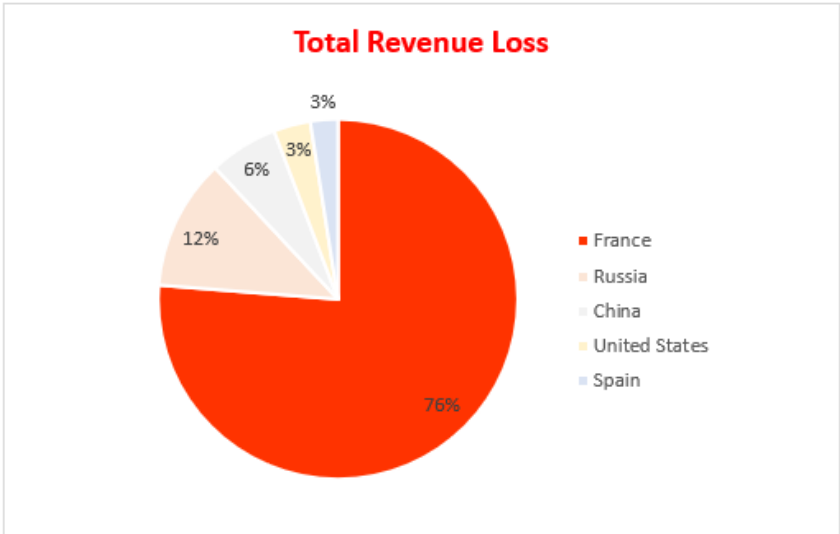


Figure 2. 2 Revenue distribution, Lost vs Gain



Figure 2. 3 Revenue Loss per Country



In figure 2.1, it appears that Yellevate lost 17.69% of the over-all disputes. For Yellevate, these dispute losses resulted into a 4.67% revenue loss as shown in figure 2.2, amounting to USD \$690,167. And the major country which contributed to the total revenue loss of USD \$526,264 as seen in figure 2.3 is France that accumulates a percentage of 76% of it among the five countries. From the five main Qs, we now know that France is where the company lost the most. What if we simply get rid of France and don't deal with them in the future? We have pondered this in mind.

With that hypothesis, we looked into the total revenue in France and saw that it is only 13% account equivalence for Revenue Losses because of lost disputes as seen in figure 3.1. Eliminating all the French clients would be unfair to those honest clients.

Figure 3. 1 Revenue Distribution of France

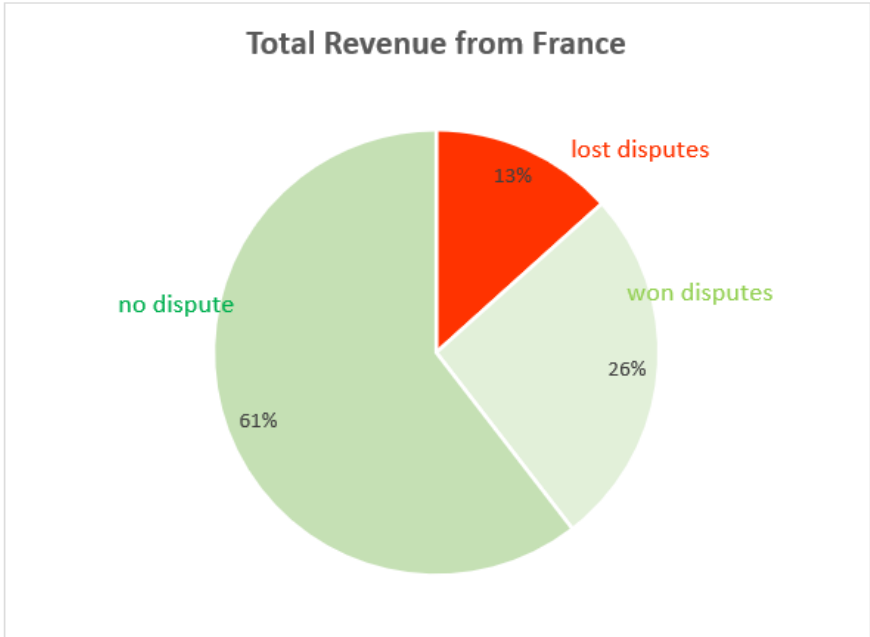
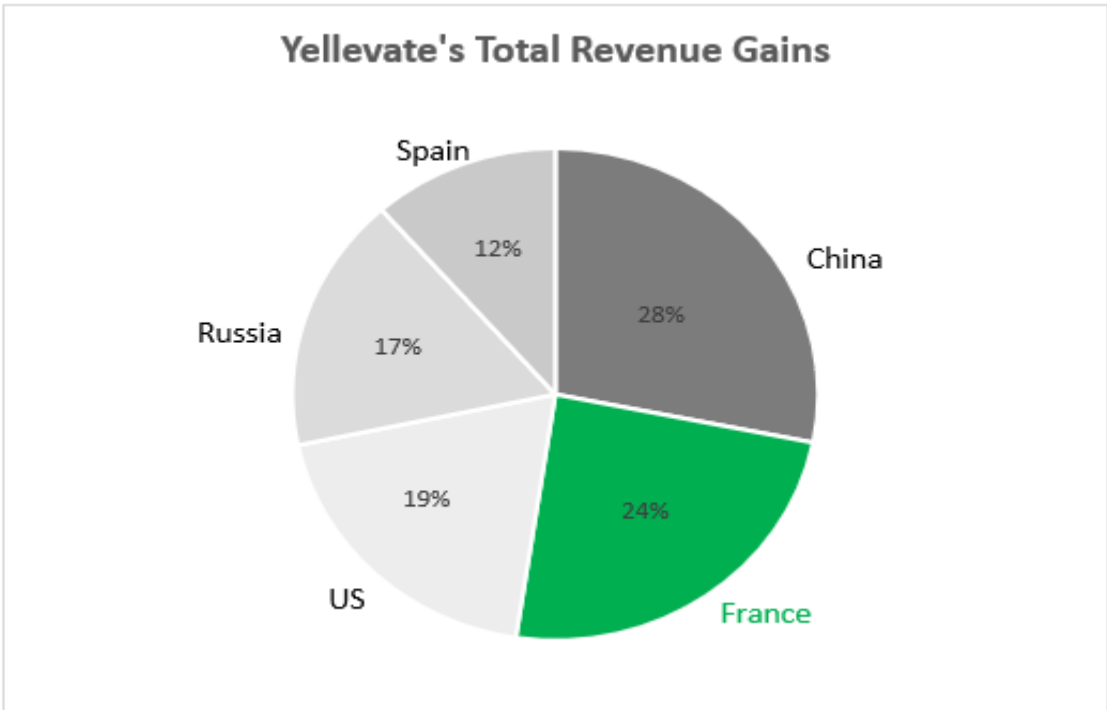


