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The Influence of Text Capitalization on Service Desk Evaluations: A Case Study in User Perception

Marciel Mario Degasperi[1], Isabela Faria Moyzes da Silva[2]

[1]*Research and Innovation Center - NTT DATA Businness Solutions*
Street Neves Armond, 210, 29052-280, Vitória/ES, Brazil
Marciel.Degasperi@nttdata.com
[2]*Human Resources - NTT DATA Businness Solutions*
Street Neves Armond, 210, 29052-280, Vitória/ES, Brazil
Isabela.Silva@nttdata.com

Abstract. Formal elements of textual language can affect the user experience. Writing style can intensify high-arousal emotions, which can directly influence the interpretation of messages in service contexts. This study presents an analysis of the impact of the exclusive use of capital letters in Service Desk systems and its relationship with customer service evaluations. The results of this study show that formal aspects of written language, such as the use of upper or lower case letters, directly influence the user experience and the efficiency of the service provided. Small linguistic choices, such as the way the text is presented, are relevant to the perception of service quality. Thus, typographic elements, often overlooked, can have a direct impact on user satisfaction.

Keywords: Service Desk, Written Communication, Uppercase, Customer satisfaction, Sentiment Analysis

1 Introduction

Customer satisfaction is a key strategic factor for companies to remain competitive and is directly influenced by the perceived quality of the services provided[1]. Organizations that establish effective communication strategies can strengthen their brand, build lasting customer relationships, and adapt more agilely to innovative solutions[2].

In this context, Service Desk systems are essential tools for communication between companies and their customers. They enable organized and efficient recording, analysis, and resolution of technical issues, serving as a central channel for interaction[3].

Reducing friction in the customer experience is a common goal for companies. While some types of friction can be constructive, adding value to the relationship and the product, "frustration friction" should be avoided. This type of friction creates obstacles and impedes the progress of the customer without generating perceived value, thereby compromising their experience[4].

According to Norman[5], negative affective states tend to narrow cognitive processes, hindering creativity in problem solving and reducing tolerance for minor difficulties during interaction. Inefficient communication is one of the factors that can generate this kind of friction[4]. For Ponzoni and Ecco[6], communication is a codependent relationship: it is essential both for the sender to convey their message clearly and for the receiver to interpret the underlying intent accurately. Furthermore, the context in which communication occurs exerts a significant influence on the communicative process.

Among the elements influencing written communication in service interactions typographic style is particularly noteworthy. According to Heath[7], the use of uppercase letters intensifies prosodic characteristics such as tone, volume, and speed, simulating an agitated or shouting voice. This writing style can directly affect the emotional perception of a message in service contexts. Text mining studies indicate that the way messages are structured, including capitalization, can significantly impact customer satisfaction ratings. Clear and appropriately capitalized responses are often rated higher[8].

This study investigates the relationship between the use of uppercase letters and user evaluations of service tickets within a Service Desk system. Due to technical limitations present since its inception, the system in question exclusively supported uppercase-written text. However, as of December 2024, this restriction was removed, allowing for the use of both lowercase and uppercase letters in message bodies.

1.1 Objective and Hypothesis

Objective: Assess the impact of removing the mandatory use of uppercase text on the evaluation of service tickets within the Service Desk system.

Hypothesis: The average customer satisfaction rating during the period when the system allowed the use of mixed-case text is statistically higher than that of the period when only uppercase letters were utilized.

2 Methodology

2.1 Dataset

For this study, a period of five months before and five months after a change in the Service Desk system was selected. This change enabled the use of mixed-case letters in messages. In total, 50,449 service tickets with exclusively uppercase text were collected before the modification, and 49,321 tickets with mixed-case text were collected after the change. These tickets correspond to interactions from 266 distinct clients with the system. Service tickets are rated by users on a scale from 1 (very dissatisfied) to 5 (very satisfied), according to the standard evaluation system used in the Service Desk.

In compliance with the Brazilian General Data Protection Law ("Lei Geral de Proteção de Dados" - LGPD)[9], the database was anonymized to prevent identification of sensitive data. The following measures were taken:

1. The names of clients, companies, and users were removed and replaced with unique numerical identifiers;
2. The textual content of the conversations was omitted and replaced by two indicators:
    - A case style indicator (identifying whether the text was in uppercase or mixed-case);
    - The result of the sentiment analysis applied to the original textual content.

2.2 Evaluation of Results

The analysis of the results was performed on the basis of statistical indicators. As a complementary validation method for user-assigned ratings, a sentiment analysis algorithm was applied to interaction texts. This allowed for a comparison between the perception expressed in the textual content and the final registered evaluation.

2.3 Development Tools

The Python programming language was used for data processing within the *Google Colaboratory* (*Colab*) development environment. *Colab* is a free platform developed by *Google* that allows the execution of Python code with access to advanced computational resources, such as GPUs and TPUs.

For statistical analysis, the *scipy* library was used[10].

