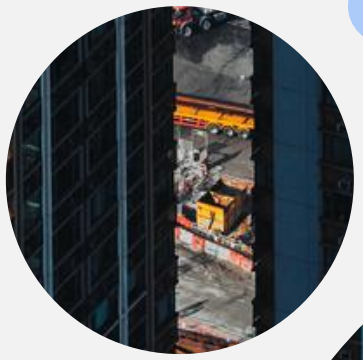
AI-DRIVEN CUSTOMER ANALYTICS PLATFORM

- NAVEEN OS

AGENDA

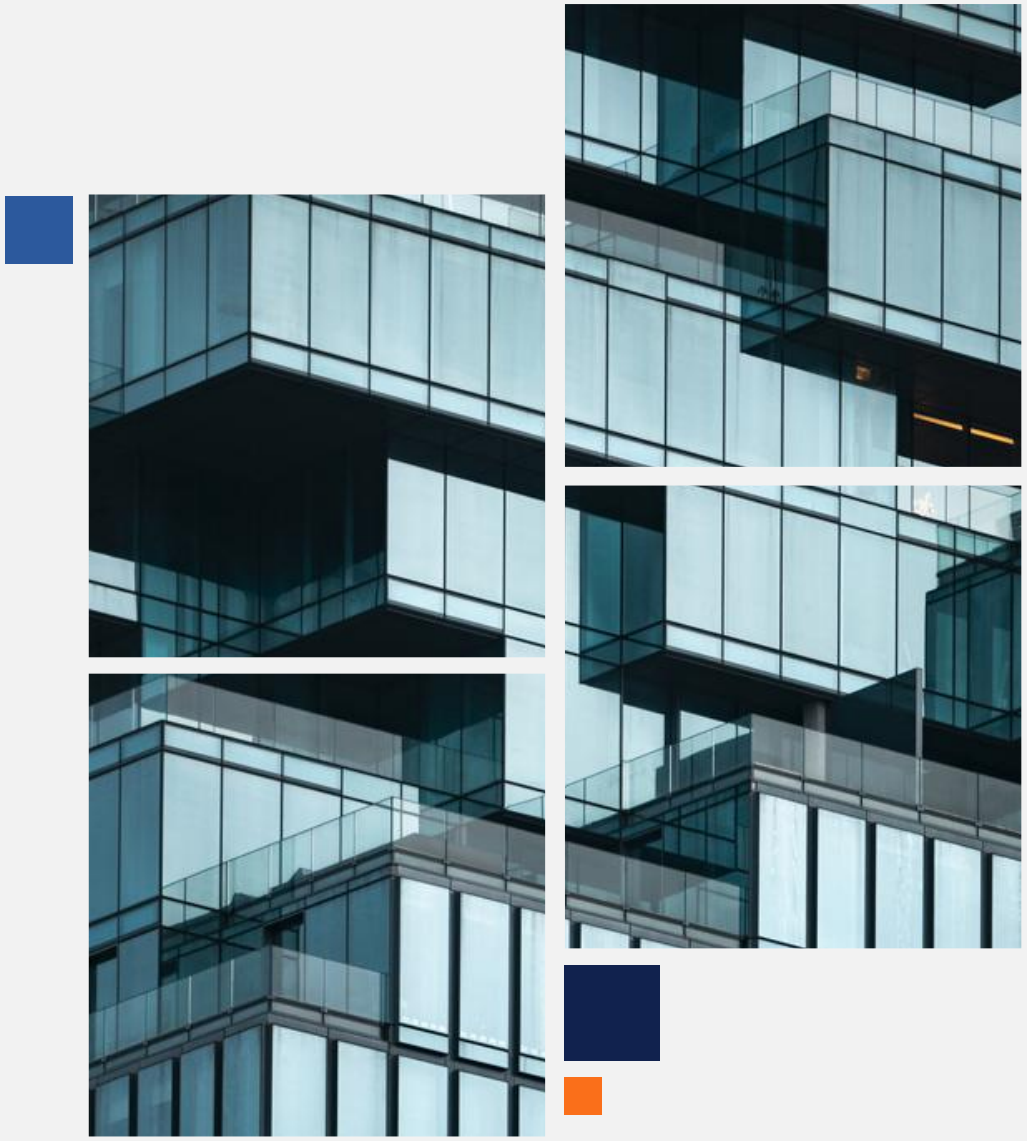
- Abstract
- Case Study
- Flowchart
- Dashboard and Prototype
- Goals
- Future Scope
- Conclusion



