



Yellevate Client Dispute Analysis

In partial fulfillment
of the Data Analytics course
In **Project Assignment #1**

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BACKGROUND

The company Yellevate specializes in providing marketing services to other companies. Yellevate helps mid-sized companies to launch their marketing operations which includes things like email marketing, website development, content creation and others.

Yellevate uses data analytics to keep track of how well it helps companies improve their marketing operations. For instance, if a company approaches Yellevate to help improve its online advertising operations, Yellevate tracks this by looking at email impressions, click-through rates, website traffic and other key performance indicators.

PROBLEM OVERVIEW

For the past few years, Yellevate has been struggling with client disputes. Yellevate defines disputes as clients expressing dissatisfaction with the company's services and refusing to pay for them.

This has been a huge financial burden for the company: statistically, nearly 20% of the disputes raised against Yellevate resulted in a payment opt-out. This has led to an approximate 5% annual loss of revenue (in USD).

Management wants our team to help resolve the issue. Using data the company collected about these disputes, we will have to identify their causes and come up with actionable strategies to solve them.

TEAM OBJECTIVES

The dataset given to us included the following: Country, Customer ID, Invoice Number, Invoice Date, Due Date of Invoice, Dollar value of Invoice, Disputed, Dispute Lost, Settled Date, Days to Settle, and Days Late.

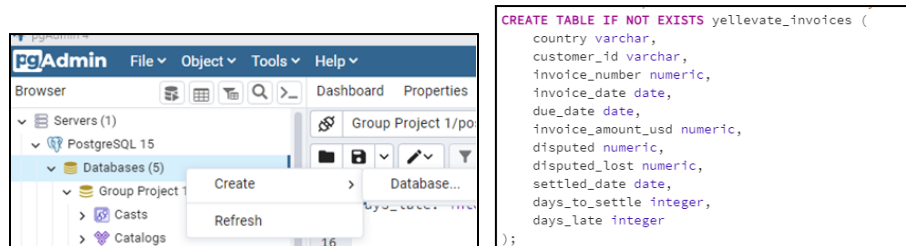
With this much information, the team drew data analysis objectives to:

1. Understand how long the processing time to settle invoices for all clients
2. Determine processing time to settle all disputes among clients in all regions
3. Identify the region where most disputes are coming from and how huge the number is compared to other clients
4. Determine how much revenue is lost from disputes in 2020-2021
5. Determine how much revenue is being lost and from which country most of the revenue lost is coming from

METHODOLOGY

1. Import Table to SQL

First, we created a database in PgAdmin and named it Group Project 1.



Then we created a table inside the database we created and we named it yellevate_invoices

The screenshot shows the 'Import/Export Data' option selected in the context menu. Below it, a table of invoice data is displayed:

	country	customer_id	invoice_number	invoice_date	due_date	invoice_amount_usd	disputed	disputed_lost	settled_date	days_to_settle	days_late
1	China	0379-NEVHP	611365	2021-01-02	2021-02-01	5594	0	0	2021-01-15	13	0
2	France	2621-XCLEH	6482427308	2020-01-13	2020-02-12	8099	1	0	2020-03-14	61	31
3	China	2820-XGXS8	9231909	2021-07-03	2021-08-02	6588	0	0	2021-07-08	5	0
4	France	9322-YCTOO	9888306	2021-02-10	2021-03-12	10592	0	0	2021-03-17	35	5
5	Russia	6627-ELFBK	15752855	2020-10-25	2020-11-24	7227	1	0	2020-11-28	34	4
6	Russia	5148-SYKLB	18104516	2020-01-27	2020-02-26	9400	1	0	2020-02-22	26	0
7	Spain	8690-EEBEO	23864272	2021-08-13	2021-09-12	7469	0	0	2021-09-09	27	0
8	United States	4460-ZKNDN	27545037	2020-12-16	2021-01-15	7506	0	0	2021-01-12	27	0
9	United States	3831-FKXWYK	28049695	2020-05-14	2020-06-13	8007	1	0	2020-07-01	48	18
10	Spain	7654-DOLHO	32277701	2021-07-01	2021-07-31	4833	0	0	2021-07-26	25	0
11	United States	3993-QUNVJ	35868002	2020-03-31	2020-04-30	7533	0	0	2020-04-16	16	0
12	France	5284-DJQZO	36478577	2021-08-07	2021-09-06	7335	0	0	2021-08-15	8	0

Then we imported the csv file into pgadmin then into the table we just created. Finally, we query it to check.