Figure 3. 2 Revenue Gain Distribution per Country



We also looked into the company's Total Revenue gains (with no disputes and won) and discovered that 24% of it is from France as seen in figure 3.2. France is the second highest source of revenue gains for Yellevate. Eliminating all the French customers would be extremely expensive for Yellevate in addition to being unjust to the other French customers who are good payers.

The solution then is to identify the particular clients who are the source of the issue. As a result, we dug a little bit deeper into the French clients and discovered that just a small subset of them is responsible for the issue, as indicated by the red bar in figure 4.1.

Figure 4. 1 Revenue Losses of French Clients

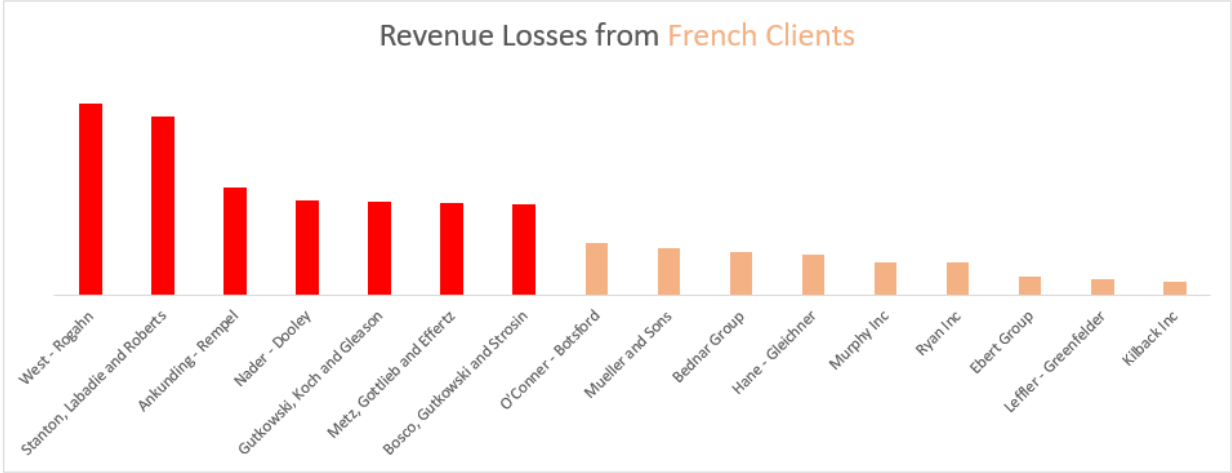


Figure 4. 2 Revenue Loss of All Clients



Given the major contributors in profit loss from France along with other clients that contributed to Yellevate’s revenue loss, it is then shown here in the above data regarding revenue losses.

