

Efficiency and Effectiveness of Feedback Management in E-Commerce using Machine Learning Algorithm

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Abstract

The feedback management portal is an online platform designed to streamline the process of collecting, analyzing, and responding to feedback from customers, employees, and stakeholders. The portal provides a user-friendly interface for users to submit feedback, which is then automatically categorized and analyzed using machine learning algorithms. Users can track the status of their feedback and receive real-time updates on any actions taken by the organization in response to their feedback. The portal also enables organizations to generate reports and insights based on the feedback data, helping them make data-driven decisions to improve their products, services, and overall customer satisfaction. Overall, the feedback management portal provides an efficient and effective way for organizations to manage and leverage feedback to drive continuous improvement.

Keywords: Feedback Management, Data Visualization, Performance Metrics, Efficiency Analysis, Effectiveness Assessment.

1. Introduction

The importance of feedback in today's fast-paced and constantly evolving business world cannot be stated, whether it's from customers, employees, or other stakeholders. Feedback can provide valuable insights into areas of improvement and help organizations make data-driven decisions. However, managing feedback can be a difficult task, especially when it comes in large volumes and from various sources. This is where a feedback management portal comes into play. A feedback management portal is an online platform that helps organizations streamline the process of collecting, analyzing, and responding to feedback. It provides a centralized location where users can submit their feedback and receive updates on any actions taken by the organization in response. With the help of machine learning algorithms, the portal categorizes and analyzes the feedback, providing valuable insights that organizations can use to improve their products, services, and overall customer satisfaction [1].

The feedback management portal not only simplifies the process of feedback collection but also enables organizations to generate reports and insights based on the data collected. This can help organizations identify patterns, trends, and areas of improvement, ultimately leading to better decision-making and increased customer satisfaction. Overall, a feedback management portal provides an efficient and effective way for organizations to manage feedback and leverage it to drive continuous improvement [2,3].

2. Literature Review

Over the past few years, there has been a growing interest in feedback management portals as a means of improving customer satisfaction and driving business success. Several studies have explored the benefits of feedback management portals, as well as the challenges associated with their implementation. One study by De Ruyter et al. (2019) found that feedback management portals can significantly improve customer satisfaction by providing a platform for customers to voice their opinions and concerns. The study also highlighted the importance of timely responses to feedback, as customers who received timely responses reported higher levels of satisfaction [11].

Another study by Lu et al. (2018) explored the use of feedback management portals in healthcare settings. The study found that feedback management portals can improve patient

satisfaction by enabling patients to provide feedback and suggestions for improvement. The study also identified challenges associated with the implementation of feedback management portals, such as the need for clear communication and training for staff [12].

A study by Zhang et al. (2019) examined the use of feedback management portals in the hospitality industry. The study found that feedback management portals can improve customer satisfaction and loyalty by enabling customers to provide feedback and receive timely responses. The study also identified the importance of analyzing feedback data to identify areas of improvement [13].

Overall, the literature suggests that feedback management portals can be a valuable tool for organizations to improve customer satisfaction, loyalty, and business success. However, successful implementation requires careful planning, clear communication, and timely responses to feedback. Additionally, the analysis of feedback data is crucial for identifying areas of improvement and driving continuous improvement [4].

3. Existing System

There are several existing systems present in feedback management portals. Here are some common features and systems:

Feedback Collection: This system allows users to submit feedback through various channels, such as web forms, emails, or mobile applications. The system can also include tools for capturing feedback from social media platforms.

Feedback Categorization: This system automatically categorizes feedback based on the content and context of the feedback. The system uses natural language processing (NLP) algorithms to identify the sentiment, topics, and keywords in the feedback.

Feedback Analysis: This system analyzes the feedback data to identify patterns, trends, and areas of improvement. The system can generate reports and visualizations to help organizations understand the feedback data and make data-driven decisions.

Feedback Response: This system enables organizations to respond to feedback in a timely and personalized manner. The system can include tools for automating responses, assigning feedback to specific teams or individuals, and tracking the status of feedback.

Feedback Management: This system provides a centralized location for managing feedback data. The system can include tools for searching, filtering, and organizing feedback data, as well as monitoring feedback activity and performance.

User Engagement: This system enables organizations to engage with users and encourage participation in feedback initiatives. The system can include tools for sending surveys, notifications, and incentives to users who provide feedback.

Overall, feedback management portals combine various systems to streamline the feedback process and provide organizations with valuable insights into their products, services, and overall customer satisfaction [5-10].