2. Processed Data in SQL

To prepare the dataset for Excel, we created another table that includes two (2) new tables named: disputes and revenue. This is to help in the process of creating data visualization through Excel.

```
18 CREATE TABLE yellevate_invoices_backup AS
19 SELECT *,
20 CASE
21   WHEN disputed=0 AND dispute_lost=0 THEN 'no disputes'
22   WHEN disputed=1 AND dispute_lost=0 THEN 'won disputes'
23   WHEN disputed=1 AND dispute_lost=1 THEN 'lost disputes'
24 END AS disputes,
25 CASE
26   WHEN disputed=0 AND dispute_lost=0 THEN 'gained revenue'
27   WHEN disputed=1 AND dispute_lost=0 THEN 'gained revenue'
28   WHEN disputed=1 AND dispute_lost=1 THEN 'lost revenue'
29 END AS revenue
30 FROM yellevate_invoices;
```

disputes	revenue
no disputes	gained revenue
won disputes	gained revenue
no disputes	gained revenue
no disputes	gained revenue
won disputes	gained revenue
won disputes	gained revenue
no disputes	gained revenue

3. Execute Initial Data Analysis in SQL

Before transferring our processed dataset to Excel, we wrote a subquery to answer our data analysis questions. Questions 1-4 were answered in one line of code while Question 5 was done separately.

```
select
  round(avg (days_settled),0) as avg_processing_time,      ---task 1
  round(avg (case when disputed = 1 then days_settled else NULL end),0) as avg_disputed_processing_time,  ---task 2
  round(sum(dispute_lost) / sum(disputed)*100,2) as pct_lost_disputed,  ---task 3
  round(sum (case when dispute_lost = 1 then invoice_amount else 0 end)/sum (invoice_amount)*100,2) as pct_losses  ---task 4
from yellevate_invoices_backup;

----- task 5: Find country reaching the highest loss from lost disputes.
select country,
  sum(case when disputes='lost disputes' then invoice_amount else 0 end) as losses_usd
from yellevate_invoices_backup
group by country
order by losses_usd desc  ----- task 5
```

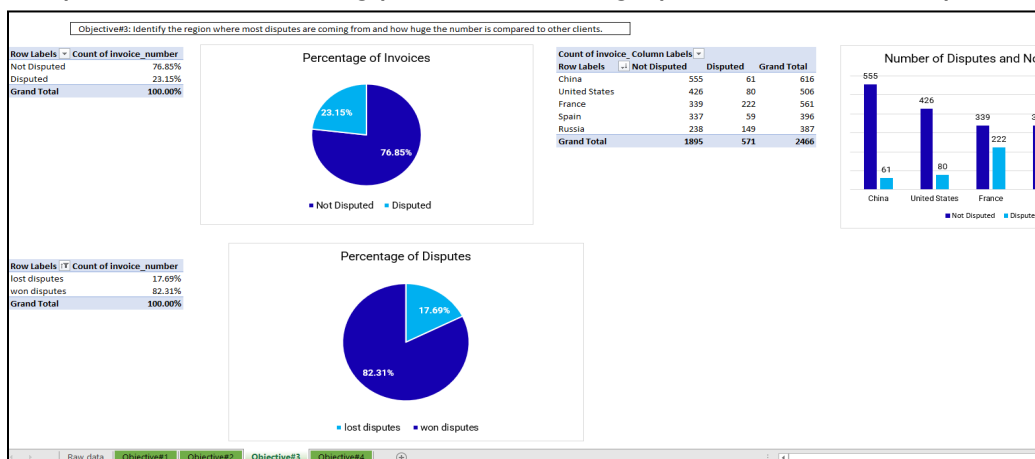
	avg_processing_time numeric	avg_disputed_processing_time numeric	pct_lost_disputed numeric	pct_losses numeric
1	26	36	17.69	4.67

	country character varying	losses_usd numeric
1	France	526264
2	Russia	81291
3	China	42630
4	United States	22936
5	Spain	17046

Then saved the results into a .csv file.

4. Create Pivot Tables and Graphs in Excel

After opening the csv file through Excel, we saved the file as an Excel Workbook and proceeded in creating pivot tables and graphs. Below is a sample of our file.



PROJECT OBJECTIVES

1. Identify the reason/s why Yellevate is losing money.
2. Recommend actionable strategies to prevent more losses.

DATA ANALYSIS GOALS

Executives at the company decided that you need to obtain the following information to identify the circumstances around the dispute problem:

1. The processing time in which invoices are settled (average # of days rounded to a whole number).
2. The processing time for the company to settle disputes (average # of days rounded to a whole number).
3. Percentage of disputes received by the company that were lost (within two decimal places).
4. Percentage of revenue lost from disputes (within two decimal places).
5. The country where the company reached the highest losses from lost disputes (in USD).

