

Project Title: Yellevate Disputes Report

Group #40

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Problem

This report will focus on the company Yellevate, which specializes in providing marketing services to mid-sized companies. Yellevate uses data analytics to keep track of their performance. However, for the past few years, the company has been struggling with client disputes. This problem with client disputes has been a huge financial burden for the company. Nearly 20% of the disputes raised against Yellevate have resulted in non-payment of invoices. This has led to an approximate 5% annual loss of revenue.

The following assumptions will be considered in analyzing the problem: 1. All the services Yellevate was hired to do were fully completed; 2. The quality of the services is not the main driving reason for these invoice disputes; and 3. Yellevate management believes most disputes are the result of contract technicalities or clients thinking they can get away with not paying for the services.

This report is aimed to achieve the following objectives:

1. Review the average processing time in which invoices are settled and to settle disputes.
2. Evaluate the percentage of disputes that were lost and the percentage of revenue lost from these disputes.
3. Identify the country where the company reached the highest losses from lost disputes (in USD).
4. Develop insights and recommendations using data analysis.

Methodology

The company has collected data about the disputes for further analysis to identify the possible causes and draw recommendations in solving the problem. Using data analytics, the data on Yellevate disputes were analyzed following the steps below:

A. Loading the raw data in SQL for data cleaning

First step was to upload the CSV file to SQL to create a Database. The Database project assignment 1 was then created using the SQL query.

```
CREATE TABLE public.'Yellevate_Invoices'  
(  
  country character varying(50),  
  customer_id character varying(50),  
  invoice_number numeric,  
  invoice_date date,  
  due_date date,  
  invoice_amount numeric,  
  disputed numeric,  
  dispute_lost numeric,  
  settled_date date,  
  days_settled integer,  
  days_late integer  
);  
ALTER TABLE IF EXISTS public."Yellevate_Invoices"  
  OWNER to postgres;
```

Once the table was created, the CSV file was imported into the SQL. Before data cleaning, a new Table was created in order not to change the value of the original table. Below is the syntax used for copying and creating a new table.

```
CREATE TABLE yellevate_invoices_backup AS  
SELECT *  
FROM yellevate_invoices_backup
```

Then the data copied was cleaned in the SQL. The Value of Disputed was changed from 1 and 0 to 1 = Cleared and 0 = Undisputed.

```
UPDATE yellevate_invoices_backup  
SET disputed = 'Cleared'  
WHERE disputed = '0'  
UPDATE yellevate_invoices_backup  
SET disputed = 'Disputed'  
WHERE disputed = '1'
```

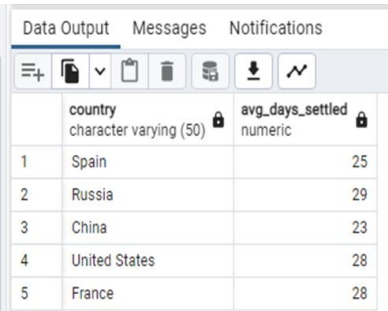
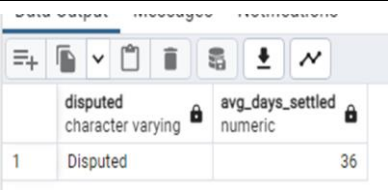
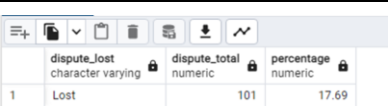

The dispute_lost column data was cleaned and grouped into 3 categories.


```
UPDATE yellevate_invoices_backup
SET dispute_lost =
(Case
WHEN dispute_lost = '1' THEN 'Lost'
WHEN dispute_lost = '0' THEN 'Won or Undisputed'
END)
```

B. Analyze data using SQL and Excel Functions

The table below shows the queries performed with the corresponding SQL queries and data output. The same data analysis goals were performed using Excel and pivot table functions to create graphs for the visualization of the data.