4. Proposed System

Feedback Collection: The system will provide multiple channels for users to submit feedback, such as web forms, emails, social media, and mobile applications. The system will also allow users to upload screenshots or images to provide additional context to their feedback.

Feedback Categorization: The system will use VADER analysis to categorize feedback based on the sentiment, topics, and keywords in the feedback. Users can also categorize their feedback by selecting predefined categories or creating new ones.

Feedback Analysis: The system will analyze the feedback data to identify patterns, trends, and areas of improvement. The system will generate reports and visualizations to help organizations understand the feedback data and make data-driven decisions.

Feedback Response: The system will enable organizations to respond to feedback in a timely and personalized manner. The system will include tools for automating responses, assigning feedback to specific teams or individuals, and tracking the status of feedback.

Feedback Management: The system will provide a centralized location for managing feedback data. The system will include sentiment analysis tools for searching, filtering, and

organizing feedback data, as well as monitoring feedback activity and performance. The system will also allow users to rate based on the quality of the response received from the organization.

User Engagement: The system will enable organizations to engage with users and encourage participation in feedback initiatives. The system will include tools like email and the communication portals for sending surveys, notifications, and incentives to users who provide feedback. The system will also allow users to see the status of their feedback and receive updates on any actions taken by the organization.

Overall, the proposed system for the feedback management portal will provide an efficient and effective way for organizations to manage and leverage feedback to drive continuous improvement. The system will also enhance the user experience by providing a user-friendly interface and timely responses to feedback, the figure. 1 below shows the overall proposed system developed for managing feedback. The feedback received through the portal will be submitted to the VADER (flowchart), a lexicon rule-based approach designed for sentiment analysis. The VADER is available as a Python library and can be used easily by installing, importing, and initializing the sentiment analyzer. The sentiment is analyzed by calling the polarity scores, which in turn return the dictionary of sentiment scores. The details of the sentiment scores received include the overall sentiment scores, the positive, neutral, and negative scores.

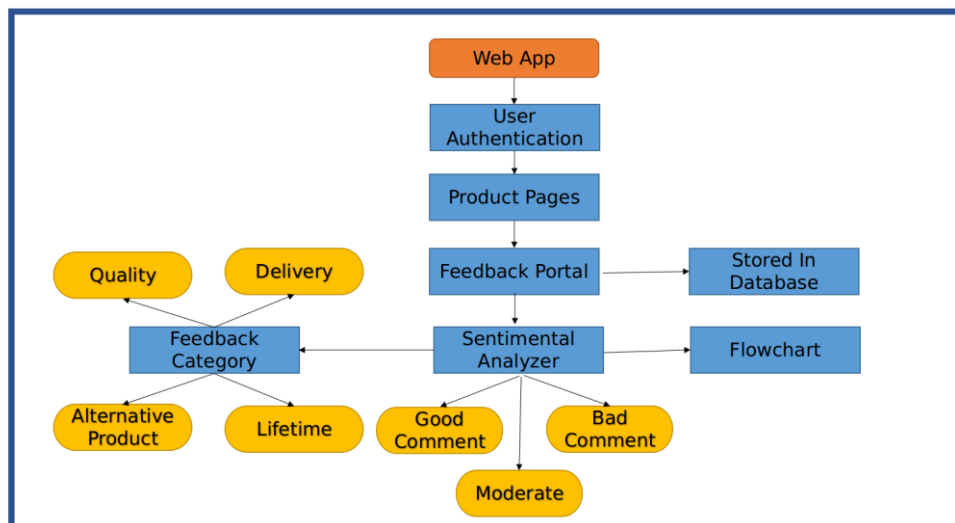


Figure 1. Proposed System

The web app is developed using Django and Sentiment analysis also performed in this app using VADER to calculate the type of feedback like Positive, Negative and Neutral. By using this the most saleable product could be identified. The feedback management system is easy to use and navigate for the customers. The feedback management system prompts the customers to provide feedback immediately after they have made a purchase. This ensures that the feedback is fresh in the customer's mind, and they are more likely to provide detailed and accurate feedback. It has a moderation and filtering mechanism to prevent spam and inappropriate content. This ensures that the feedback is genuine and helpful to other customers. Figure.2 shows the product page, and the feedback form is depicted in figure.3.