IMPORTANT ASSUMPTIONS

1. All the services Yellevate was hired to do were fully completed.
2. The quality of the services provided is not the main driving reason for these invoice disputes.
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.

RESULTS OF DATA ANALYSIS GOALS

1. The average processing time to settle invoices is **26 days**.
2. The average processing time to settle these disputed invoices is **36 days**.
3. The company lost [or opted-out] on 101 invoices or **17.68%** of disputed invoices.
4. Yellevate lost USD 690,167 representing **4.67%** of invoiced value USD 14,770,318.
5. The country with highest losses is **France** with **USD 526,264**.

INSIGHTS

Processing time to settle invoices:

We believe that processing time to settle invoices is not a factor in disputes. Knowing/tracking when the customer receives the bill will further sharpen our data analysis.

- Clients are given a 30-day grace period to settle their bills. The overall processing time of 26 days is within this grace period.
- Undisputed invoices are processed in an average of 24 days.
- Among the five countries, Spain and China are below the overall average. The rest went longer for 2-3 days but still within the 30-day grace period.

Processing time to settle disputed invoices:

Out of 100 customers, 78 disputed their bill at least once. We do not have data as to why clients dispute their bills.

The time it takes to process disputes is a factor. However, we do not know when the customer disputed the bill; we can count the number of days to settle from this date instead of the invoice date.

- A total of 571 invoices were disputed representing 23% of all invoices issued.
- France where 40% of the invoices were disputed; settlement was reached in 34 days. The United States took the longest with 41 days.
- China with only 10% disputed invoices took 34 days to settle.

country	ttl_invoices	undisputed	disputed	%disputed	Days to settle
France	561	339	222	39.57	34
Russia	387	238	149	38.50	38
United States	506	426	80	15.81	41
China	616	555	61	9.90	34
Spain	396	337	59	14.90	37

- Undisputed invoices were settled in 24 days.

Processing Time	company	no dispute	with dispute	dispute won	dispute lost
Ave. # Days	26	24	36	37	34

Percentage of disputes received by the company that were lost:

Almost 20% of the disputed invoices were lost.

- These lost invoices represent 4.1% of overall issued invoices this period.
- It takes the company 34 days to settle these lost invoices.

country	customer count	ttl invoices	amt invoice USD	disputed	amt disputed USD	lost	amt lost USD
France	23	561	3,942,291	222	1,558,241	76	526,264
Russia	16	387	2,450,206	149	1,016,383	13	81,291
China	25	616	4,004,896	61	434,536	5	42,630
United States	20	506	2,738,077	80	476,129	3	22,936
Spain	16	396	1,634,848	59	263,455	4	17,046
TOTAL	100	2,466	14,770,318	571	3,748,744	101	690,167

The reasons why Yellevate is losing money:

- Yellevate is losing more disputes in France than any other country.
 - 34% of disputed invoices are lost compared while other countries range from 4% to 10%
 - Losses in France account for 76% revenue lost by Yellevate in 2 years.
- It takes 33-days to settle disputes in France. Disputes ruled in the company's favor are settled in 37 days on average.
 - While other countries take longer to settle disputed invoices they only lose a small amount
 - France lost 3 times more than combined total losses in other countries.

Percentage of revenue lost from disputes:

In 2020 the company lost USD 267,301 of invoiced value. Significant increase in 2021 to USD 422,866; an 150% increase year-on-year.

How much is the company willing to lose in disputes in relation to total invoice value?

- Russia and Spain have decreased lost revenue by -55% and -100%, respectively while the remaining countries increased lost revenue year on year.

