Telecom Business Review
17 (1) 2024, 49-53
http://publishingindia.com/tbr/

Redefining Crisis Management in an AI-First World

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Abstract

India's development pace relies heavily on a consistent energy supply. Any interruptions in this vital resource can significantly impede progress across sectors and frustrate citizens, resorting to complaints and loss of trust. Indian customers utilize multiple channels like voice calling, social media, and word-of-mouth to manifest their dissatisfaction.

Users raised 76,321 complaints across social media in June 2023 and this is increasing exponentially due to the adoption of 5G technology. Around 80% of the youth actively use social media in India – making it an outlet for creative expression. When citizens share their experiences on platforms like Twitter, they not only draw attention to the issue but also amplify the pace of dialogue or engagement. Hence, catering to their concerns on social media becomes indispensable for maintaining public trust, addressing immediate needs and emergencies, and gathering feedback for future improvements and analysis.

This paper provides insights into how Generative AI, augmented with ethical AI led to an unparalleled customer experience for one of the largest electricity distribution companies which received around 2000 social media complaints every day during peak seasons. The complaints were handled by Gen AI to accommodate the operating procedures and policies existing in the organization, ensuring minimal deviation from company norms. Multiple frameworks of "customer justice" were employed to ensure that AI outputs were appropriate from anthropological lenses. The solution helped the organization surpass manual bandwidth limitations, mitigated social bias, and allowed efficient complaint tracking and resolution mechanisms leading to setting a benchmark for others in the industry.

Keywords—5G Technology, Gen AI, Ethical AI, Customer Experience, Customer Justice, Customer Mood Index, AI, Responsible AI, Customer Behavior, Experience Transformation, Value Management, Social Media

I. INTRODUCTION

Critical infrastructure serves as a bedrock for a country's development and advancement. India's development pace relies heavily on a consistent energy supply. Any interruptions in this vital resource can significantly impede progress across sectors and frustrate citizens who depend on the electricity supply for everyday endeavors, making customers resort to complaints. Indian customers utilise multiple channels like voice calling, social media and word-of-mouth to manifest their dissatisfaction with the gaps in services from various electricity distributors.

Looking at numbers from 2023, Indian users raised 76,321 complaints across social media intermediaries in June 2023 as per the transparency reports of four platforms. Additionally, according to estimates, around 80% of the youth population actively uses social media in India. Thus, social media has become an outlet for creative expression by young customers across all industries. When citizens share their experience of electricity cuts or shortages on a social media platform like Twitter, Facebook, or Instagram, they not only draw attention to the issue but also amplify the pace for dialogue or engagement. Hence, catering to their concerns on social media becomes indispensable for maintaining public trust, addressing immediate needs and emergencies, and gathering valuable feedback for experience and process improvements.

In this paper, we have provided insights into how an Infosys-led Generative AI-based Social Media Response Management System, helped one of the largest electricity distribution companies handle their customer complaints and ensured continuity of trust with its customers.

II. LITERATURE REVIEW

In June 2023, Indian users raised 76,321 complaints across various social media platforms, which is about 10,000 more than in May. Google received the highest number of complaints at 26,078, followed by Facebook with 22,4371. Other platforms like WhatsApp and Instagram also saw significant numbers of grievances. This increase is due to various factors, such as changes in platform policies, increased user activity, or specific incidents that triggered more complaints (Varadarajan & Sanzgiri, 2023).

People in advanced economies view social media and its impacts on society based on positive impact on democracy, concerns about misinformation, age differences etc. The key insights are the spread of false information as a major threat are less likely to view social media positively and the younger adults are generally more positive about social media's impact on democracy compared to older adults (Wike et al., 2022).

About 85% of Indian youth have access to smartphones and most youths spend around five hours online daily, with 80% using social media (Bohra, n.d.).

The study highlights that poor interpersonal communication by frontline employees is a major reason for dissatisfaction in complaint handling. Customers often experience negative emotions such as frustration and anger due to ineffective complaint responses. Dissatisfied customers are more likely to engage in negative behaviors like spreading negative word-of-mouth or seeking legal action. Complicated and inefficient procedures further escalate complaints and negatively impact customer satisfaction. The study suggests that communication training programs for employees are essential to improve complaint handling and enhance customer retention. (Tronvoll, 2008).

Two factor structure where categorizing attitudes as positive or negative, different personality traits, corporate distrust and general trust are different psychological factors which have influence on people's attitudes towards AI (Schepman & Rodway, 2023).

III. RESEARCH METHODOLOGY

The electricity distribution company followed the conventional process of responding to the customers on social media, manually through a third party. This approach was effort intensive and slow. The company faced a dilemma – whether to focus on cost reduction through agent optimisation or to focus on improvement of customer satisfaction by increasing the number of agents who could handle the incoming volume of complaints. During the surge times like storms, heatwaves, or natural disasters the volume of customer complaints spiked dramatically. The inefficiencies in the manual process became more apparent during these critical periods – often inviting more frustration and dissatisfaction from customers.