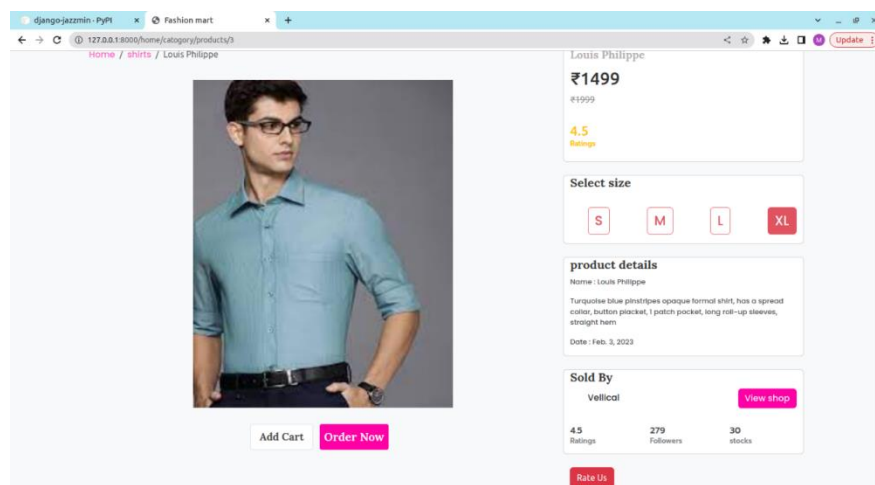


Figure 2. Product Page

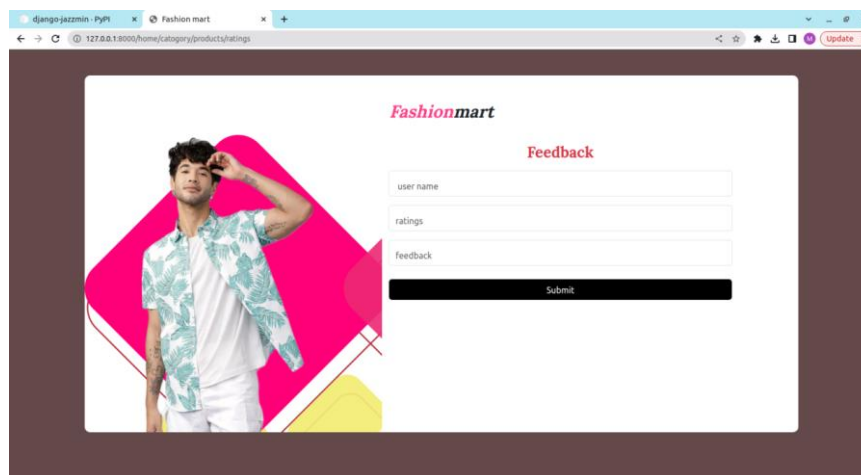


Figure 3. Feedback Form

The feedback management system provides the analytics and reporting features that allow the ecommerce store to track and analyze feedback trends. This helps in identifying areas of improvement and making data-driven decisions to enhance the customer experience. The dashboard panel is created for management to view the feedback and analytics. Customer feedbacks are stored in a database. The Stored data are displayed in a management portal