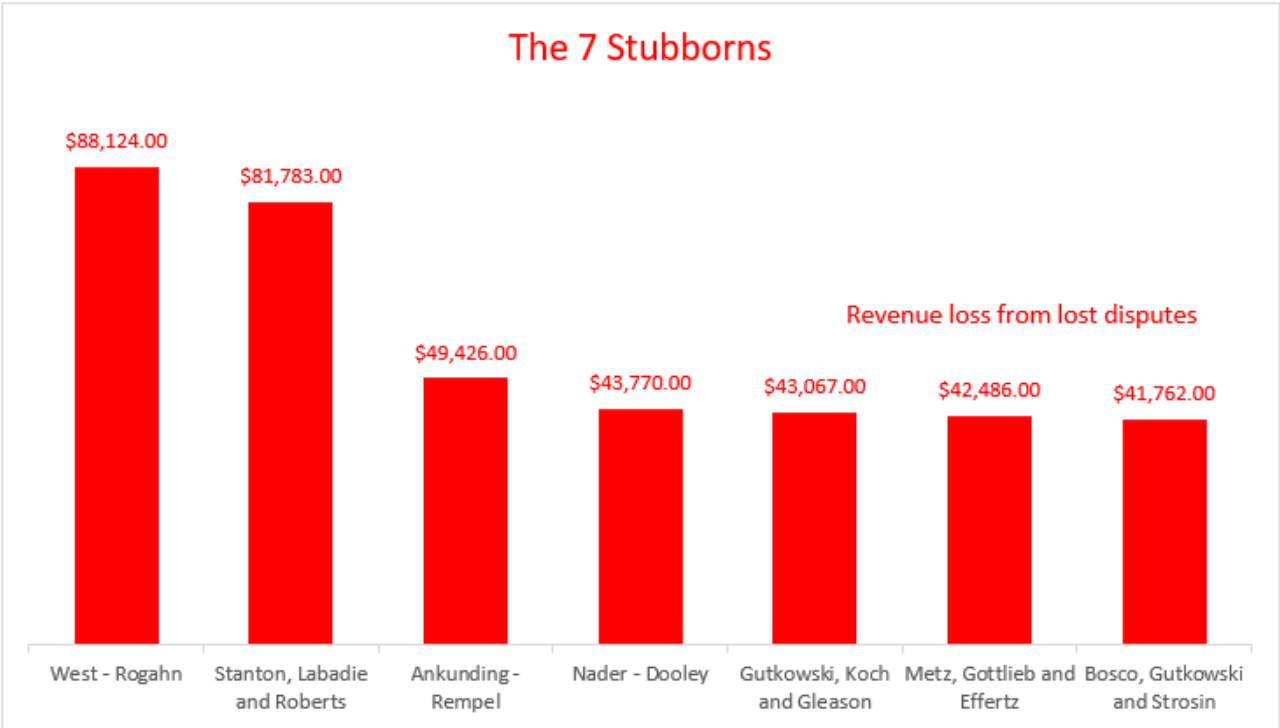
In the charts above (figure 4.1 and 4.2), it’s obvious that there are 7 clients who created the largest revenue losses for Yellevate, whether seen from the perspective of "French Clients" or "All of the Clients". And on this study, we will refer them as the **7 STUBBORNS**.

In addition, we have researched the company name of these so called 7 Stubborns as shown in Figure 4.3.

Figure 4. 3 Seven Stubborns Name and Country Designations

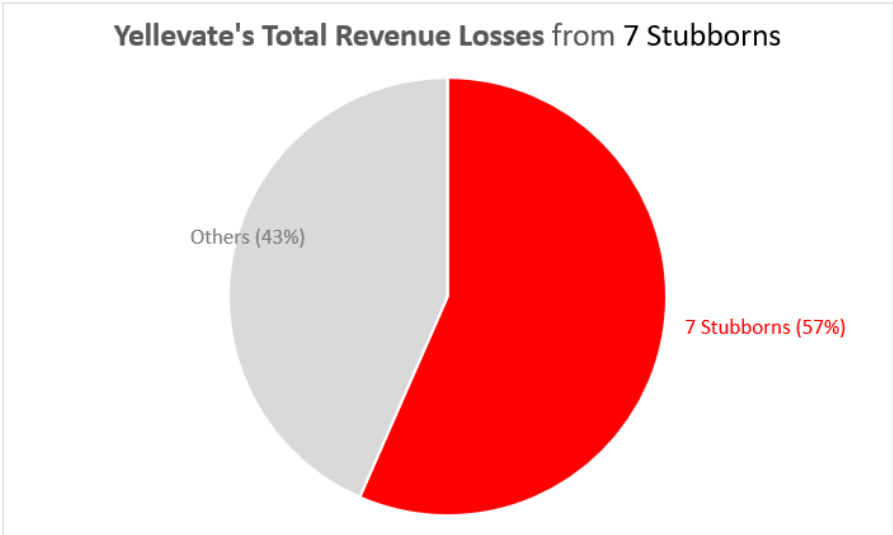
THE 7 STUBBORNS		
Country	Customer ID	Company Name
France	4640-FGEJI	Bosco, Gutkowski and Strosin
France	8389-TCXFQ	Gutkowski, Koch and Gleason
France	9725-EZTEJ	West - Rogahn
France	3448-OWJOT	Stanton, Labadie and Roberts
France	7600-OISKG	Ankunding - Rempel
France	9771-QTLGZ	Nader - Dooley
France	4632-QZOKX	Metz, Gottlieb and Effertz

Figure 5. 1 Revenue Loss of 7 Stubborns



As you can see in the column chart above (figure 4.1, 4.2 & 5.1), it is clear that the majority of the losses originated from these 7 Stubborns which are from French client’s dispute losses.