The country where the company reached the highest losses from lost disputes:

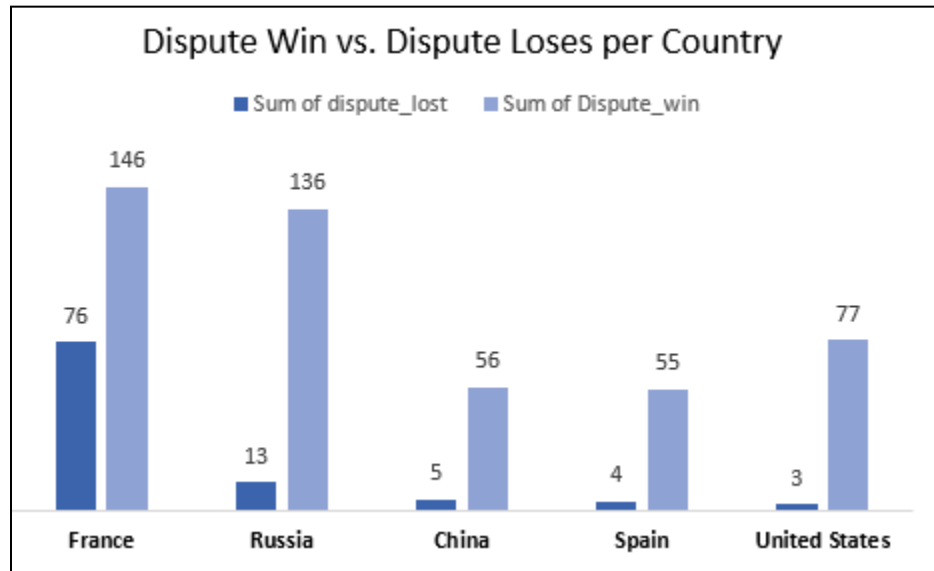
- Clients in France are the second biggest contributor of the company's total revenue next to the lead of clients in China. It generates 24.26% of the company's total revenue.
- France has the most number of disputed invoices and the most number of lost disputes.
- France contributes substantial part of revenue losses: France lost 3 times more than combined total losses in other countries.
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RECOMMENDATIONS

Bill Disputes



France has the most number of disputed invoices and the most number of lost disputes, the great part of loss revenue is in this region

- Yellevate should investigate, classify, and deduce the root causes of disputes starting in France. Since the dataset doesn't have the reasons about the disputes, we recommend Yellevate should start collecting this data moving forward.
- Conduct audit or investigation particularly to the department that handles invoices and other transactions to determine and eliminate operational issues connected to dispute losses. Immediate review of the contract and take necessary action focusing on the top 5 customers with more than 30% of lost revenue because of client disputes.

CUSTOMER ID	INVOICES	LOST DISPUTES	% LOST DISPUTES
4632-QZOKX	17	8	47%
3448-OWJOT	28	12	43%
9725-EZTEJ	26	11	42%
9771-QTLGZ	22	8	36%
7600-OISKG	23	8	35%
8389-TCXFQ	33	6	18%
9117-LYRCE	23	4	17%
4092-ZAVRG	21	3	14%
4640-FGEJI	35	5	14%
5573-KSOIA	24	2	8%
5284-DJOZO	30	2	7%

①
②
③
④
⑤

CUSTOMER ID	INVOICES	LOST DISPUTES	% LOST DISPUTES
6048-QPZCF	30	2	7%
5164-VMYWJ	31	2	6%
0783-PEPYR	21	1	5%
1447-YZKCL	23	1	4%
6833-ETVHD	33	1	3%
2621-XCLEH	15	0	0%
4651-PMEXQ	21	0	0%
7245-CKNCN	17	0	0%
7938-EVASK	21	0	0%
8976-AMJEO	27	0	0%
9322-YCTQO	19	0	0%
9758-AIEIK	21	0	0%

- From the data collected:

- The company can then improve processes to mitigate if not eliminate causes of disputes.
- Qualify and state clearly in the contract: the necessary rules and guidelines to establish limitations and qualifications of disputes
- Establish KPIs for accountable personnel to keep bill disputes to an acceptable level.
- Apply best practices from other countries where lost disputes are low