ABSTRACT

- **Small entrepreneurs in e-commerce struggle to interpret customer feedback, datas effectively for business growth. This project introduces an AI-driven Customer Analysis Platform integrating Natural Language Processing (NLP) for text processing and Machine Learning (ML) for feedback classification. It classifies customer feedback as positive, neutral, or negative and identifies key trends impacting customer satisfaction.**

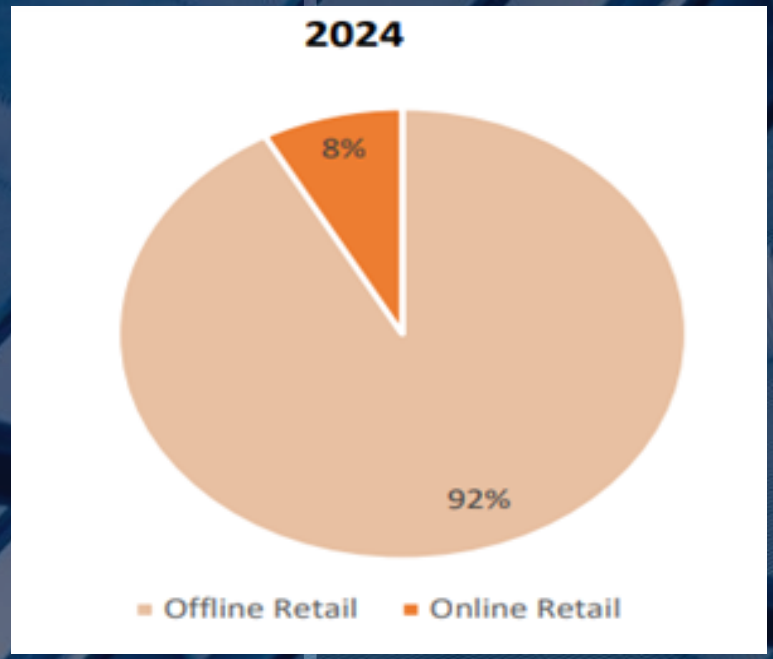
- **Additionally, ML-based predictive analytics will analyze past sales to forecast demand, optimizing inventory, pricing, and promotions. A dashboard with a real-time chatbox will provide actionable insights, while automated notifications alert businesses about negative feedback trends, high-demand products, and pricing adjustments. By transforming raw data into strategic insights, this solution enhances customer satisfaction, boosts operational efficiency, and drives profitability for small businesses in a competitive digital market.**



1. WHY WE NEED TO CREATE COMMERCE WEBSITE

In 2024, offline retail dominates 92% of the market, while online retail stands at just 8%. Despite growing digital adoption, small businesses struggle to establish an online presence due to high costs, lack of expertise, and competition from larger platforms

The platform offers an affordable store builder with customizable templates and a product dashboard for inventory tracking and sales insights, helping small businesses grow digitally and stay competitive

