

# Understanding Yellevator's Payment Opt-Outs:

Developing effective financial management Strategies

## PROJECT ASSIGNMENT 1

**BATCH 10**

**GROUP 9**

Date of submission: May 4, 2023

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## Introduction

Data analysis was done for Yellevate company to help address the company's financial issues and boost operational effectiveness. This was done through data collection, processing, and interpretation to understand client behavior and preferences. The findings were presented to Yellevate stakeholders to identify the causes of the company's high payment opt-out rate and areas for improvement. Recommendations on providing proactive actions to better customer service and operations are also discussed.

## Problem

Almost 20% of client disputes raised against the Yellevate company resulted in payment opt-out and caused almost 5% loss in the company's annual revenue from years 2020 to 2021.

## Objectives

To investigate and pinpoint the underlying causes of financial challenges brought by lost disputes by determining the following:

- Processing time of invoices
- Processing time of invoices with disputes
- Percentage of lost disputes
- Revenue lost from these disputes
- Main contributor to disputes lost

Obtaining this information from the company's invoice database would help us describe what we are dealing with, and further understand the nature of the problem. Once this is done, we can focus on the possible root cause and identify resolutions to the problem.

## Methodology

### A. Data cleaning in SQL

- We used the DISTINCT command followed by the column name, such as "country", to identify duplicate values in the column. As a result, we found that the "country" column does not contain any duplicate values in the table.

Link: <https://drive.google.com/drive/folders/1I4IVk5nGbMxEZ7q8WOtcsq1gEVzWIWLC>

- -To verify the absence of NULL values in a column, we used the WHERE command followed by the column name and the condition IS NULL to filter the data. As a result, we confirmed that there are no NULL values in any of the columns within the yellevate\_invoices table.

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Link: <https://drive.google.com/drive/folders/1I4IVk5nGbMxEZ7q8WOtcsq1gEVzWIWLC>

### B. Table generation in SQL

#### 1. Data Analysis Goal #1

- We calculated the average time it takes to settle an invoice by using the AVG command on the “days\_settled” column from the “yelleivate\_invoice” table. The resulting answer was 26 days.

SQL file link: <https://drive.google.com/drive/folders/1F2DwB-TAI3d5QcTNT5Qn1VbfimhA4B1>

CSV file link: <https://drive.google.com/drive/folders/1F2DwB-TAI3d5QcTNT5Qn1VbfimhA4B1>

- In order to examine the data based on the country, we utilized the aggregated command “GROUP BY” to group the data by country.

SQL file:  
<https://drive.google.com/drive/folders/1F2DwB-TAI3d5QcTNT5Qn1VbfimhA4B1>

CSV file: <https://drive.google.com/drive/folders/1F2DwB-TAI3d5QcTNT5Qn1VbfimhA4B1>

#### 2. Data Analysis Goal #2

- We obtained the average number of days it takes for the company to settle disputes by using the AVG command on the “days\_settled” column from the “yelleivate\_invoices” table. The result showed that on average it takes 36 days for the company to settle disputes.

SQL file link: <https://drive.google.com/drive/folders/1gBW5lBy3WJ-13pPer00ufzuWY1FqSR34>

CSV file link: <https://drive.google.com/drive/folders/1gBW5lBy3WJ-13pPer00ufzuWY1FqSR34>

- In order to check the average based on the country, we included the “GROUP BY” command to group the data by country.

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SQL file link: <https://drive.google.com/drive/folders/1gBW5lBy3WJ-13pPer00ufzuWY1FqSR34>

CSV file link: <https://drive.google.com/drive/folders/1gBW5lBy3WJ-13pPer00ufzuWY1FqSR34>

### 3. Data Analysis Goal #3

- We calculated the percentage of disputes that were lost by the company by utilizing the aggregated function SUM on the “dispute\_lost” column, divided by the COUNT in the “invoice\_number” column and then MULTIPLY the result by one hundred, all from the “yelleivate\_invoices” table. The calculated result showed that 4.10% of the disputes received by the company were lost.