Data Analysis Goals	SQL Query	Data Output																																																			
0. The reason why transaction in France suffers in losses. Multiple dispute losses from same customers.	SELECT customer_id, COUNT(transaction_status = 'disputed' AS lost_disputes FROM yellevate_invoices_backup1 WHERE country = 'France' AND dispute_status = 'Lost' GROUP BY customer_id ORDER BY lost_disputes DESC	<table><thead><tr><th></th><th>customer_id character varying</th><th>lost_disputes bigint</th></tr></thead><tbody><tr><td>1</td><td>3448-OWJOT</td><td>12</td></tr><tr><td>2</td><td>9725-EZTEJ</td><td>11</td></tr><tr><td>3</td><td>4632-QZOKX</td><td>8</td></tr><tr><td>4</td><td>7600-OISKG</td><td>8</td></tr><tr><td>5</td><td>9771-QLGZ</td><td>8</td></tr><tr><td>6</td><td>8389-TCXFQ</td><td>6</td></tr><tr><td>7</td><td>4640-FGEJI</td><td>5</td></tr><tr><td>8</td><td>9117-LYRCE</td><td>4</td></tr><tr><td>9</td><td>4092-ZAVRG</td><td>3</td></tr><tr><td>10</td><td>5573-KSOIA</td><td>2</td></tr><tr><td>11</td><td>5164-VMYWJ</td><td>2</td></tr><tr><td>12</td><td>5284-DJOZO</td><td>2</td></tr><tr><td>13</td><td>6048-QPZCF</td><td>2</td></tr><tr><td>14</td><td>6833-ETVHD</td><td>1</td></tr><tr><td>15</td><td>0783-PEPYR</td><td>1</td></tr><tr><td>16</td><td>1447-YZKCL</td><td>1</td></tr></tbody></table>		customer_id character varying	lost_disputes bigint	1	3448-OWJOT	12	2	9725-EZTEJ	11	3	4632-QZOKX	8	4	7600-OISKG	8	5	9771-QLGZ	8	6	8389-TCXFQ	6	7	4640-FGEJI	5	8	9117-LYRCE	4	9	4092-ZAVRG	3	10	5573-KSOIA	2	11	5164-VMYWJ	2	12	5284-DJOZO	2	13	6048-QPZCF	2	14	6833-ETVHD	1	15	0783-PEPYR	1	16	1447-YZKCL	1
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1. The processing time in which invoices are settled (average # of days rounded to a whole number). BY Country Average	SELECT ROUND(AVG(days_settled)) AS Avg_Days_settled FROM yellevate_invoices_backup; SELECT country, ROUND(AVG(days_settled)) AS Avg_days_settled FROM yellevate_invoices_backup GROUP BY country;	<div><div>Data OutputMessagesNotifications</div><div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div><div>avg_days_settled numeric</div><table><tbody><tr><td>1</td><td>26</td></tr></tbody></table></div></div>	1	26																																																	
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2. The processing time for the company to settle disputes (average # of days rounded to a whole number).	<pre>SELECT disputed, ROUND(AVG(days_settled)) AS Avg_Days_settled FROM yellevate_invoices_backup GROUP BY disputed HAVING disputed = Disputed</pre>	 <table><thead><tr><th></th><th>disputed</th><th>avg_days_settled</th></tr></thead><tbody><tr><td>1</td><td>Disputed</td><td>36</td></tr></tbody></table>		disputed	avg_days_settled	1	Disputed	36														
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3. Percentage of disputes received by the company that were lost (within two decimal places). A. New table created B. Convert dispute total column into numeric	<pre>CREATE TABLE yellevate_Dispute AS SELECT disputed, dispute_lost, COUNT(dispute_lost) AS Dispute_Total FROM yellevate_invoices_backup GROUP BY disputed, dispute_lost HAVING disputed = Disputed; ALTER TABLE yellevate_Dispute ALTER COLUMN dispute_total TYPE NUMERIC USING dispute_total::NUMERIC; SELECT dispute_lost, dispute_total, ROUND(SUM(dispute_total)*100/ (SELECT SUM(dispute_total) FROM yellevate_Dispute),2) AS Percentage FROM yellevate_Dispute GROUP BY disputed, dispute_lost, dispute_total</pre>	 <table><thead><tr><th></th><th>dispute_lost</th><th>dispute_total</th><th>percentage</th></tr></thead><tbody><tr><td>1</td><td>Lost</td><td>101</td><td>17.69</td></tr></tbody></table>		dispute_lost	dispute_total	percentage	1	Lost	101	17.69												
	dispute_lost	dispute_total	percentage																			
1	Lost	101	17.69																			
4. Percentage of revenue lost from disputes (within two decimal places)	<pre>SELECT disputed, dispute_lost, SUM(invoice_amount) AS Total_amount, ROUND(SUM(invoice_amount)*100/ (SELECT SUM(invoice_amount) FROM yellevate_invoices_backup1),2) AS Percentage FROM yellevate_invoices_backup GROUP BY disputed,dispute_lost;</pre>	 <table><thead><tr><th></th><th>disputed</th><th>dispute_lost</th><th>total_amount</th><th>percentage</th></tr></thead><tbody><tr><td>1</td><td>Disputed</td><td>Lost</td><td>690167</td><td>4.67</td></tr><tr><td>2</td><td>Cleared</td><td>Won or Undisputed</td><td>11021574</td><td>74.62</td></tr><tr><td>3</td><td>Disputed</td><td>Won or Undisputed</td><td>3058577</td><td>20.71</td></tr></tbody></table>		disputed	dispute_lost	total_amount	percentage	1	Disputed	Lost	690167	4.67	2	Cleared	Won or Undisputed	11021574	74.62	3	Disputed	Won or Undisputed	3058577	20.71
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3	Disputed	Won or Undisputed	3058577	20.71																		