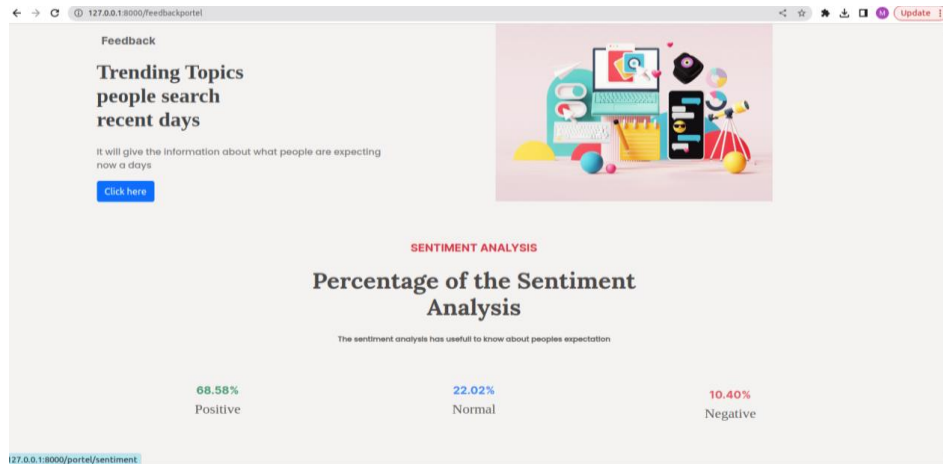


Figure 4. Feedback Observed

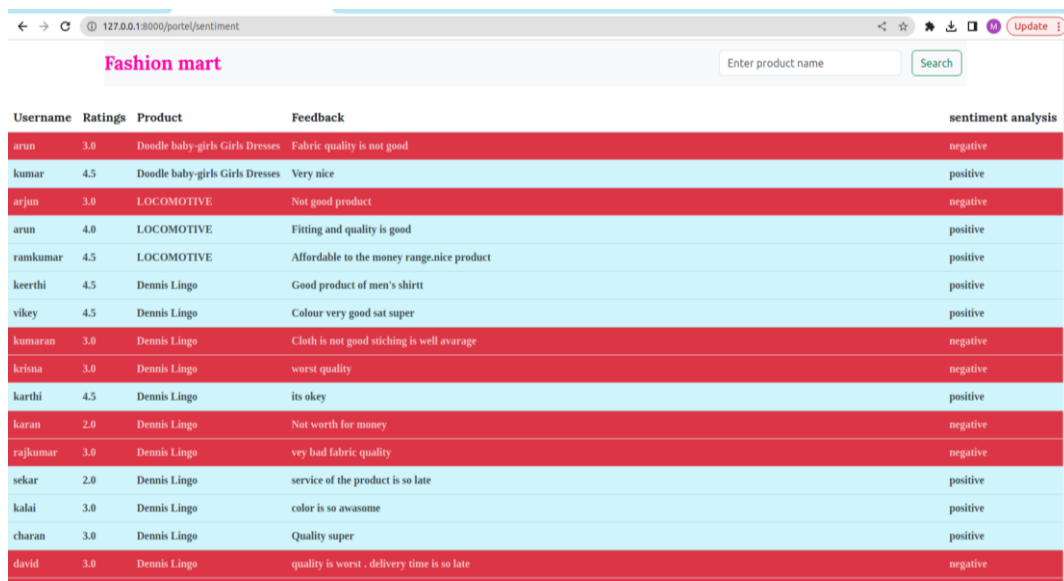
sentiment analysis is used in the feedback system to identify the feedback based on the category. If the feedback is negative then the feedback is very useful to improve the process.

VADER

VADER is its ability to handle sentiment expressed in social media and online communication platforms, which often contain informal language, slang, and emotions. VADER can effectively analyze such text and provide accurate sentiment scores.

5. Results and Discussion

The management portal is used to display feedback. In the backend process, all data has been collected. The collected data has transformed into a structured one. It will give a clear visualization of the product reviews. The positive feedback given by the customer is displayed in blue and the negative feedback is displayed in red.



Username	Ratings	Product	Feedback	sentiment analysis
arun	3.0	Doodle baby-girls Girls Dresses	Fabric quality is not good	negative
kumar	4.5	Doodle baby-girls Girls Dresses	Very nice	positive
arjun	3.0	LOCOMOTIVE	Not good product	negative
arun	4.0	LOCOMOTIVE	Fitting and quality is good	positive
ramkumar	4.5	LOCOMOTIVE	Affordable to the money range.nice product	positive
keerthi	4.5	Dennis Lingo	Good product of men's shirt	positive
vikey	4.5	Dennis Lingo	Colour very good sat super	positive
kumaran	3.0	Dennis Lingo	Cloth is not good stitching is well average	negative
krishna	3.0	Dennis Lingo	worst quality	negative
karthi	4.5	Dennis Lingo	its okay	positive
karan	2.0	Dennis Lingo	Not worth for money	negative
rajakumar	3.0	Dennis Lingo	very bad fabric quality	negative
sekar	2.0	Dennis Lingo	service of the product is so late	positive
kalai	3.0	Dennis Lingo	color is so awesome	positive
charan	3.0	Dennis Lingo	Quality super	positive
david	3.0	Dennis Lingo	quality is worst . delivery time is so late	negative

Figure 5. Customer Feedback

The overall feedback is displayed on this page. The figure.5 shows the customer feedback observed for the various products. The separate product feedback, can be found by using the search options to find the separate product feedback. The portal will display positive and negative feedback on that product.

The feedback can be split based on the category also. This splitting method is very useful to find the product analysis. Thus, enabling the customer to have the positive as well as the negative feedback about a product. If the product has a lot of negative commands, it becomes necessary to rectify the problems. the portal gives category-wise feedback so that the negative feedback posted related to service or quality or appearance also could be observed in the product analysis page displayed in the figure.6 below.