SQL file link:

[https://drive.google.com/drive/folders/1hvE\\_Kin18TsGexf0Q24QLrF5caGMVcf9](https://drive.google.com/drive/folders/1hvE_Kin18TsGexf0Q24QLrF5caGMVcf9)

CSV file link:

[https://drive.google.com/drive/folders/1hvE\\_Kin18TsGexf0Q24QLrF5caGMVcf9](https://drive.google.com/drive/folders/1hvE_Kin18TsGexf0Q24QLrF5caGMVcf9)

- In order to examine the total number of disputes lost, we utilized the aggregated function SUM on the “dispute\_lost” column from the “yelleivate\_invoices” table. The result showed that the total number of disputes lost was 101.

SQL file link:

[https://drive.google.com/drive/folders/1hvE\\_Kin18TsGexf0Q24QLrF5caGMVcf9](https://drive.google.com/drive/folders/1hvE_Kin18TsGexf0Q24QLrF5caGMVcf9)

CSV file link:

[https://drive.google.com/drive/folders/1hvE\\_Kin18TsGexf0Q24QLrF5caGMVcf9](https://drive.google.com/drive/folders/1hvE_Kin18TsGexf0Q24QLrF5caGMVcf9)

- In order to verify the total number of invoices, we utilized the aggregated function COUNT on the “invoices\_number” column from the “yelleivate\_invoices” table. The result showed that the total number of invoices was 2466.

SQL file link:

[https://drive.google.com/drive/folders/1hvE\\_Kin18TsGexf0Q24QLrF5caGMVcf9](https://drive.google.com/drive/folders/1hvE_Kin18TsGexf0Q24QLrF5caGMVcf9)

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CSV file link:

[https://drive.google.com/drive/folders/1hvE\\_Kin18TsGexf0Q24QLrF5caGMVcf9](https://drive.google.com/drive/folders/1hvE_Kin18TsGexf0Q24QLrF5caGMVcf9)

## 4. Data Analysis Goal #4

- We calculated the percentage of revenue lost from disputes by utilizing the aggregated function SUM on the "lost\_invoice" column, divided by the SUM on the "invoice\_amount\_usd" column, then multiplying the result by one hundred, and finally rounding the result to two decimal places in the "yelleivate\_invoices" table. The calculated result showed that 4.67% of the revenue was lost due to disputes.

SQL file link:

<https://drive.google.com/drive/folders/1omISKOVl5N1TjI9tdeuIFJ8DYJqt5oQj>

CSV file link:

<https://drive.google.com/drive/folders/1omISKOVl5N1TjI9tdeuIFJ8DYJqt5oQj>

- In order to examine the total revenue lost, we utilized the aggregated function SUM on the "lost\_invoices" column from the table. The result showed that the total revenue lost was 690,167.

SQL file link:

<https://drive.google.com/drive/folders/1omISKOVl5N1TjI9tdeuIFJ8DYJqt5oQj>

CSV file link:

<https://drive.google.com/drive/folders/1omISKOVl5N1TjI9tdeuIFJ8DYJqt5oQj>

- To verify the total revenue, we utilized the aggregated function SUM on the "invoice\_amount\_usd" column. The result showed that the total revenue was 14,770,318.

SQL file link:

<https://drive.google.com/drive/folders/1omISKOVl5N1TjI9tdeuIFJ8DYJqt5oQj>

CSV file link:

<https://drive.google.com/drive/folders/1omISKOVl5N1TjI9tdeuIFJ8DYJqt5oQj>

## 5. Data Analysis Goal #5

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- To identify the company with the greatest losses, we utilized the aggregated function SUM on the "invoice\_amount\_usd" column, then filtered the data to only include the "dispute\_lost" column with a value of 1. We grouped the data by country using the "GROUP BY" command and then ordered it by the "total\_lost" column in descending order. The result showed that France had the highest losses.