5. The country where the company reached the highest losses from lost disputes (in USD).	<pre> SELECT country, SUM(invoice_amount) AS Total_amount_in_USD FROM yellevate_invoices_backup GROUP BY country, disputed, dispute_lost HAVING dispute_lost = 'Lost' ORDER BY total_amount_in_usd DESC LIMIT 1 </pre>	 <table border="1"> <thead> <tr> <th></th><th>country character varying (50)</th><th>total_amount_in_usd numeric</th></tr> </thead> <tbody> <tr> <td>1</td><td>France</td><td>526264</td></tr> </tbody> </table>		country character varying (50)	total_amount_in_usd numeric	1	France	526264
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1	France	526264						

The tables and graphs were generated using Microsoft Excel pivot table function and graphs.

Findings

The following are tables and graphs with the insights gathered through data analysis:

Customer ID (France)	Disputes Lost
3448-OWJOT	12
9725-EZTEJ	11
7600-OISKG	8
4632-QZOKX	8
9771-QTLGZ	8
8389-TCXFQ	6
4640-FGEJI	5
9117-LYRCE	4
4092-ZAVRG	3
5573-KSOIA	2
6048-QPZCF	2
5164-VMYWJ	2
5284-DJOZO	2
6833-ETVHD	1
0783-PEPYR	1
1447-YZKCL	1
Grand Total	76

Table 0. Multiple lost disputes from same customer per customer id in France.

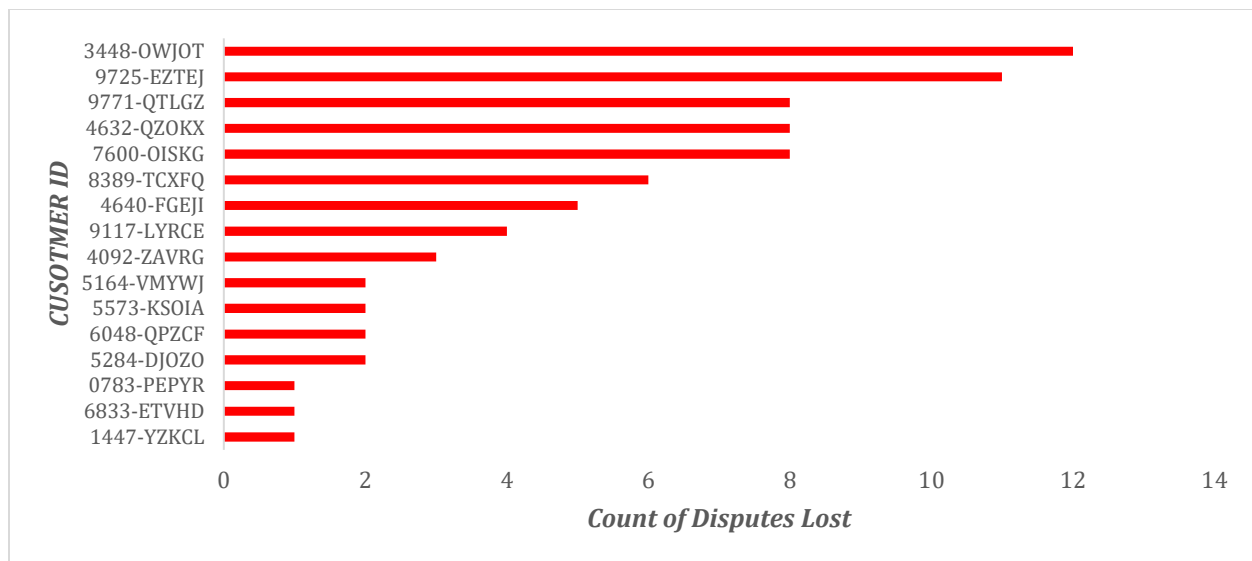


Figure 0. Multiple lost disputes from same customer per customer id in France.