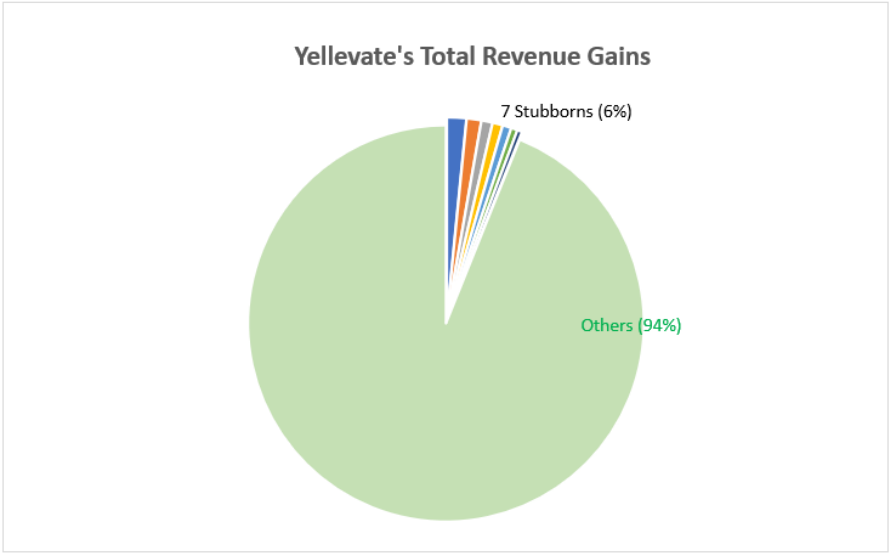
Figure 5. 2 Lost Revenue Distribution, 7 Stubborns vs Others



Next thing we did was to get the total revenue loss of the company and see to what extent did these 7 Stubborns contributed. As seen in figure 5.2, it turns out that 57% of the total revenue loss with the amount of USD \$390,418 were from these 7 Stubborns. If we eliminate them, we solve more than half of the problem. But doing so will have consequences.

To determine these consequences, the next thing we did was to look at the company's overall revenue growth and see how much these 7 Stubborns contribute. As you can see (figure 5.3), 6% of the Yellevate’s total revenue gains with the amount of USD \$857,048 come from these 7 Stubborns.

Figure 5. 3 Gained Revenue Distribution, 7 Stubborns vs Others



These only means that if the trend on disputes continues, removing the 7 Stubborns will result in 57% decrease in revenue losses from lost disputes and thus, solving half of the problem, but it will also cause the revenue gains to decrease by about 6%.

To give the management options, we looked for another alternative.

Yellevate may potentially decide to sever connections with simply the **Top 2 Stubborns**. If we do so, we solved only a quarter of the problem because **25% of the Total Revenue Losses** came from them as seen in figure 6.1. But by doing so, eliminating only the Top 2 Stubborns reduces the **potential loss from 6% to 3%** from the Total Revenue Gains as seen in figure 6.2.

Figure 6. 1 Lost Revenue Distribution, Delinquents vs Others

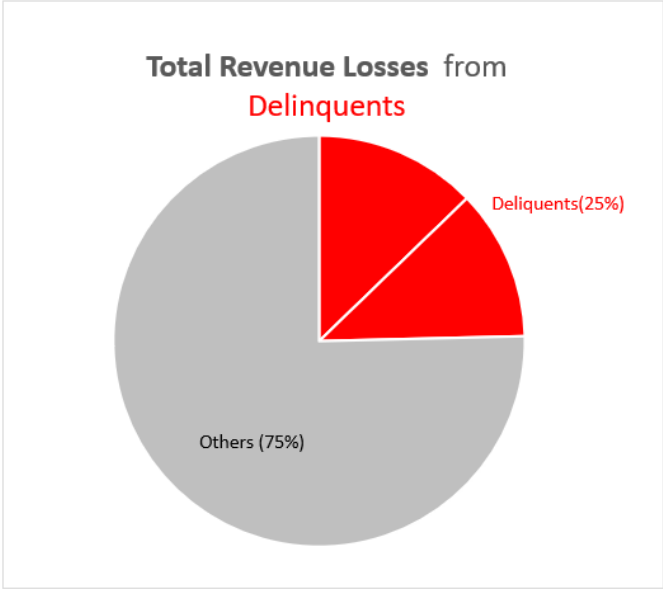
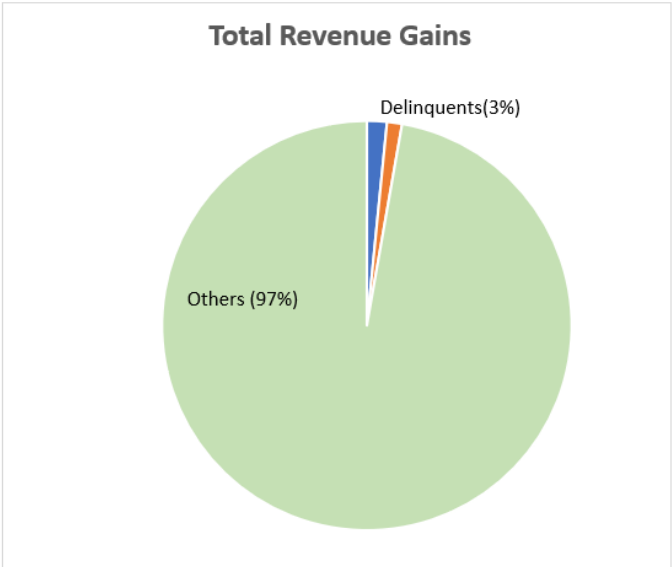