SQL file link:

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CSV file link:

[https://drive.google.com/drive/folders/158GiVyzmxbSGpkqJfoGrF5QIDl\\_6vo2p](https://drive.google.com/drive/folders/158GiVyzmxbSGpkqJfoGrF5QIDl_6vo2p)

### 6. Additional Analysis on France

- (A) To determine the average duration it takes to settle invoices, we employed several functions. We used the COUNT function on the "invoice\_number" and "days\_late" columns to calculate the total number of invoices and the total number of days late. Additionally, we utilized the SUM function on the "disputed" and "disputed\_lost" columns to compute the total amount disputed and disputed-lost. We computed the average number of days late using the AVG function on the "days\_late" column, but only for rows where the "days\_late" value is greater than zero. Finally, we sorted the results in ascending order by country and in descending order by the "days\_late" column.

SQL file link:

[https://drive.google.com/drive/folders/1uCt8seYZh49XWI7SNLkWt26zxU\\_oYGKv](https://drive.google.com/drive/folders/1uCt8seYZh49XWI7SNLkWt26zxU_oYGKv)

CSV file link:

[https://drive.google.com/drive/folders/1uCt8seYZh49XWI7SNLkWt26zxU\\_oYGKv](https://drive.google.com/drive/folders/1uCt8seYZh49XWI7SNLkWt26zxU_oYGKv)

- (B) We performed an additional check to gather information about disputed invoices for customers situated in France from a table labeled "yelleivate\_invoices". To do so, we utilized various aggregate functions, such as COUNT on the "invoice\_number" column and SUM on the "invoice\_amount\_usd", "disputed", and "disputed\_lost" columns. We then filtered the results based on the "country" column to include only rows where the country is France. Next, we grouped the results by customer ID and sorted them in descending order by the "dispute\_lost" column.

SQL file link:

[https://drive.google.com/drive/folders/1uCt8seYZh49XWI7SNLkWt26zxU\\_oYGKv](https://drive.google.com/drive/folders/1uCt8seYZh49XWI7SNLkWt26zxU_oYGKv)

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CSV file link:

[https://drive.google.com/drive/folders/1uCt8seYZh49XWI7SNLkWt26zxU\\_oYGKv](https://drive.google.com/drive/folders/1uCt8seYZh49XWI7SNLkWt26zxU_oYGKv)

### C. Formulae Pivot Tables and Visualizations in Excel

#### 1. Data Analysis Goal #1

To get the average days to settle invoice, we used average function and select the column containing day to settle data

1.1 Formula:

=AVERAGE('Yellevate Invoices'!K2:K2467)

1.2 Pivot Table

Reference Table: Yellevate Invoices		
Axis (Categories)	country	Countries sort descending by average days settled
Values	Average of days_to_settle	Data which we want to see

1.3 Charts

Bar table was used to visualize differences or similarities of the value generated for each country

#### 2. Data Analysis Goal #2

2.1 Formula:

=ROUND(AVERAGEIF('Yellevate Invoices'!H2:H2467,"1",'Yellevate Invoices'!K2:K2467),0)

2.2 Pivot Table

Reference Table: Disputed		
Axis (Categories)	country	Countries sort descending by average days settled
Values	days_settled disputed	Average of days_settled Sum of disputed

2.3 Charts

Using bar table the country visualize the difference value by getting the average of days\_settled comparing to the total sum of disputed



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### 3. Data Analysis Goal #3

#### 3.1 Formula:

=ROUND(GETPIVOTDATA("Sum of dispute\_lost", \$A\$6)/GETPIVOTDATA("invoice\_number", \$A\$6)%2)

#### 3.2 Pivot Table

Reference Table: Disputed		
Axis (Categories)	country	Countries placed on categories to distribute value of insight
Values	Invoice_number dispute_lost	Invoice_number is set to total count Total sum of dispute_lost

#### 3.3 Charts

Using Stacked Column to easily determine the trend for each country sort in ascending by count of invoice\_number