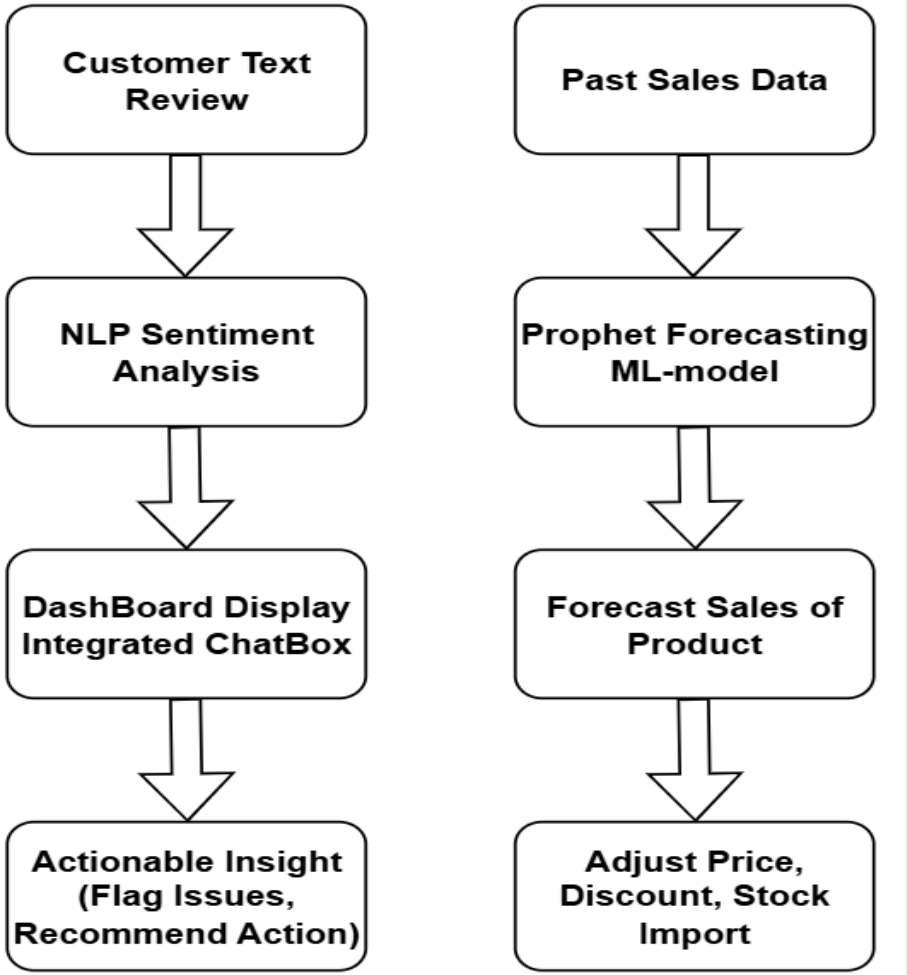


USE OF NLP MODEL INSTEAD OF HUMAN ANALYSIS

1. **Misinterpretation of Context: Subtle dissatisfaction like *"I expected better, but it's okay."* may be labeled as neutral instead of negative.**
2. **Missing Sarcasm: Sarcastic comments like *"Wow, amazing quality... for something I'd throw away!"* can be misclassified as positive.**
3. **Subjectivity & Bias: Reviews may vary in sentiment, e.g., one sees *"It's fine"* as neutral while another sees it as negative.**
4. **Ambiguity in Sentiments: Mixed feedback like *"Good product, but delivery was terrible!"* confuses sentiment classification.**

NLP tools address these issues by detecting context, sarcasm, and intent, providing precise and consistent sentiment analysis.
Scalability Challenge: With 1,000+ reviews, manual analysis is impossible. NLP tools ensure faster, accurate results

FLOW CHART



- **Early Issue Detection from Customer Feedback**
- **Identifies Seasonal Demand Trends**
- **Optimized Pricing Strategy**
- **Automated Discount Recommendations**
- **Early Issue Detection from Customer Feedback**

Early Issue Detection from Customer Feedback

Why is this important?

An **e-commerce clothing brand** faces customer complaints about **fabric quality or delayed deliveries**,

- Manually analyzing thousands of reviews is **slow and inefficient**.
- Delayed response leads to **brand reputation damage**.

leading to **negative reviews and lost customers**.

Solution: Our platform **automatically scans reviews** and flags **common complaints** early **in real time**, allowing quick corrective action.

Example- If multiple reviews mention "**late delivery**", the system **alerts the business owner** so they can **fix logistics issues before customer trust declines**.

Identifies Seasonal Demand Trends

Why is this important?

- Demand for clothing fluctuates based on seasons, festivals, and market trends.
- Brands that fail to anticipate seasonal spikes in demand lose sales opportunities.
- Without proper insights, businesses overstock or understock the wrong products.

Solution:

Our platform **analyzes past sales trends** to forecast seasonal demand and adjust inventory before peak periods.

- **Example:**
  Before **summer arrives**, the system predicts increased demand for **cotton dresses** and suggests **early stock imports** to prevent shortages.

Prevents Overstocking & Understocking

Why is this important?

- A fashion retailer struggles with excess stock of summer collections when demand drops unexpectedly.
- Understocking winter coats due to sudden cold waves results in lost sales.
- Overstocking increases storage costs, while understocking leads to dissatisfied customers.

Solution:
Our platform uses **ML-based forecasting** to predict demand accurately and adjust stock levels dynamically.

- **Example:**
  If a sudden heatwave in October reduces winter jacket sales, the system **reduces stock orders** to prevent overstocking and excess inventory.

Optimized Pricing Strategy

Why is this important?

- Fashion retailers set **static prices**, leading to **lost profits** when demand fluctuates.
- Hyped sneakers sell out instantly, while **formal wear remains unsold**.
- Incorrect pricing leads to **either profit loss or excess inventory**.