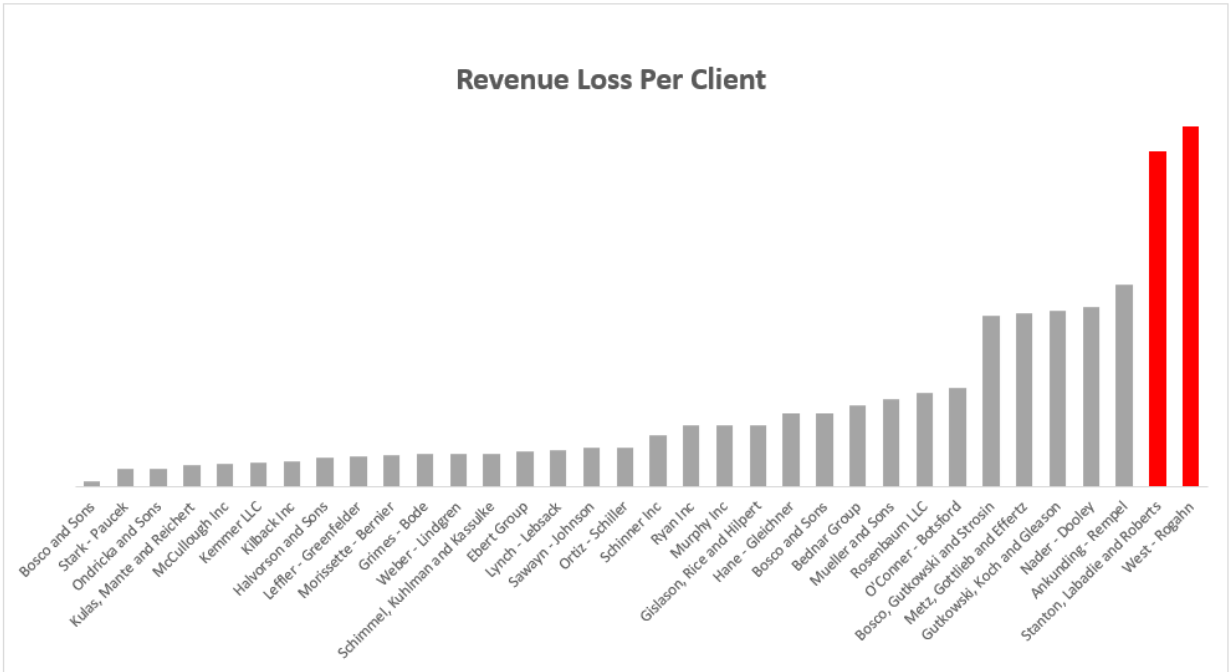
Figure 6. 2 Gained Revenue Distribution, Delinquents vs Others



Outliers

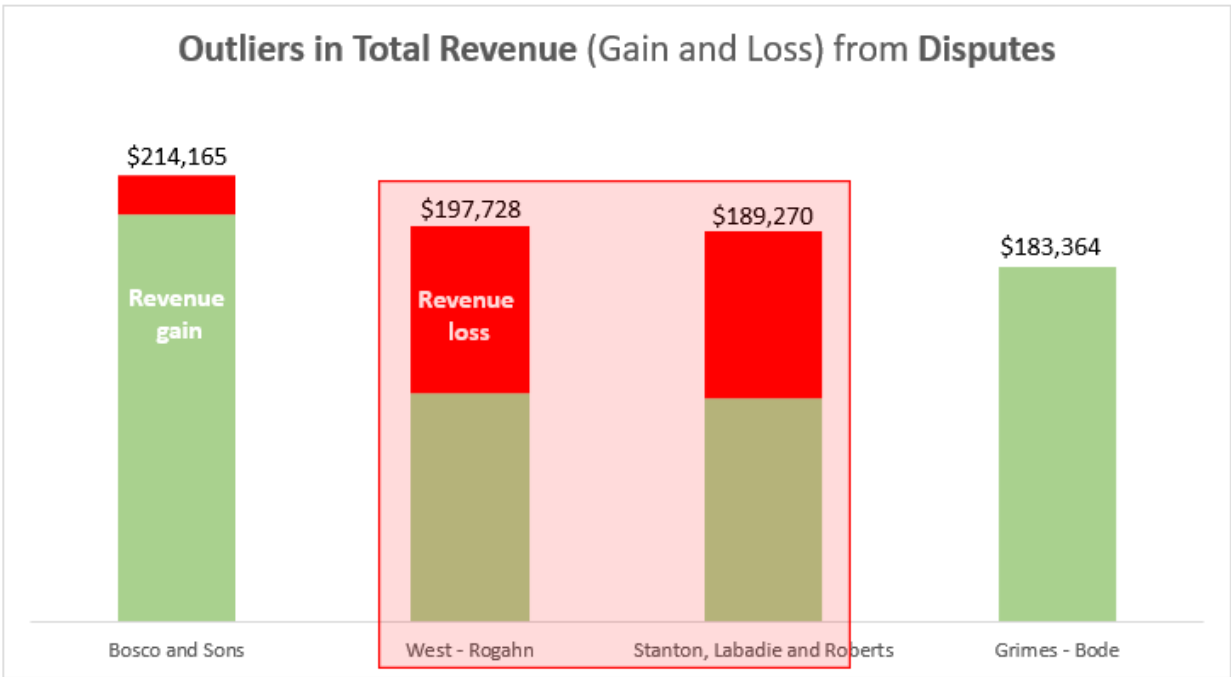
To further verify these findings, we used statistical methods and looked for outliers in different negative traits/metrics. From these outliers, it is observed that the names of the 7 Stubborns appeared over and over again which only proves that they are not doing business in good faith.