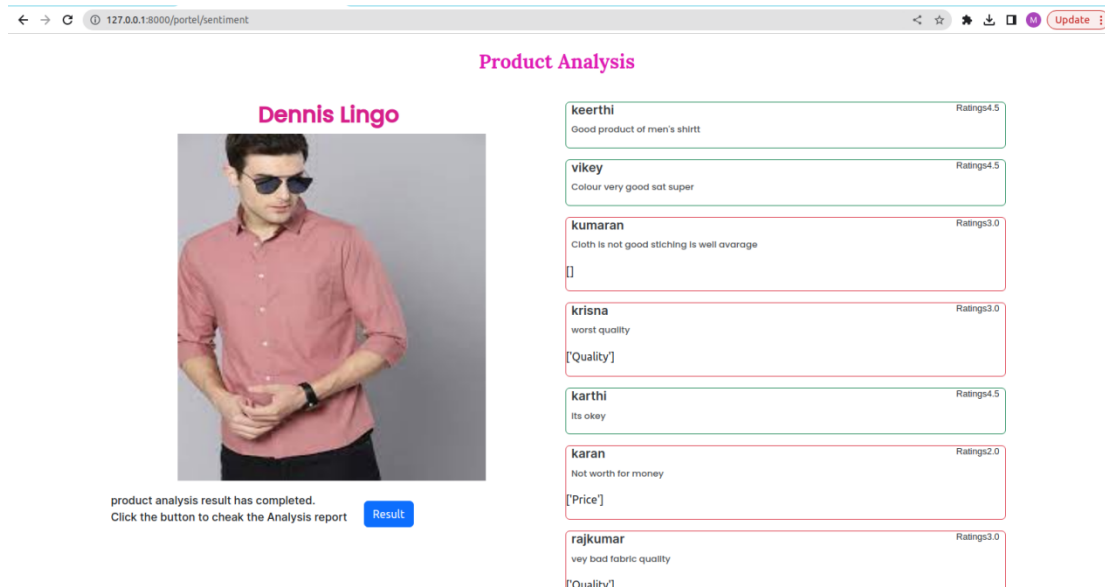


Figure 6. Product Analysis

Finally, all the product feedbacks are analyzed and displayed in a chart. The bar chart will give the whole analysis of the product as depicted in figure.7 below.

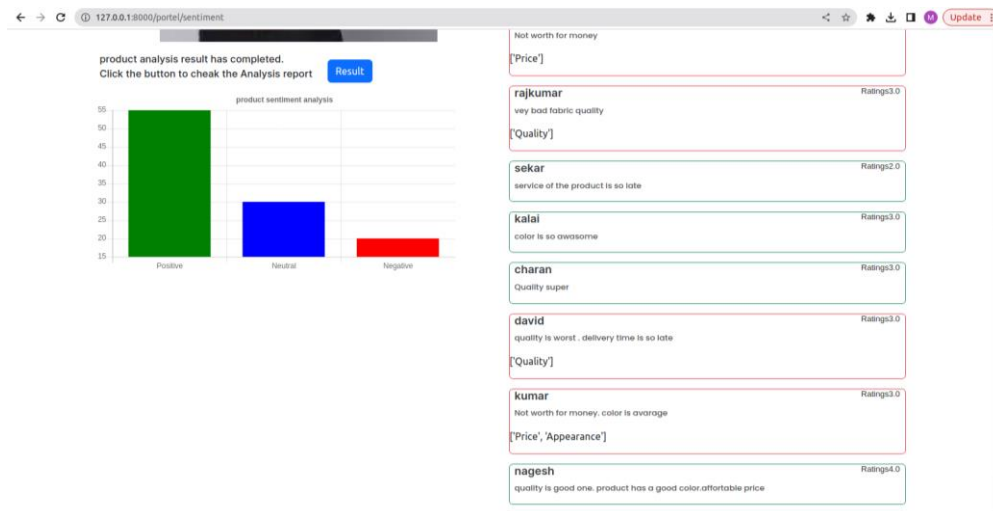


Figure 7. Analysis Report

6. Conclusion

In conclusion, this analysis provides a comprehensive overview of the complexities and nuances associated with feedback management. It underscores the importance of fostering a feedback-oriented culture and paying attention to the quality, delivery, and reception of

feedback. As organizations continue to adapt to evolving work environments and technologies, effective feedback management will remain a critical element in achieving individual and organizational success. This analysis encourages further research and practical efforts to refine and optimize feedback management practices

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