Solution:

Our platform **tracks demand in real time** and **adjusts prices dynamically** to ensure optimal pricing.

- **Example:**
  If an influencer promotes a **specific dress**, demand spikes. Instead of selling out at a low price, our system **adjusts the price upwards** to **maximize revenue**.

1. **Low Sales → Apply Discount**
    - If forecasted sales are below 50, apply a **10% discount**.
    - If forecasted sales are below 70, apply a **5% discount**.
2. **Excess Stock → Apply Extra Discount**
    - If stock is more than **1.5× forecasted sales**, apply an **extra 5% discount**.
3. **High Sales → Price Increase**
    - If forecasted sales **> 80**, increase price by **5%**.
    - If forecasted sales **> 100**, increase price by **10%**.

Automated Discount Recommendations

Why is this important?

- Clothing brands apply **heavy discounts too late**, reducing profit margins.
- Without strategic discounting, stock clearance becomes **inefficient**.
- Too-high discounts reduce revenue, while too-low discounts **fail to clear inventory**.

Solution:

Our system **identifies slow-moving stock early** and applies controlled markdown strategies.

- **Example:**
  If **winter coats aren't selling as expected**, the system suggests a **small early discount (5%)** instead of waiting until the end of the season for a **huge 50% clearance sale**.

Data-Driven Business Decisions

Why is this important?

- Retail brands relying on **manual decision-making** face inefficiencies and missed opportunities.
- Guesswork-based restocking leads to **overstock or stockouts**.
- Businesses lack insights on **customer preferences and future sales trends**.

Solution:
Our platform **provides a dashboard** with real-time sales trends, demand forecasts, and customer behavior insights.

- **Example:**
  If **black jeans** are selling well while **white jeans remain unsold**, the system suggests **reducing white jeans stock orders** and **increasing black jeans production** for the next season.

YES, ALREADY DASHBOARD WITH A PRODUCT REVIEW SYSTEM EXISTS, BUT AT THE SAME TIME, IT IS INSUFFICIENT TO ANALYZE.