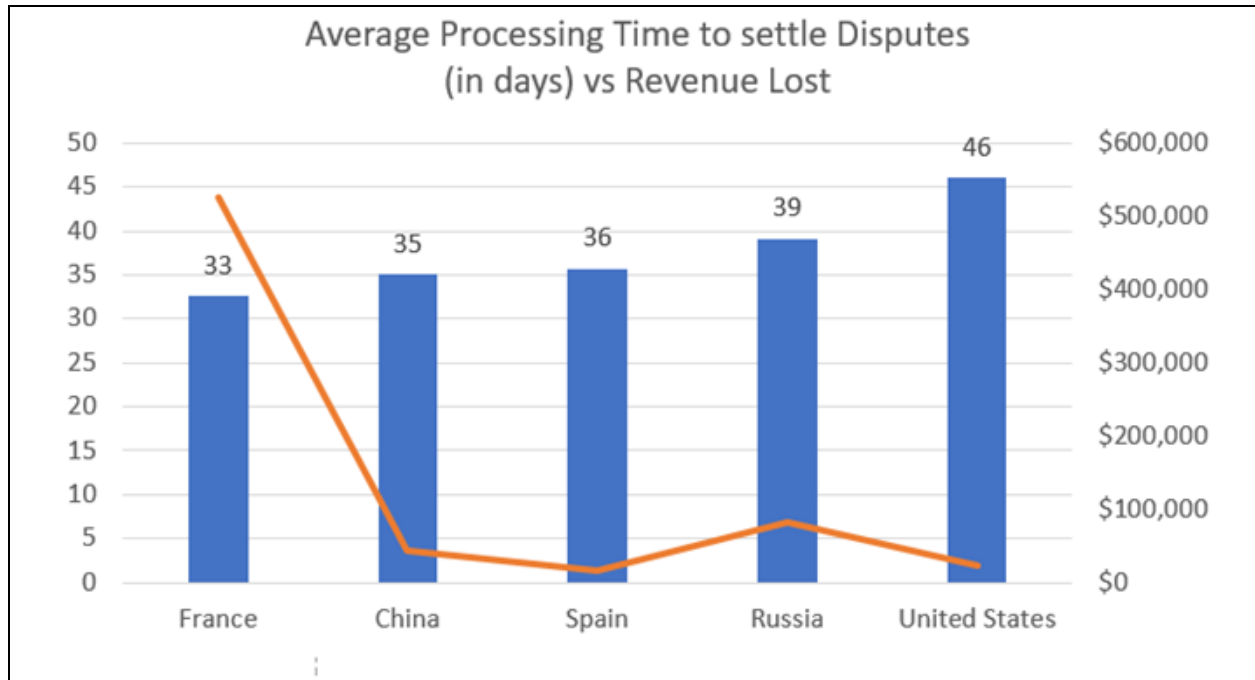
Lost Disputes/Opt-out

- Also in France, Yellevate should review the terms of the contracts offered in this region to find out the reasons why opt-out was authorized.
 - Institute process and procedures in handling and approving disputes
 - Develop a process to settle disputes within the 30-day grace period.
 - Qualify and state clearly what constitutes a valid reason to grant an opt-out for disputes
 - Establish KPIs for accountable personnel to keep opt-outs to an acceptable level
- Compare best practices in handling disputes across all markets: What are these markets doing to keep lost disputes low.

Billing Process and Credit & Collection

Yellevate to review billing, credit and collection policies and procedures:

- Determine when customers get the bill: The 30-day grace period starts when the invoice is generated. Send a statement of account to the client every end of the billing period.
- Determine when to bill a customer: When do customers get billed? After a project, a fixed date every month?
- Determine how customers pay the bill: Increase number in payment channels if applicable.
- Establish credit lines and credit limits: if a customer has outstanding balances services should be stopped. Limit the adding of invoices/projects until a dispute has been settled. Lessening overlapping open disputes.
- Create a system for customer rating and credit standing to be done annually: prompt payment or frequency of disputing bills
- Review and amendment of the contract's alignment to each country's laws and regulations connected to fund transfers, and credit and collections.



Data shows that clients in France are the fastest to settle lost disputes averaging at **33 days**, however they are also the biggest contributor of lost revenue amounting to **\$526,264**. **Why is that?**

In the **United States**, settling lost disputes takes about **46 days**, and clients in the **United States** are the least contributor of revenue lost. It is possible that the contracts or processes that Yellevate's providing in this region is effective.

It is suggested that the best practices of the people handling disputes for clients in the **United States** be applied to the people or employees who are handling disputes in **France**. **The longer the days to settle disputes, the more scrutiny, the lesser the revenue lost.**

Client Relations/Account Management

Yellevate should be more engaging for the clients in France, improving communication should help the company understand why clients in France are disputing the services offered in this region.

- Yellevate should also consider checking the market in France to see if competitors offering the same services is a challenge in the region, execute mitigation plan to solve the problem
- Communication is the key. Build performance assessment forms for every service rendered by Yellevate to its client. This form should be attached to the invoice as a supporting document and proof that the client is satisfied with the service provided to them by Yellevate. It will also reduce claims of disputes from clients.

- It's possible that due to the pandemic some clients in France are greatly affected and they wanted to make sure that their expenses are in order. They may ask to opt-out of payment to see if the company would consider it. Yellevate contracts should stipulate its term clearly and make sure that mitigating action during calamities are included if it's not already there.