Sentiment analysis was performed using the *gemini-2.5-pro model*, developed by Google[11]. The effectiveness of using large language models (LLMs) for this task is supported by studies such as that of Buscemi and Proverbio[12]. For processing, only the client-submitted text from each ticket was collected, and all content was converted to lowercase to avoid bias stemming from capitalization. The following prompt was then used: "*Analyze the sentiment of the text below and provide only a single value on a 5-point Likert scale, where 1 represents 'Very Negative', 2 'Negative', 3 'Neutral', 4 'Positive', and 5 'Very Positive'*".

3 Results

The initial analysis aimed to identify a potential change in service ticket evaluations following the change in the text entry style within the Service Desk system. Table 1 presents the mean, median, and standard deviation of the ratings assigned to service tickets before the change (uppercase-only text) and after the change (mixed-case text).

It is observed that the average evaluation for mixed-case tickets is higher than that for uppercase tickets. Figure 1 illustrates the distribution of evaluations assigned to service tickets, grouped by score, comparing the two text styles.

Based on the figure, an increase in the frequency of maximum-score evaluations and a decrease in the frequency of minimum-score evaluations are notable.

Table 1. Statistical Summary by Text Style

Text Style	Count	Mean	Median	Standard Deviation
Uppercase	19420	4.357878	5.0	1.185263
Mixed-case	20350	4.430811	5.0	1.085831

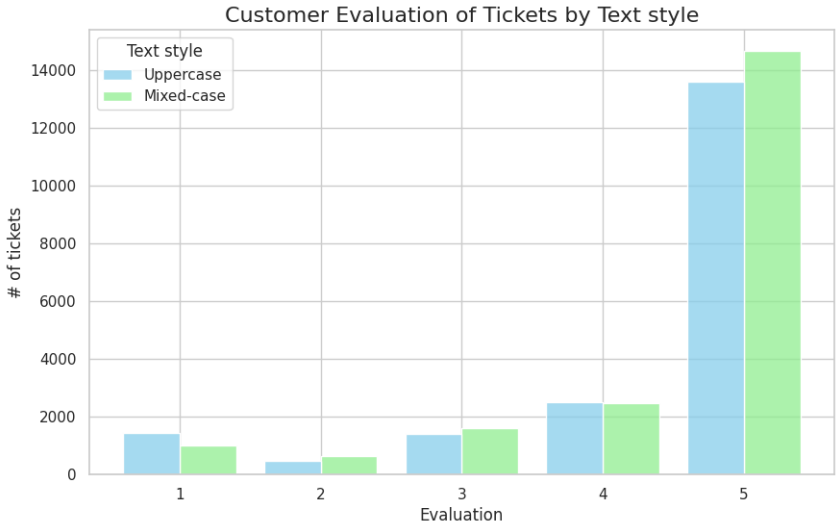


Figure 1. Distribution of service ratings by text style

This scenario leads to two fundamental questions:

1. Could the observed results be due to chance?
2. Are there other factors that could have influenced these results?

These questions are addressed in the following sections.

3.1 Could the Observed Results Be Due to Chance?

To verify whether the observed difference in the average ratings is statistically significant, an independent sample Student's t-test was applied[13]. The uppercase and mixed-case groups are considered independent, as service tickets were collected in distinct periods.

The test was carried out using the *scipy* library, adopting a significance level (α) of 0.05 for rejecting the null hypothesis. The objective was to determine whether the difference between the mean scores of the two periods is statistically significant.

The test yielded a p-value of 0.0474, which allows the rejection of the null hypothesis, leading to the conclusion that the observed difference is not due to chance. Therefore, it is statistically plausible to affirm that allowing the use of mixed-case text positively influenced the evaluation of service tickets.

3.2 Are There Other Factors That Could Have Contributed to These Results?

Despite statistical evidence that the change in typing style may have influenced the evaluations, it is important to consider that other factors could also have contributed to the observed results. These include, but are not limited to:

- The entry of new clients or users into the system;
- Training for the customer service team;
- Internal changes in technical support processes.

Many of these factors are not easily identifiable through direct data analysis.

Figure 2 shows the number of service tickets from the 10 most active clients, before and after the change. It is observed that there were no significant variations in the volume of tickets per client, which reduces the likelihood that the results can be explained solely by changes in the client profile.