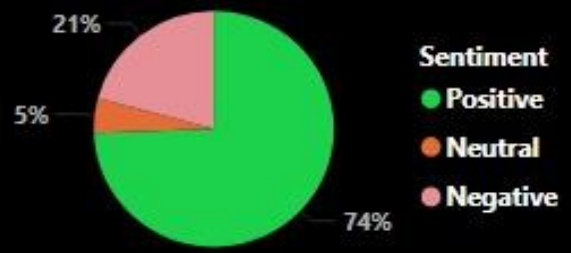
CUSTOMER REVIEW DASHBOARD

AVERAGE REVIEW RATING

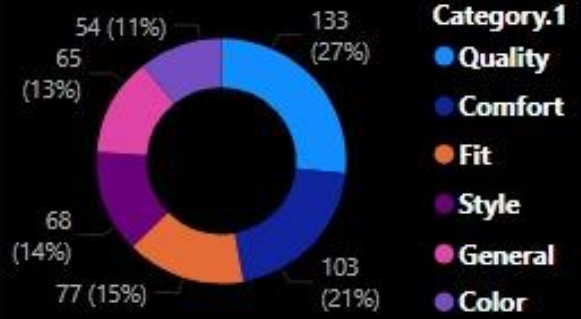
AVERAGE SENTIMENT SCORE

RATINGS

SENTIMENT ANALYSIS



SENTIMENT BY CATEGORY



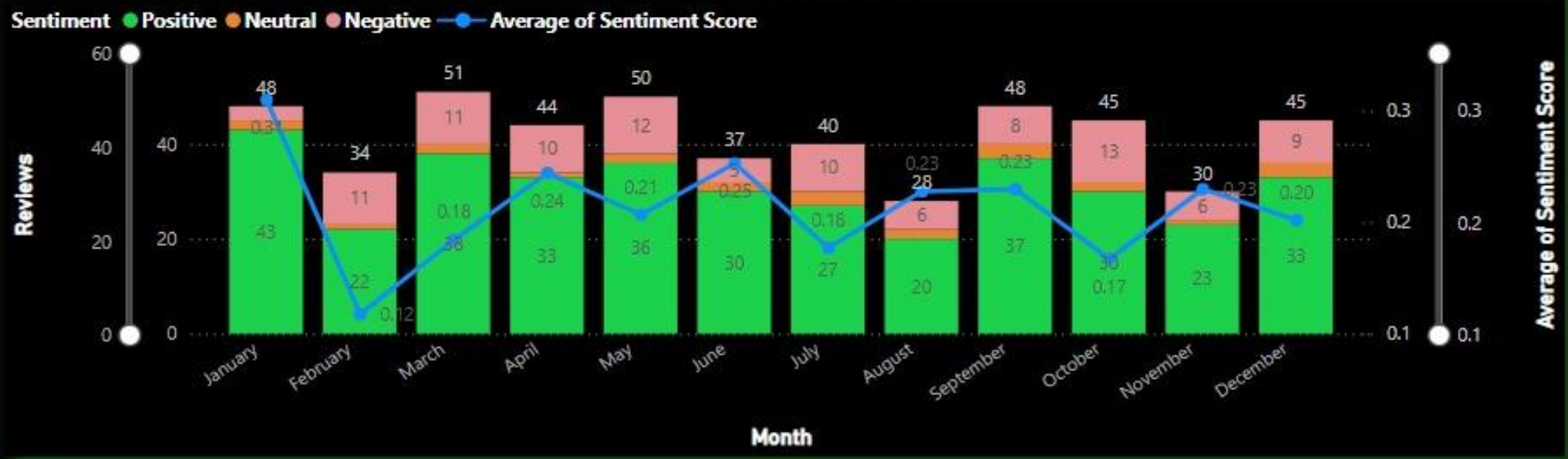
EMOTION

- [ ] Disappointment
- [ ] Excitement
- [ ] Neutral

SENTIMENT

- [ ] Negative
- [ ] Neutral
- [ ] Positive

SENTIMENT TIMELINE

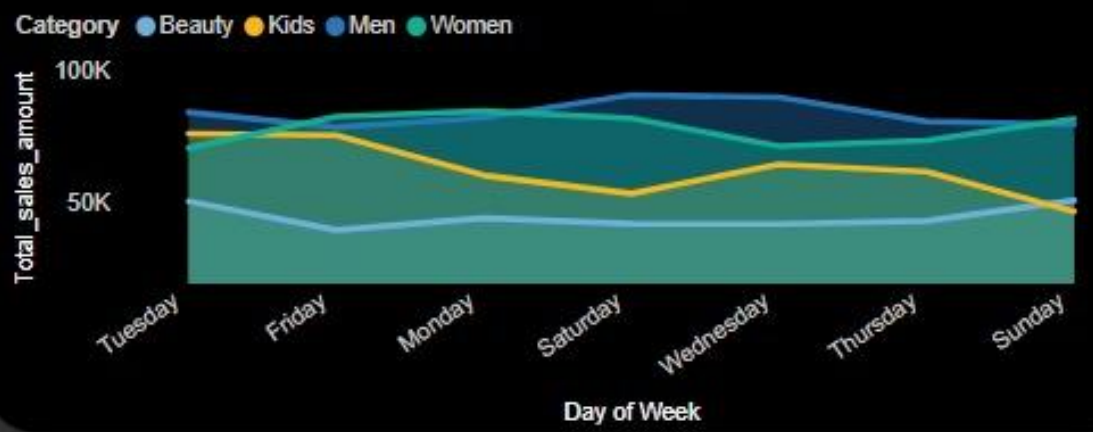


For Customer Dashboard

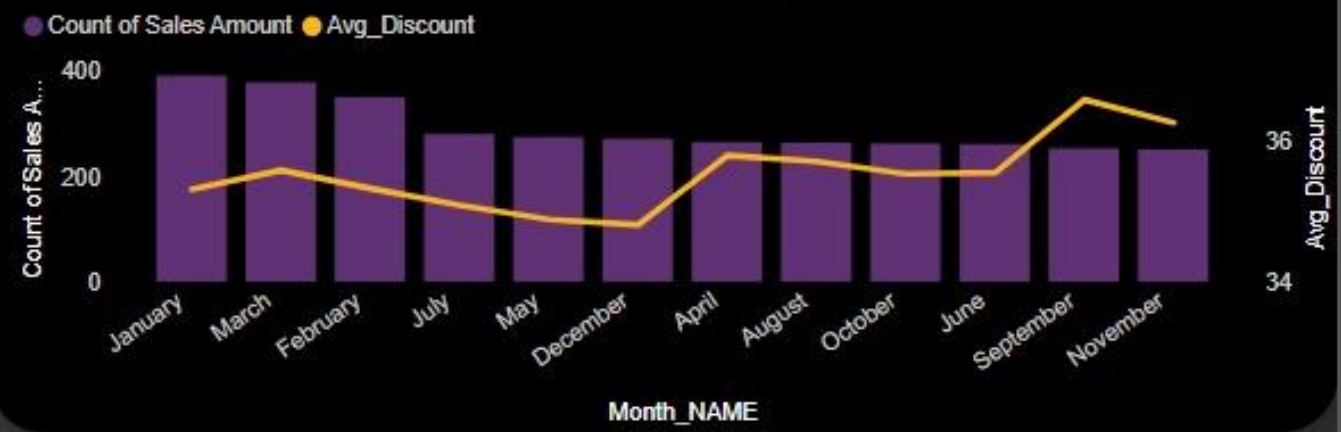
1. What is the overall customer sentiment?
2. How satisfied are customers with their purchases?
3. Which factors contribute most to customer sentiment?
4. What is the overall sentiment score, and what does it mean?
5. Which months have the highest and lowest customer engagement?
6. How can neutral reviews be improved into positive ones?

Total Orders	Total Revenue	Avg. Discount	Total Sales	Total Products	Avg. Sales Amount
3500	3M	35.51	18,83,853	3071	538.24

Total sales amount by discount



Total sales amount by discount

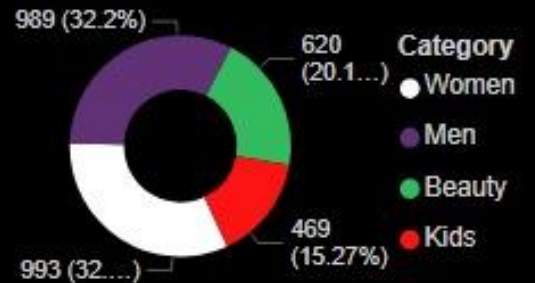


Distribution of Product

Distribution of Brand

Revenue

Distribution by Category

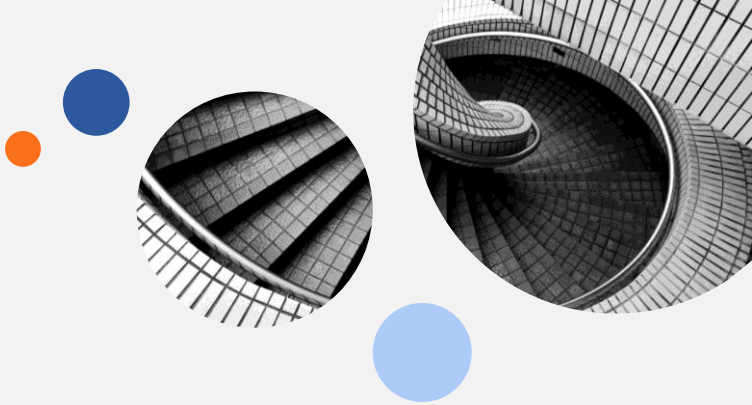


Year	Sub-category	Ratings	Category
All	All	All	All

For Company Dashboard

1. How is the overall business performing?
2. How do discounts affect sales performance?
3. Which days see the highest sales?
4. Which product categories contribute the most to sales?
5. What are the most popular products?

GOALS OF THE CUSTOMER FEEDBACK SENTIMENT ANALYZER:



1. **Enable small businesses to analyze customer feedback using NLP-driven sentiment analysis to classify reviews as positive, neutral, or negative.**
2. **Identify emerging trends, recurring themes, and satisfaction scores to provide actionable business insights.**
3. **Act as an AI-driven intermediary between customers and businesses by analyzing feedback and sales data to predict future trends.**
4. **Integrate an interactive chatbox to help businesses track real-time customer concerns and product demand.**
5. **Leverage ML-based predictive analytics to optimize inventory, pricing strategies, and promotional discounts.**
6. **Provide a dynamic dashboard with automated notifications Data-driven recommendations on import quantities to reduce losses and increase profitability.**
7. **Enhance competitive advantage in the e-commerce marketplace through AI-powered insights.**

CONCLUSION

- The Customer Feedback Sentiment Analyzer empowers small businesses with AI-driven insights, enabling efficient sentiment analysis, sales forecasting, and inventory optimization.
- By integrating NLP, ML, and a dynamic dashboard, it enhances customer satisfaction and business growth, ensuring competitiveness in the digital marketplace.