Figure 7. 1 Revenue Loss per Client, Outliers



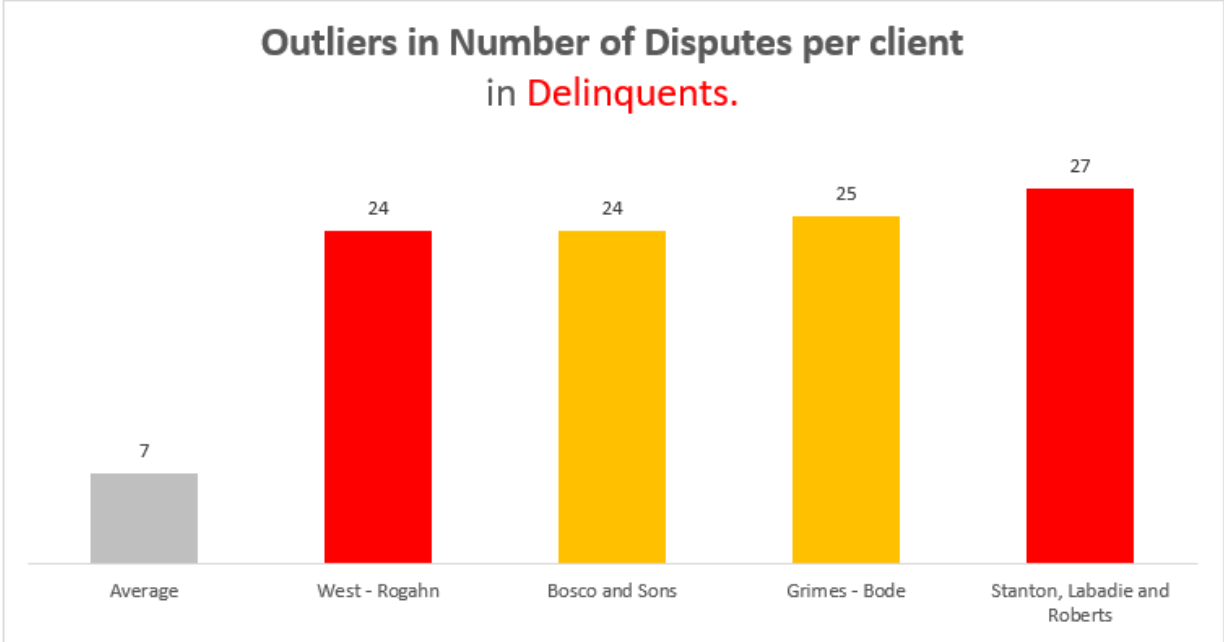
Shown in this chart (figure 7.1), the “**delinquents**” (highlighted in red in the graph) has exhibited above normal losses from the rest of the clients that incurred losses. They are the outliers in terms of Revenue Losses.

Figure 7. 2 Revenue Distribution of Outliers



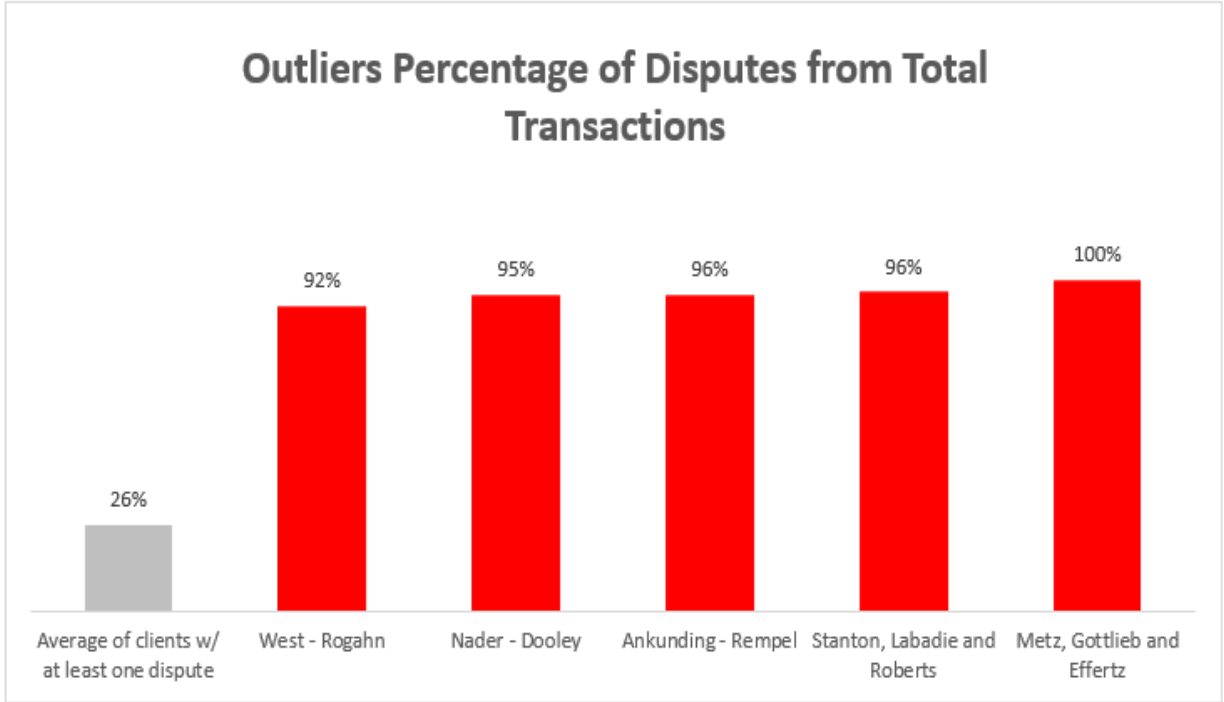
Further denoting the delinquents, their revenue gain to loss ratio (figure 7.2) has shown unfavorable outcomes as both delinquents has shown that their losses almost encompass the revenue that the company is gaining from them.