- The solution employs gathering customer posts on various social media channels like X (formerly Twitter) and Facebook. Channel APIs is used to extract this information. The information is extracted from both posts and direct messages. An RPA bot is put in between the channel and the Gen AI system to ensure that the extraction of the posts happened 24X7 ensuring that power outage complaints during hot summer nights or otherwise are handled immediately.
- A sentiment analysis module is integrated within the Gen AI system to categorise the posts into negative, positive, and neutral. LLM model helps in understanding the nuances of language like sarcasm. A customer retorted "Seems like our service provider is helping us have a candlelight dinner after ages". The Gen AI system correctly classified this into negative sentiment.
- The next step in the process is to understand the problem area for the customer so that the complaint can be raised with the right department. Using few-shot prompt engineering, LLM classifies the posts into various classed - supply-related issues, voltage fluctuations, billing-related issues, emergency situations, and a few other broad buckets. It also can differentiate between very similar problems like problems with wrong bill or problems related to bill payment. The solution is tuned to understand the local vernacular language including Hindi, Bangla and English. Its intelligence also lies on posts which needs transliteration where it has proven to provide right classification.
- The integration of the system via an in-house API with the CRM enables it to raise complaints. Once the complaints are raised, a personalised response along with the generated complaint number is posted

for each customer in near real-time. It is crucial to understand that each of these complaints are raised under the classes based on which the departments start taking action to resolve the issues for the customers.

Additionally, the Gen AI system is trained to understand the presence of existing complaint numbers in the posts. This helps in the continuity of the responses going to the customer and ensuring the customer does not get frustrated with the responses of the Gen AI system.

As highlighted before, it is also important for the Gen AI system to understand that which posts it should not respond to and where the human in the loop should take a lead. Cases where political parties are tagged should be handled with utmost care and that is achieved through training the system on the political motivated scenarios.

While the process is made efficient through this transformation, the business also needs to understand the value that the Gen AI system brings to the organization. We developed a Customer Mood Index (CMI) which aggregates the customer sentiments using a scoring technique and highlights the improvement in each customer's perception towards the organization. This score serves as a basis of tracking the needs of the customer. The Gen AI system also integrates with analytics tool to create visualizations for the CMI score and related posts and responses for efficient decision making for customer satisfaction improvement.

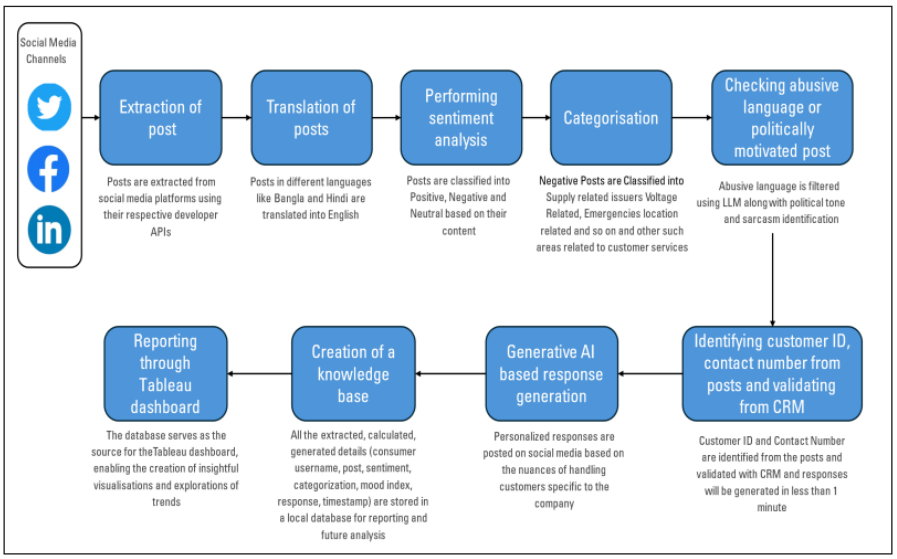

Fig. 1: Logistic Regression Confusion Matrix

The process flow diagram depicts from extracting posts from social media channels, translating posts, performing sentiment analysis, classification of posts, identifying and validating from CRM, Gen AI based response, knowledge base creation and reporting to the Tableau dashboards.

Taking it a step forward, Infosys augmented the solution with aspects of ethical AI. Each of the generated responses is vetted across multiple frameworks of "customer justice" to ensure that the customer is being provided with appropriate information to rebuild trust with the firm (Tronvoll, 2008). Mainly three main types of customer justice were subscribed to while designing this AI solution – these are namely:

Interactional Justice – This caters to the customer's perceptions of employee empathy, employee politeness and the effort made by them, and how much information is disseminated to them. It constitutes broadly of two aspects: a) Interpersonal Justice b) Informational Justice.