### 4. Data Analysis Goal #4

#### 4.1 Formula:

=ROUND(GETPIVOTDATA("Sum of lost\_invoice", \$A\$4)/GETPIVOTDATA("Sum of invoice\_amount\_usd", \$A\$4)%2)

#### 4.2 Pivot Table

Reference Table: Disputed Lost		
Axis (Categories)	country	country placed on Rows for categories
Values	invoice_amount_usd lost_invoice	Sum of amount_invoices_usd Sum of lost_invoice

#### 4.3 Charts

### 5. Data Analysis Goal #5

#### 5.1 Formula:



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= ROUND(GETPIVOTDATA("Sum of lost\_invoice",\$A\$4)/GETPIVOTDATA("Sum of invoice\_amount\_usd",\$A\$4)%,2)

### 5.2 Pivot Table

Reference Table: Disputed Lost		
Axis (Categories)	country	Country on categories
Values	lost_invoice invoice_amount_usd	Sum of amount_invoices_usd Sum of lost_invoice

### 5.3 Charts

Pie chart to visualized the total invoice\_amount from 5 countries

Cluster Bar used to determine the top most losses from disputed country in USD

## 6. Added Analysis on France

### 6.1 Formula:

= SUMIFS('Dispute Lost'!F2:F102,'Dispute Lost'!A2:A102,"####-XXXX")  
 where ####-XXXX is customer id listed in the pivot table  
 =SUM

### 6.2 Pivot Table

Reference Table: France		
Axis (Categories)	customer_id	Rows as categories costomer_id
Values	Invoice_amount Country Disputed dispute_lost	Sum of Invoice_amount Count of Country Sum of Disputed Sum of dispute_lost

### 6.3 Charts

No chart

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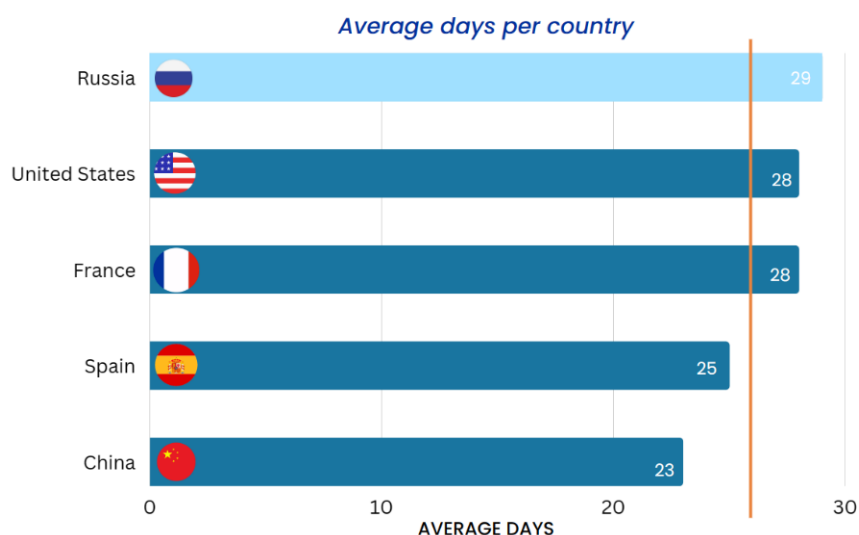
## Findings

### I. Processing time of invoices and disputes

Understanding the financial issue of the company as a result of the lost disputes requires looking into the processing time of invoices and of invoices with disputes. This is in consideration of the possibility that this may be a factor that affects or have a correlation with clients who file for disputes.

**Table 1.** Average number of Days to Settle Invoice by Country from Yellevate invoices

Country	Average of days_to_settle
China	23
Spain	25
France	28
United States	28
Russia	29
Overall Ave	26



**Figure 1.** Average days per country to settle invoices presented in a horizontal bar chart of Table 1, red line indicating overall average of 26

Table 1 presents the average processing time of settling invoices by clients from the five different countries where the company operates. The average is 26 days which is below the 30 days fixed given lead time for clients once invoice has been issued. Even though France, US and Russia seem to take more days, their respective averages are still within lead time. From this, we can say that the 30 days is enough to process invoice and may not have an effect on client behavior, specifically the chances of them filing for dispute.