Figure 7. 3 Count of Disputes of Outlier Clients



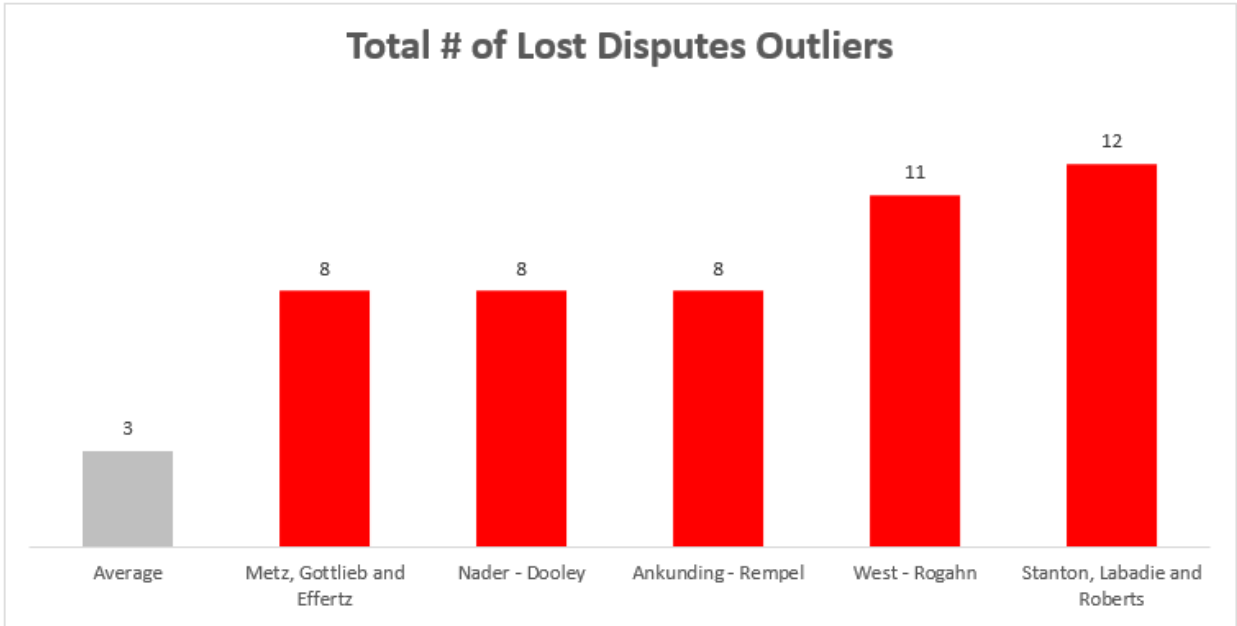
The delinquents again have shown outlier scores (figure 7.3) where the sum of their disputes is very well above average reminding us from the findings of their negative implications for the company. And that there are other clients that also dispute frequently.