Procedural Justice – This caters to the customer's perceived fairness of the complaint-handling process convenience, flexibility, promptness (of response), opportunity to voice, process control, process knowledge, helpfulness, efficiency, assumption of responsibility, and follow-up.

Distributive Justice – This caters to the customer's perceived benefits and costs, tangible economic

and emotional compensation (e.g., reimbursement, product/service replacement, credit, apology, repair, refund, correction). All three justices were intricately incorporated while training the model.

The tech stack for deploying the AI solution is designed to be robust, and scalable, utilising a variety of services and components. At its core, the architecture has an API Gateway as the entry and exit point for handling complaints and ensuring communication, facilitating interaction between customer and bot on behalf of the organisation. To mitigate the big chunks of incoming queries, Simple Queue Services is employed to manage message queuing allowing queries beyond the capacity to be queued and responded in cycles. The code allows for the execution of the code in response to the events without the need for server provisioning or management. Comprehensive monitoring and error tracking tools are utilized to enable proactive identification and resolution of issues that may arise within the system. Special functions are used to manage and coordinate the execution of various processes involved in AI model deployment, ensuring reliability and scalability. A comprehensive toolset for building, training, and deploying machine learning models has been utilised for providing a virtual computing environment for running applications and services with flexibility and scalability.

IV. LIMITATIONS

The customer's worldviews are largely through two lenses. One is the need for resolution of their individual problem and the other is associated with engaging in state or country-level public issues. While the client aimed to tackle both efficiently, they had to be separated first.

Using AI tools, we distinguished between these by employing classification, and close analysis of typical words, emotions, and context which helped in differentiating problems from complaints, while sentiment analysis gauges the emotional tone to identify complaints. Flagging a politically motivated post, emotionally charged cases, profanity, fake news, or hate speech disguised as electricity complaints on social media involve multi-layered analysis and intervention. Such cases are to be handled with more care *(Astrid Schepman & Paul Rodway, 2023*). Thus, the solution is not aimed to eliminate but rather accommodate the human in the loop for more critical cases. The flagged instances are then reviewed by human moderators who apply nuanced judgment, ensuring that legitimate complaints are addressed while inappropriate content is managed effectively. This hybrid model not only upholds free expression but also safeguards public discourse by preventing the spread of misinformation and hate speech. By integrating AI and human oversight, this approach ensures a balanced, efficient, and socially responsible management of online interactions, enhancing trust and engagement between utility providers and the public.

V. RESULTS

The solution automated around 80% of the cases around supply and voltage concerns raised by customers. The response time including the time to generate complaint numbers in the CRM was brought down from 7-8 minutes to less than a minute. It increased the productivity of the customer relationship team of the organization by ~20% and helped them reduce operational costs. The costs that were related to agents spending time in negotiations, streamlining, and enhancing the efficiency of conflict resolution were reduced.

It also revolutionized user interactions by limiting the use of profanity, ensuring a more respectful communication environment helping bring transparency to their customers, and tracking value through improvement in the "Customer Mood Index" over time. It was observed that the immediate action taken by the organisation for complaints increased CMI significantly.

VI. CONCLUSION

Through its comprehensive design, this AI model emerges as a versatile tool, it is dedicated to enhancing customer satisfaction while upholding principles of fairness and respect in online discourse. Through this model, we aim not only to meet but exceed our customers' expectations, fostering trust, loyalty, and satisfaction towards the organization. The proactive approach – armed with insights gleaned from data analytics and sentiment analysis, demonstrates our commitment to customer satisfaction and helps us allocate resources efficiently, maximizing the ability of the organization to address customer concerns promptly.

To align with the need for ethical AI, this solution model draws inspiration from sociological and anthropological scientific frameworks and advocates a mix of mechanistic and organic approaches in an organization while complaint handling in addition to the customer justice frameworks. The mechanistic approach emphasizes structured procedures, clear hierarchies, and standardized responses to address complaints while the organic approach focuses on prioritizing flexibility, empathy, and adaptive responses tailored to individual needs and contexts. The model has been trained on the same lines and these approaches can be traced in the responses generated while answering concerns of customers. By incorporating the mechanistic approach, it ensures consistency, transparency, and accountability in their process. Meanwhile, the organic elements lead to fostering trust and satisfaction. A striking balance between the two enables them to address complaints effectively while demonstrating understanding and care for their stakeholders' concerns.

In the age of Anthropocene and AI, the focus has already shifted beyond mere process transformation and has moved towards experience transformation. By embracing generative AI and empathy in equal measures this solution model is hitting the right chord at catering to customers in anguish - setting a benchmark across industries.

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