Based on table 0 and figure 0, several dispute losses were recorded multiple times from same customers in France. This resulted in a 34% lost in total 222 disputes raised in the country. The lost translates to \$ 526, 264.00 which is 76% of the total losses from disputes. This the main problem requiring attention from the company as it is the one incurring the most damage to the company.

Average of Days to Settle	
Grand Total	26
Disputed	36
Cleared	24
Grand Total	26

Table 1. Average processing time in which invoices are settled vs. average processing time to settle disputes.

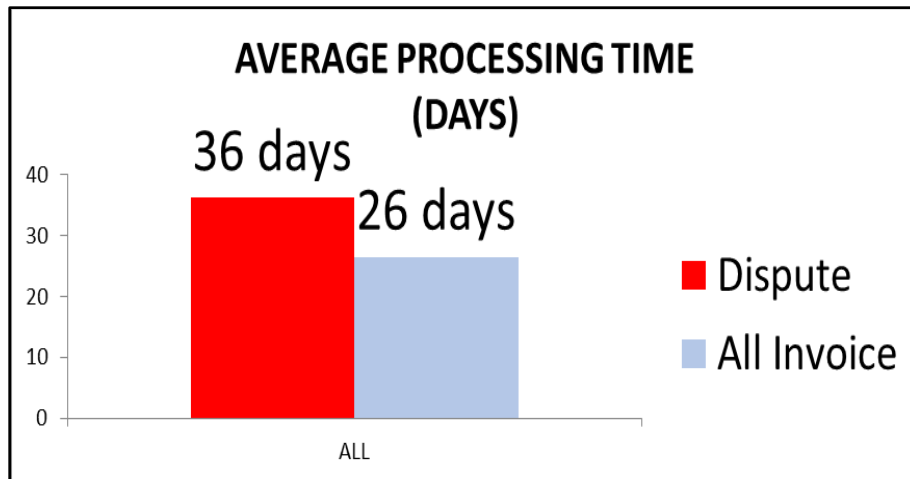


Figure 1. Average processing time in which invoices are settled vs. average processing time to settle disputes.

Based on table 1 and figure 1 the average processing time of all the invoices is 26 days while the average processing of disputed invoices are 36 Days. This is a 10-day difference. There is a 50% or an average of 12 additional days to settle disputes. This is a problem because it means a decrease in productivity every day invoices are not settled on time. The predicted revenue per day is not met. There is work diverted to resolving disputes from more productive tasks.

Disputes	Percentage
Lost	17.69%
Won or Undisputed	82.31%
Grand Total	100.00%

Table 2. Percentage of disputes received by the company that were lost and won or not disputed.

