

TEAM NOVA

ZENTEL TICKETING PERFORMANCE REPORT

About the dataset: This is data from a Zentel Network Service center.

Every day, customers log their different types of complaints across their branches and expect quick responses and resolutions to their queries.

Some of these customers have a Service level agreement with the Network service provider to resolve their daily queries within a particular average duration. This service center has different Managers and operators looking into the customers' issues and Performance can be measured weekly and daily.

Manager's Expectations:

- To provide a general outlook of the performance of the business based on relevant metrics.
- The top executives believe we should optimize TAT(Turn Around Time) between 6 pm to 9 pm every day due to backlash from disgruntled customers. Do you agree?
Show us the data to support your position. Hint: Round-up time to start of the hour
- To highlight key factors leading to a delay in ticket response time(Normal response time: Within 10 secs?
- To highlight which managers and operators are performing well and which are struggling to meet up with the required resolution Time.

Procedures for Data Preparation

To make sense of the dataset in response to the case study questions, we created some new columns. These are the new column and their designations:

- `Response_time_diff`: This is the time difference between when the ticket was opened to when it was responded to. This is denoted as:

$$\text{Ticket Resp Time} - \text{Ticket Open Time}$$

- `resolution_time_diff`: This is the time difference between the time the issue was resolved and the time the ticket was responded to. This is denoted as :

$$\text{Issue Res Time} - \text{Ticket Resp Time}$$

- `resolution_hour`: This is the conversion of *resolution_time_diff* to hours
- `hour_of_day`: This represents the hour of the day the ticket came in.
- `resolution_class`: This replicated the information on the resolution matrix.
- `response_class`: We categorized the responses into two categories. For responses less than or equal to 10, we classified them as good, while greater than or equal to 10 was classified as bad.
- `within_or_outside_6_9pm` : This was created in other to filter the dataset between the hours of 6 to 9pm and outside the time frame in a bid to investigate if Turn-Around-Time should be optimized within that time frame or not.

Data Quality Issues

For this analysis, all our transformations and datetime manipulations were done using Python and our visualization was done using PowerBI. We imported pandas and NumPy with their respective aliases. We converted to datetime using

pd.to_datetime() for easy manipulation. These were some of our observations on the datasets:

- Missing Fault type record: We found **526** missing records on the *Fault type*.
- **974** entries showed a **0-time** difference between *response* and *resolution* , a snapshot of what these records looks like is shown below:

Ticket Open Time	Ticket Resp Time	Issue Res Time
2020-12-01 08:09:12.134	2020-12-01 08:09:12.134	2020-12-01 08:09:12.134
2020-12-01 08:30:13.603	2020-12-01 08:30:13.603	2020-12-01 08:30:13.603
2020-12-01 08:47:24.374	2020-12-01 08:47:24.374	2020-12-01 08:47:24.374
2020-12-01 09:08:12.602	2020-12-01 09:08:12.602	2020-12-01 09:08:12.602
2020-12-01 09:11:57.896	2020-12-01 09:11:57.896	2020-12-01 09:11:57.896
...

- The *ticket close time* had **639** empty cells. Since we did not need this for calculating any key metric, it was not included in our report.
- From our data, we had **1053** rows whose *total response seconds* were less than or equal to **10** secs. Out of which **974** showed a 0-time difference between response and resolution as earlier stated.

Data Exploration and visualization

Case Study Question 1: The general outlook of the performance of the business based on relevant metrics.

From the overview page, We had the following:

- There were 5998 recorded reports in December 2020.
- We observed 274 average response time(seconds) and 2.41 average resolution time(hours)
- There were 4 managers and 28 operators. 7 operators are assigned to a particular manager.
- 89.35% (5359) of Tickets are completed while 9.49% (569) are still active and 1.17% (70) are terminated.
- Social media is the most used report channel having 28.41% of our total reports.
- The most common fault type from the report received is from the customer's end. This was noticed among 52.53%(3151) of our reports.

Case Study Question 2: One of the top executives thinks we should optimize TAT(Turn Around Time) between 6 pm to 9 pm every day due to backlash from disgruntled customers. Do you agree? Show us the data to support your position. Hint: Round-up time to start of the hour

Our Approach to answering this:

We defined our TAT as the difference between the issue response time and resolution time.