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Table 2. Average number of Days to

Country	Average of days_settled
France	34
China	34
Spain	37
Russia	38
United States	41
Overall Ave	36

Settle Invoice that were Disputed by  
Country from Yellevate invoices database

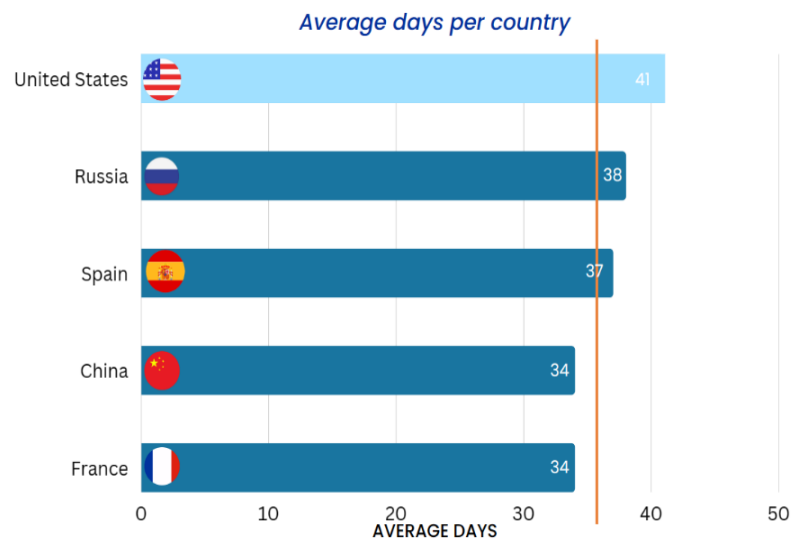


Figure 1. Average days to settle per country presented in a horizontal bar chart of Table 2, orange line indicating overall average of 36 days duration to settle invoice with disputes per country.

Looking more into the data at hand and focusing on the duration for settlement of invoices from disputed transactions, Table 2 presents this and the average per country. From this and the graph presented in Figure 2, it can be seen that US took the longest time, followed by Russia and Spain, taking more than the average of 36 days. It can be noted that this overall average exceeds the standard 30 days given to settle the invoice, naturally as resolving disputes may take time for both client and company.

## II. Losses in lost disputes

To further examine the average processing time of invoices with disputes per country, it would be good to check the relationship of frequency of disputes lost from each country.

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Table 3. Sum of disputed and dispute lost per country from Yellevate invoices database

Country	Sum of disputed	Sum of dispute_lost
France	222	76
Russia	149	13
United States	80	3
China	61	5
Spain	59	4
Overall Ave	571	101

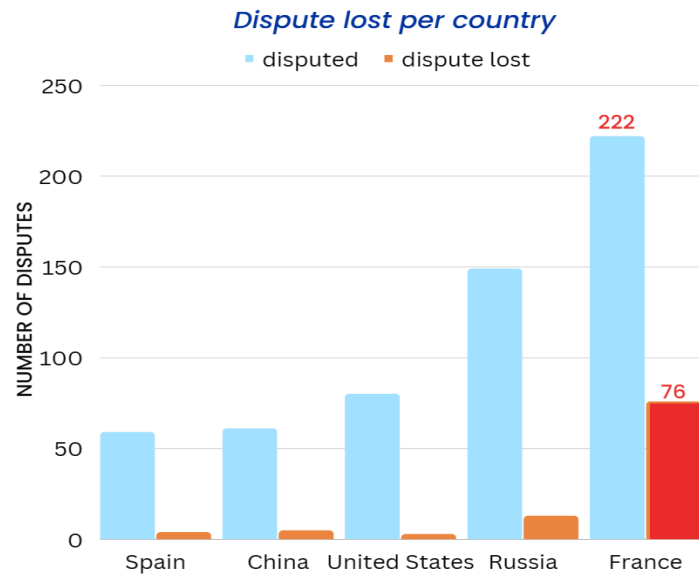


Figure 2. Dispute lost per country side by side visualization with sum of disputed transaction per country.

