

## **Problem Statement**

### **Marketing Customer Sentiment Analysis**

The contemporary digital business environment has ensured that customer feedback is a significant factor in defining whether a business succeeds or otherwise. Customer satisfaction plays a pivotal role in creating customer trust and retaining the customer in addition to remaining competitive particularly among small businesses. The customers also interact regularly with each other sharing their view about products and services in various avenues such as product reviews, emails, social media posts and online surveys. Though this feedback is highly valuable, it is generally in the form of a free text which therefore gives businesses some issues in being able to draw out any meaning.

Analysis of this vast amount of feedback manually is a big challenge in the case of small organizations that have issues with manpower and financial resources. It is time-consuming, ineffective and most likely to be marred with human errors or biases. This means that the majority of business establishments are unable to identify the general mood of the customers whether positive, negative, or even neutral. Such a lack of analytical capacity fails them to make strategic decisions in time with regard to how best to enhance the products, the quality of the services, and marketing procedures.

Also, companies risk losing vital information that could be raised up using feedback. e.g., the same issues with the quality of products, issues with the packaging or the delays of the delivery may remain unnoticed till they get out of control and begin to affect the company image. Good customer experiences and compliments which can be employed in marketing campaigns are

also untapped on the same note. It is also not possible that businesses are able to proactively modify their plans without a systematic analysis that further makes them unable to monitor the new trend in customer sentiment as the days pass.

The other significant issue is that negative emotions that are not addressed quickly can spread like wildfire in the social media and damage the brand image. On the other hand, the absence of data-driven implementations to take advantage of the positive feelings results in the absence of opportunities to enhance the customer loyalty and find new clients. Consequently, lack of an effective customer sentiment analysis puts a small business at a disadvantage against the competition that are able to utilize advanced technologies of analysis.

To remove these barriers, companies need a system that would aid them to analyse customer feedback and real time actionable feedback. This requirement can be fulfilled with the help of an AI-based sentiment analysis system based on the Natural Language Processing (NLP) methods to determine whether the feedback is positive, negative, or neutral sentiment. Such system would also identify the keywords often used, the issues which require attention immediately, and the variations in the customer mood over the period of time.

This strategy will help the small businesses save time, reduce the volume of manual labour, and will obtain the real picture of what customers think. More important is that they might utilize the results in their marketing campaigns, enhance the customer experience and build stronger and more meaningful customer relations, to lead to a sustainable growth and competitive advantage in the market.

## **PROTOTYPE OVERVIEW:**

The prototype is not similar to explore the reviews left by the customers, or the comments posted on social media simultaneously and parallel to each other, which is the analysis of the sensation of the multitude of channels: social media, email, chat support, product reviews, and survey. It uses AI to trace the trends and newly surfacing problems and customer satisfaction rate in real-time.

### **Key Features:**

#### **1. Multichannel Data Integration**

Read (Google, Amazon) and internal (customer support chat, emails, surveys) information, get social media (Twitter, Instagram, LinkedIn).

#### **2. Real Time Sentiment Analysis**

There are negative, neutral and positive emotions as per AI.

#### **3. Trend & Topic Detection**

Auto determines complaints that are trending or common complaints.

The betterment is in regard to the product teams and the assists marketing.

#### **4. Customer Segmentation**

The studies of the foundation of demographics, site and purchasing patterns.

Displays the most satisfied and non-satisfied groups of customers.

#### **5. Predictive sentiment Alerts**

The one anticipates a shift of mood and previews it.

Intimidates the supporters and promotional groups to start functioning.

## 6. Actionable Recommendations

Recommends on the marketing, product or customer relationship strategies, which is based on the trends in sentiments.

Eg with very negative feelings at the delivery time the marketing can be activated and make the customers aware of the delays.

### **PROTOTYPE VISUALIZATION:**

Dashboard view:

- Overall sentiment score : 78% positive, 15% neutral, 7% negative.
- Sentiment by Region Heatmap.
- Word cloud complaint/trending topics.
- Trend chart Sentiment trend Timeline chart.

Alert system:

- No care is taken of excessive emotions.

Technology Stack:

Backend: Python, Flask/Django

- AI/ML Hugging face Transformer, NLTK or Text Blob to perform sentiment analysis.
- Data visualisation Power BI / Tableau / Portly Dash.
- Assessment of social media and integration API.