We then grouped our data into two categories:

Within 6-9 pm: These were the reports received between 6 pm to 9 pm

Outside 6-9 pm: These were the reports received outside 6 pm to 9 pm

On comparing the visualization of the above, we discovered the following:

- **95.4%(5722)** of all our reports in December were reported *outside 6 pm to 9 pm* leaving **4.6 %(276)** of the report in December *between 6 pm to 9 pm*.
Although reports recorded **within 6-9 pm** are relatively very low (**4.6%**), reports within **6-9 pm** had an average response time of **309** seconds and an average resolution time of **2.86** hours while reports that came in outside **6-9 pm** had an average response time of **272** seconds with an average resolution time of **2.39** hours.
- Comparing the number of reports that met the 10 seconds response time benchmark or service level agreement, 1.81% of the reports within 6-9 pm met the benchmark while 18.32% of the reports outside 6-9 pm met the benchmark.
- There is a greater critical resolution class (resolution hours > 3 hours) of 50.36% for reports within 6-9 pm compared to 41.33% of the reports that are critical outside 6-9 pm.

From these observations above, We agree with the manager that there is a need to optimize TAT between 6 pm to 9 pm.

Case Study Question 3: To highlight key factors leading to a delay in ticket response time(Benchmark response time: Within 10 secs)

Our approach to answering this: The reports were grouped into categories. 'Good' represented response time equal to or below 10 seconds and 'Bad' represented response time greater than 10 seconds.

The visuals were observed for all reports with Bad response time and We concluded that these three factors contributed to the response time:

- The average response time for reports is 274 seconds which is generally poor compared to the Service Level Agreement. This could be attributed to the low number of Operators being able to handle the considerably large number of reports coming in on a daily basis.
- From the 28th of December to the 31st of December, there was an increase of 144% which increased the average response time from 274 seconds to 308 seconds. This was also a factor that contributed to the ticket delay in response time for the month of December.
- Social Media is the most used report channel for the customers. From 28th to 31st, close to 80% of the reports came through the social media channel. This led to a longer delay in response time for the other channels most especially the E-mail and Phone call channel.

Case Study Question 4: Which Managers and Operators are performing well and which are struggling to meet up with the required resolution time?

Make recommendations as to how they can improve?

Approach: A calculation was done to check the percentage of reports resolved within 3 hours for each manager and Operator and what we used to measure well performing and struggling employees is based on the percentage of reports resolved within 3 hours compared with the percentage of reports resolved above 3 hours.

After taking this approach in the analysis, we discovered that;

- The top performing Manager is Kerry. 59.2% of their reports have been resolved within 3 hours which is the highest percentage compared to other managers. Other managers in descending % are Wale (58.74%), Victor (57.84%) and Seun (57.26%).
- The Top performing Operator is Kachi. 65.52% of their reports have been resolved within 3 hours which is the highest percentage compared to other operators. Other top performing operators are Vitus (63.82%), Kola (61.95%), Sola (61.90%) and Goodluck (61.86%)
- To check for struggling operators, we ranked them based on a high percentage of reports completed above 3 hours. The Operator struggling the most is Ore. 52.69% of their reports exceeded 3 hours to be resolved. Other struggling operators are Paul (46.90%), Bukky (45.76%), Fola (44.71%) and Jennifer (44.40%)

Recommendations for improvements :

- The Manager in charge of the least performing operator, should be probed about the work ethics and well being of the operator, as well as the working condition in comparison to other operators.

- The least performing operator should be made aware of the poor performance which could serve as a motivation for an improved performance in January.
- In order to keep the team morale as high as possible, the operator with the top performance should be rewarded and recognized and also allowed to share their strategy used for adhering to the required benchmark.
- Operators have fixed managers. Perhaps a rotation such that struggling operators will get to work under top performing managers, this could improve the general Operator performance.
- As observed with the surge in reports within the 28th and 31st of Dec, 2020, and the over reliance on social media as the most preferred report channel, there's a need to have more operators in order to handle the influx of reports through other channels in the future.
- An automated response scheme should be created for the most common type of complaints, this could help reduce the number of redundant reports the operators would have to respond to.

Conclusion:

From the results outlined above, seeing as future explorative and prescriptive data analytics is key to the company's growth and services ,extra attention should be given to the data extraction pipeline for time based fields in order to mitigate data quality issues during the course of analysis or data entry.

Also, in general , no operator met with the required Service Level Agreement, there might be a need to restructure the SLA or better still hire more operators and create automated responses on social media channels in order to filter out common reports , this would create a room for the operators to handle more pressing issues.

We believe we have been able to give reasonable insights and recommendations to justify the analysis carried out for this project.

A link to the published PowerBI report:

<https://app.powerbi.com/groups/me/reports/5dc30617-de3d-4106-b6cd-325f97fc6c8d/ReportSection>

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