Table 3 presents the sum of disputes and disputes lost per country, which is visualized by a vertical bar graph in Figure 3.

The US takes the longest time to settle disputes. By associating it to frequency raised per country, France and Russia have a greater number of disputes compared to the US. From this observation it can be speculated that the US takes time in their disputes and pursues the correct resolution for the dispute. On the other hand, Russia and France are raising relatively more disputes but settling invoices faster than the US. This can give us an idea on the attitude of clients from both countries to settle disputes quickly. They are more likely to prioritize settlement of invoices rather than resolving the issues. More importantly, a conclusion can be made that processing time of disputes is not a factor for losing the dispute to the client.

The total number of disputes lost resulting in payment opt-outs is 101 as already shown in Table 3. This is equals to 4.10% of the 2466 overall number of invoices in record.

Further interpreting Figure 3, it is noteworthy that most of disputes and disputes lost came from France. Also, since only France has both large number of disputes and disputes lost, it can be assumed that the system of company or the quality of services it provides applied across all countries is not a factor in the loss of disputes; otherwise, the observation would be an even distribution or percentage of disputes lost per country. Considering this, it can be considered that disputes from France is an isolated albeit a worrying case.

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Translating this 4.10% lost disputes to total revenue lost, it amounts to a whopping \$690,167 or 4.67% of the \$14M overall total revenue. Further scrutinizing the revenue lost per country, visualization is shown in Figure 4.

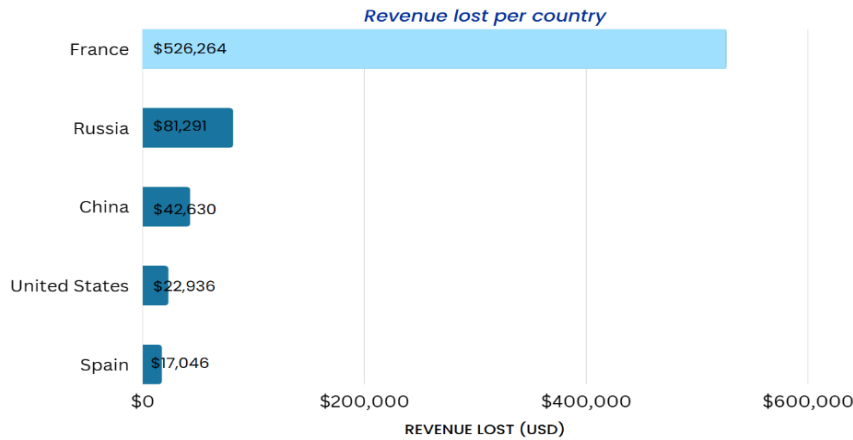


Figure 3. Revenue lost per country presented in a bar graph to visualize difference in magnitude per country

Therefore, disputes lost in France can be presumed as the main contributor or cause to the financial challenge that the company is facing.

## III. The Challenging Clients

TOP 8 REPEAT CLIENTS FROM FRANCE WITH HIGHEST DISPUTE LOST

Customer ID	Invoices	Disputed	Disputes Lost	Total Amount of Invoices	Total Amount of Lost Invoices
3448-OWJOT	28	27	12	\$197,550	\$81,783
9725-EZTEJ	26	24	11	\$214,610	\$88,124
7600-OISKG	23	22	8	\$149,136	\$49,426
9771-QLTGZ	22	21	8	\$115,295	\$43,770
8389-TCXFQ	33	17	6	\$209,584	\$43,067
4632-QZOKX	17	17	8	\$97,745	\$42,486
6048-QPZCF	30	17	2	\$237,779	\$14,910
4640-FGEJI	35	11	5	\$263,546	\$41,762
SUM OF TOP 8 CLIENTS	214	156	60	\$1,485,245	\$405,328
OTHER CLIENTS	347	66	16	\$2,457,046	\$82,220
TOTAL	561	222	76	\$3,942,291	\$526,264