Figure 7. 4 Percentage Disputes vs Total Transaction per client



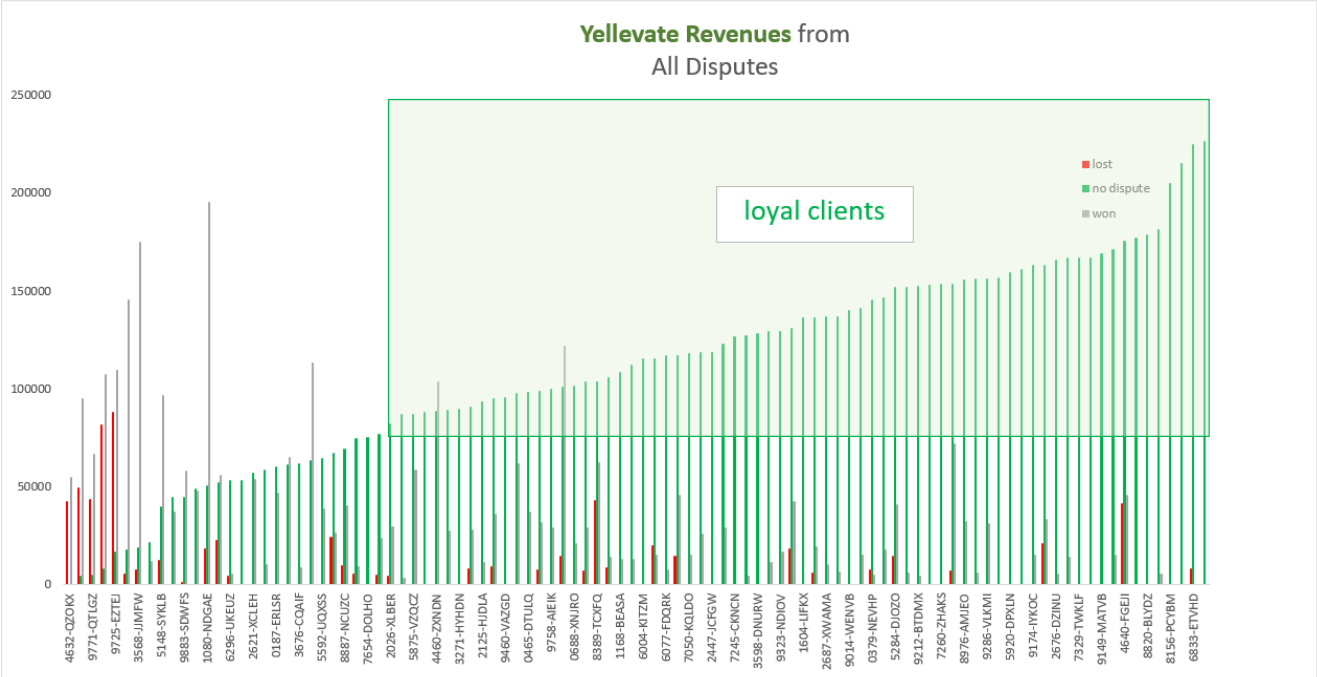
In terms of their proportion of their disputes over transactions, there were clients that have been made known to have disputed almost all their transactions, including the “delinquent” clients (figure 7.4). And also, one client that disputed every transaction they ordered revealing their intentions for availing the services from the company. Thus, that is gain advantage over the company.

Figure 7. 5 Count of Lost Disputes per Outlier Clients



There are two results from disputes - won or lost. The number of turnovers seen in figure7.5 of these disputes per client has shown 5 outliers, 2 of which has 3 to 4 more disputes than the three and is well over the average.

Figure 8. 1 All clients Revenue Lost, Revenue Gained, Expected Revenue



Even though Yellevate incurs losses from the lost disputes of clients, majority of the turnovers from these disputes are won and most of the client have not disputed their transactions.

We still have a lot of loyal clients who doesn't dispute and we are gaining a lot of Revenues them as shown in Figure 8.1. Instead of stressing ourselves, wasting our time and effort on the Stubborn clients, let's just focus on serving our loyal customers well.

Cutting ties with the 7 Stubborns (or just the Top 2) would mean sacrificing our future Revenue gains from 3 to 6%. But Yellevate can continue to collect a lot of revenue from our many devoted customers who appreciate our work and don't complain.

Recommendations

- Yellevate can eliminate the 7 major clients from France (**7 Stubborns**) who contributed the most to the loss revenue of Yellevate and with that, assuming the trend continues, **future Revenue Loss** will decrease by more than half (**about 57%**), but in doing so, the company has to face the consequences of giving up **about 6%** of **future Revenue Gains**.
- Yellevate can also opt to cut ties with only the 2 major contributors (**Top 2 Stubborns**) of revenue losses that will result to a hit of **future Revenue Gains to 3%** and decrease in **future Revenue Loss by 25%**.
- Use the time that would be freed from eliminating **Stubborn** clients to serve our devoted customers more effectively instead of wasting our time in these arguments. Making money in the process, it will already account/compensate for the effects of removing the **Stubborn** clients.
- The outliers that are not yet part of the 7 Stubborns means that we are not yet suffering huge losses from them, but their intentions are questionable. Having said that, we need to take caution in dealing with them. We can even give warnings. We may still be gaining revenues from won disputes against them but keep in mind that **we are spending more time to resolve these issues**. Remember that **in business time is money**.
- We can even give special discounts and rewards to clients that doesn't dispute and pay on time as a sign of appreciation/gratitude.
- Create or improve well written contracts that would prevent clients from using technicalities to escape from their financial obligations.

These are our recommendations, but it's still the management's call.

Definitions

Country	Country where the invoice was issued.
Customer ID	Unique identifier for each customer.
Invoice Number	Unique identifier for each invoice issued.
Invoice Date	Date when invoice was generated.
Due Date	Date when payment for invoice is due.
Invoice Amount	Dollar value of invoice; how much the customer needs to pay.
Disputed	A client has issued a dispute on service rendered. “ <u>1</u> ” means the customer disputed the invoice; “ <u>0</u> ” means they did not.
Dispute Lost	"1" means Yellevate lost the dispute and the dispute was resolved in favor of the customer, and the customer does not have to pay the invoice; "0" means the customer did not win the dispute, and they are legally required to pay the full invoice amount, it either means that Yellevate won the dispute, or there was no dispute in the first place.
Settled Date	Date when either the customer paid the invoice, or if the dispute was resolved in favor of the customer, the decision that the customer does not have to pay was finalized.
Days To Settle	Number of days from when the invoice was generated to when it was settled.
Days Late	Number of days from when the invoice was due to when it was settled.

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