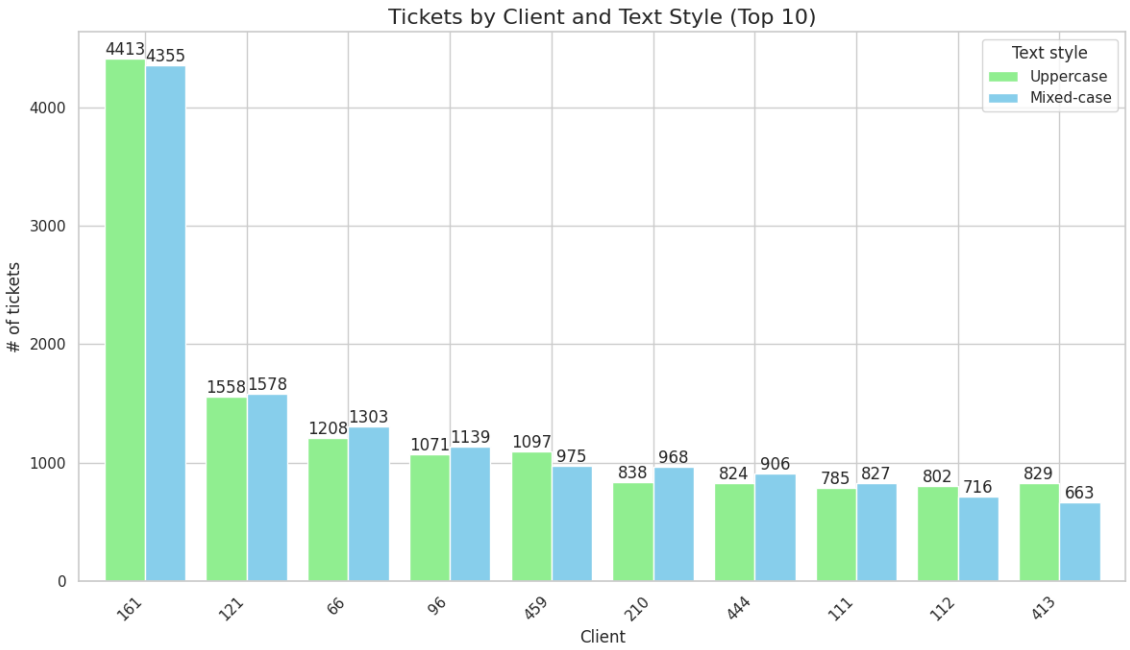


Figure 2. Number of tickets by client and text style

Finally, the sentiment analysis applied to the texts reveals a trend toward the emotional neutralization of the messages. Figure 3 shows the sentiment classification for a data sample, based on five polarity levels (very negative, negative, neutral, positive, and very positive). A reduction in emotional extremes is noted, particularly in the "very negative" and "very positive" classifications. The change in writing style not only decreased the "very negative" ratings but may also have rendered the communication less effusive. This could explain the slight drop in "very positive" ratings, resulting in a more neutral and professional communication style.

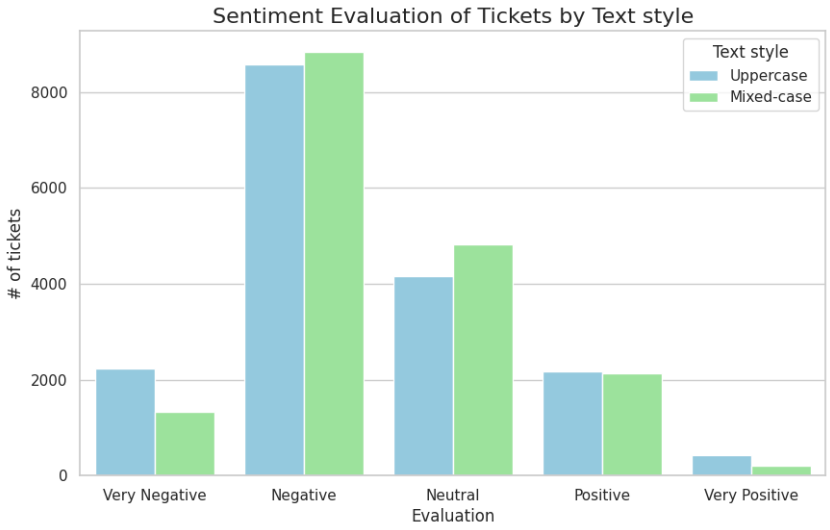


Figure 3. Sentiment evaluation of tickets by text style

This softening of emotional extremes signals that the changes in capitalization caused a shift in the perception of service, resulting in a reduction in negative reviews.

4 Conclusion

This study analyzed the impact of removing the mandatory use of uppercase letters in the texts of service tickets from a Service Desk system. By comparing over 99,000 tickets, distributed across two periods (before and after the system change), a statistically significant increase in average customer satisfaction ratings was observed after the use of mixed-case text was permitted.

The statistical analysis, conducted using the Student's t-test, indicated that the difference in means could not be attributed to chance, with a p-value lower than the adopted significance level ($p = 0.0474$). Furthermore, the distribution of scores revealed an increase in maximum ratings and a decrease in minimum ones, suggesting an overall improvement in user perception.

Although other factors may have contributed to this shift, such as variations in the client profile or operational changes, the analysis of ticket frequency per client and the neutralization of extreme sentiments in the texts reinforce the hypothesis that typographic style influences the perceived experience.

The results indicate that minor changes to the interface and methods of textual communication can have a significant impact on user satisfaction. In particular, the importance of tone and readability in the digital environment, elements frequently overlooked in technical support systems, is highlighted.

For future work, it is suggested to investigate the impact of other linguistic and visual characteristics of service interactions, such as punctuation, sentence structure, and response time, in order to deepen the understanding of factors that affect customer perception on digital channels.

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