Table 4. Top 8 clients from France with highest dispute lost

France having the greatest number of disputes at 561 which came from only 23 clients filing for disputes repeatedly. Each client has 15 transactions as minimum and 35 as maximum based on recorded invoice within the whole 2 years alone. Out of all 23 clients, only 2 of them did not ever file for dispute. Focusing on the top 8 clients with the highest number of disputes and dispute lost, the sum of their invoice resulting to opt-outs has amounted to 405,328 USD. This is already the 2.74% of the 4.67% revenue lost recorded.

Therefore, eliminating or addressing the issues that the top 8 clients encounter would immediately lower the revenue losses to 1.93%.

## IV. Summary



The average processing time of invoices is 26 days, within the 30-day period to settle invoice as stated in the data provided. In settling disputed invoices, the average processing time is 36 days which is beyond the 30-day period. The total of disputed lost invoices is 4.10% of the total invoices generated from 2020 to 2021. It translated to 4.67% loss from total annual revenue. And France is the country where the company reached the highest losses. 526,264 USD of 690,167 USD total loss revenue is from France. Fixing the disputes in France would somehow lessen the company's revenue loss.

The following are the 3 recommendations that the stakeholders may consider.

## **Recommendations**

### **1. Create Dispute Team**

This is to address the issue of disputes and dispute loss. Its main task is assessing customer disputes. The dispute team will focus on France knowing that the greatest number of disputes came from France. Dig deeper why there are repeat customers in France with many lost disputes to the disadvantage of the company. What are their reasons for raising disputes? Why do they still get services when they have raised many disputes against the company? From this information we can see that the repeat customers are kind of playing around the company. The role of the dispute team is crucial to filter out 'bad' customers. The quality of the services provided by the company is not a factor of such high dispute loss in France. Because from the investigation, it turned out that only France has the highest number of lost disputes though it is second in terms of revenue generation. But China as the major revenue generator has the least dispute raised and lost. It implies that the quality of service is not the factor. This can give us a picture of what is going on in French customers. This is where the crucial role of the Dispute Team comes in. Getting more information from France challenging customers will give the team an idea in arriving at a sound dispute resolution. Recommended resolutions are subject for approval by the management.

Another role of the dispute team is to collaborate with other teams from other countries on how they handle disputes. For example, Russia has 136 disputes but lost only 13 disputes in favor of the clients. The dispute team can check on these disputed invoices to get more ideas in order to come up with sound dispute resolution. And eventually provide suggestions in improving further the services of the company to the clients. Client disputes could potentially contain areas of services that the company needs to improve.

### **2. Prepaid Service- Cancel anytime within 7 days.**

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Prepaid Payment options: Monthly, Quarterly, Semi-annual, Annual.

This is to address the issue of revenue losses due to disputes. There is a high chance that the customer will evade payment of the invoice once a dispute is raised. As a guarantee that the company will not be in disadvantage, the customer must pay first before the execution of the service. This is to ensure that the company will not be left out without pay once the customer raises a dispute. Though the customer can cancel anytime within 7 days without questions asked. But in the event the customer raises a dispute after 7 days, this will be assessed by the Dispute Team. Refund is subject to approval by the management.

### 3. Payment Tracking Automation

This will send automated notifications or reminders to customers to improve collection of payments and to avoid missing the 30-day payment due. Many invoices were settled late though on average the processing time is within 30-days. It seems the 30-day payment due is not followed. It seems the company has no hold or so lenient in collecting payments. It should be stated upfront regarding the payment due. Penalties or surcharges should be applied for late payments. Better also to introduce auto-debit arrangement to ensure that payment will be paid on time.