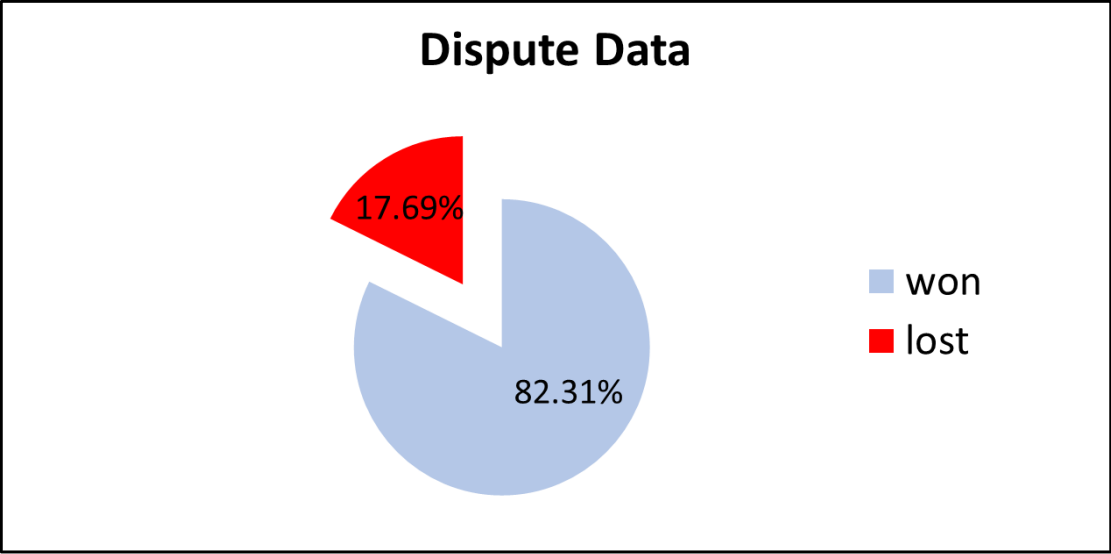


Figure 2. Percentage of disputes received by the company that were lost and won or not disputed.

Based on table 2 and figure 2, the disputes that are won by Yellevate is 82.31%. This shows that the company has a high success rate in resolving the disputes. However, there is a relatively significant percentage of the total disputes that are lost which is approximately 17.69%. This adds to the problem of work productivity and revenue generation.

Disputes	Sum of Invoice Amount (%)
Lost	4.67%
Won or Undisputed	95.33%
Grand Total	100.00%

Table 3. Percentage of revenue lost from disputes, won and not disputed.

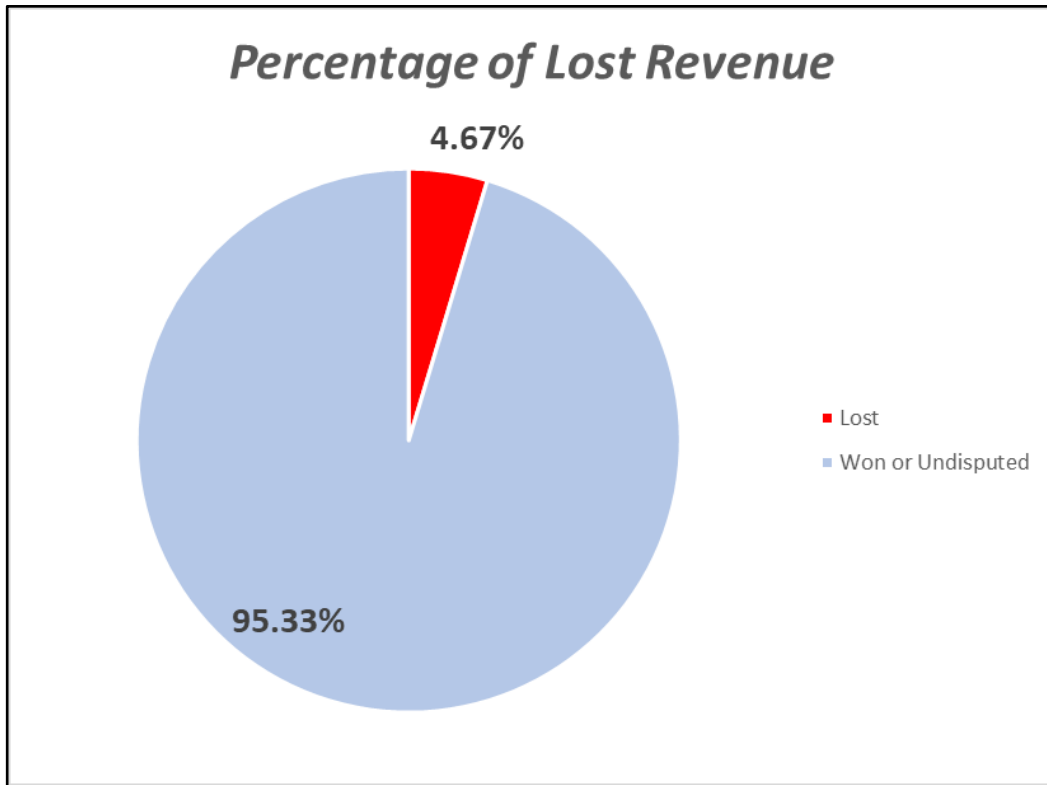


Figure 3. Percentage of revenue lost from disputes, won and not disputed.

Based on table 3 and figure 3, there is a relatively significant percentage of the projected revenue is lost from the disputes that were lost which is 4.67% of the total revenue. This value is quite high in Dollar value. The team needs to further investigate these Disputes in order to determine if we should have issued refunds to the Customers.

Country	Revenue Lost
Spain	\$17,046
United States	\$22,936
China	\$42,630
Russia	\$81,291
France	\$526,264
Grand Total	\$690,167

Table 4. Lost disputes in terms of revenue by country

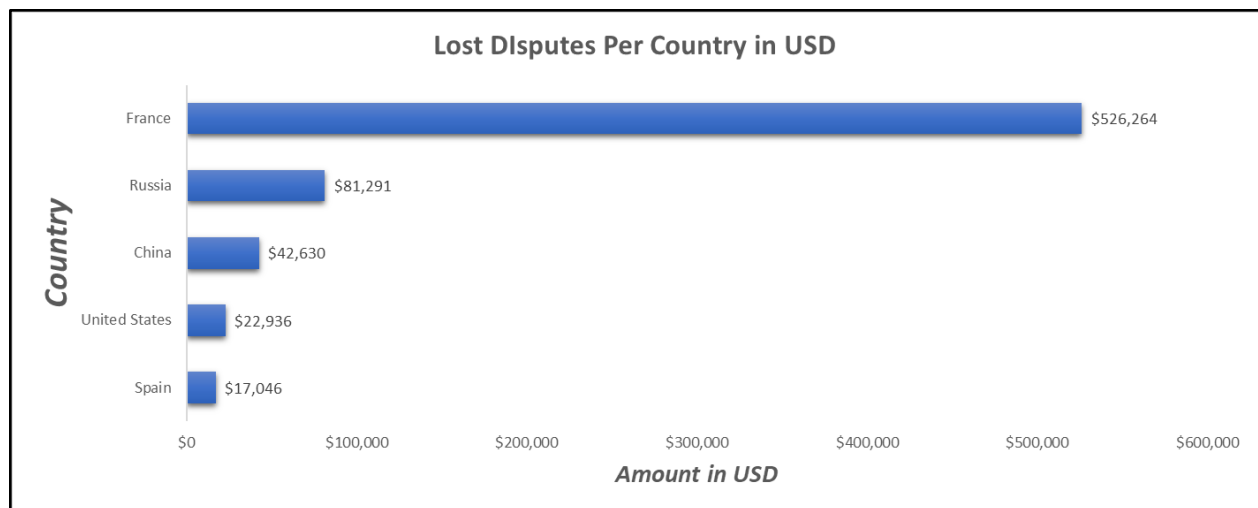


Figure 4. Lost disputes in terms of revenue by country

Based on table 4 and figure 4 above, the country with the highest revenue lost from disputes is France. There is a very significant difference between the revenue lost in France compared to the other four countries. Transactions done in France recorded the highest number of losses by about 34% and amounting to \$526264.00. This alone accounts for 76% of losses from disputes.

Recommendations

The following recommendations are formulated taking into considerations the given assumptions for the situation of Yellevate regarding disputes and the data analysis done using SQL and excel:

1. On contract signing; Discuss the pricing, terms, and condition with the Client.
 - Go over the pricing before accepting a job and keep the client updated with the bills as the job progresses. Be sure that the invoices are correct and timely to avoid clients getting any reason to dispute the invoice.
 - Set up a time limit on disputes in the terms and conditions to ensure that any disputes are raised nice and early. It should be stated that disputes can only be raised within a specific amount of period. This will give Yellevate plenty of time to rectify any errors or settle the dispute well in advance of the invoice's due date.
2. Adapt good practices from other countries of operation and learn from them. It is conclusive that the Company's transactions in France suffers a huge deficit when compared to the other countries. Look into France and the types of disputes, circumstances, how they are handled, and many more factors that may contribute to the occurrence of high disputes and dispute loss. The countries with the least number of revenues lost must be reviewed as well. This is to help identify the factors that may contribute in finding solutions to the problem of dispute losses in France.
3. As disputes are unavoidable:
 - Yellevate could hire a third-party collector or seek legal advice for delinquent clients. Doing so may incur additional expenses but could be beneficial in minimizing the losses. The added weight on Yellevate's side could be enough for the clients to settle their balances.
 - The Company could set up a payment term where clients will be required to pay an initial 30% before services are rendered. This should be possible and reasonable as Yellevate boasts an exceptional high completion rate on their services. Any violation of the contract's terms and conditions would make the initial payment non-refundable. Losses will be reduced to at least 3.43% and up to at least 2.45% for a 50% initial payment.
 - Tag and blacklist delinquent customers. Focus should be given on this area as this is where Yellevate lost most of its revenue. It would be better to lose a few customers if they are incurring more damage than gain to the Company.