International Journal of
DATA SCIENCE AND IOT MANAGEMENT SYSTEM
Peer Reviewed, Referred & Indexed Journal
ISSN: 3068-272X www.ijdim.com Original Research Paper

FOOD DELIVERY RATINGS DASHBOARD

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ABSTRACT

The Food Delivery Ratings Dashboard is a data-driven application designed to analyze customer ratings and feedback from food delivery services. Food delivery platforms generate large amounts of data through customer orders, restaurant information, delivery experiences, ratings, reviews, order amounts, and delivery times. Analyzing this information can help understand customer satisfaction and identify factors that influence ratings.

The proposed system collects and processes information such as restaurant name, food category, customer rating, review, delivery time, order value, location, and order date. Data preprocessing techniques are applied to remove duplicate records, handle missing values, standardize ratings, and prepare textual and numerical data for analysis. The cleaned data is then used to generate meaningful analytical insights.

The dashboard provides important metrics such as average rating, total reviews, positive and negative ratings, restaurant-wise performance, and rating distribution. Users can analyze ratings based on restaurants, food categories, locations, delivery times, and different time periods. Interactive charts, graphs, tables, and KPI cards make the information easier to understand.

The system can also identify highly rated and low-rated restaurants or food categories based on the available data. Trend analysis can show how customer ratings change over time, while delivery-time analysis can help examine the relationship between delivery performance and customer ratings. These insights can support restaurants and delivery-management teams in improving service quality.

Overall, the Food Delivery Ratings Dashboard provides a centralized platform for transforming customer rating data into useful business insights. It reduces manual analysis and supports data-driven decision-making. Future enhancements can include sentiment analysis, rating prediction, complaint classification, personalized restaurant recommendations, real-time review monitoring, and Machine Learning-based customer satisfaction analysis.

I. INTRODUCTION

Food delivery services have become an important part of the modern food-service industry. Customers use delivery applications to discover restaurants, order food, track deliveries, and provide ratings and reviews. These ratings and reviews generate valuable information about customer satisfaction and service quality.

Customer ratings can be influenced by several factors, including food quality, delivery time, order accuracy, packaging, restaurant service, and overall customer experience. Understanding these factors can help restaurants and delivery platforms identify areas that require improvement. However, analyzing large volumes of customer feedback manually can be difficult.

Traditional food delivery systems primarily focus on order placement, payment processing, delivery tracking, and customer reviews. Although these features are essential, basic systems may not provide comprehensive analytical dashboards for

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understanding rating patterns. Management teams may need separate tools or spreadsheets to analyze customer feedback.

Data analytics provides methods for converting large volumes of rating and review data into meaningful information. Descriptive analytics can calculate average ratings, rating distributions, review counts, and restaurant-level performance. Visualization can present these metrics through charts and dashboards, allowing users to identify patterns more easily.

The proposed Food Delivery Ratings Dashboard combines data preprocessing, rating analysis, review analysis, trend analysis, visualization, and reporting in a single platform. It helps users understand customer satisfaction across restaurants, categories, locations, and time periods. The system can also provide a foundation for future sentiment analysis and predictive customer-rating models.

II. LITERATURE SURVEY

Customer review and rating analysis has become an important area of research in food delivery and e-commerce applications. Online platforms collect large volumes of user ratings and textual reviews after transactions. These datasets provide valuable information about customer satisfaction, restaurant performance, and service quality.

Rating-based analysis is commonly used to measure customer satisfaction. Metrics such as average rating, rating distribution, percentage of positive ratings, and percentage of low ratings can provide an overview of service performance. Comparing these metrics across restaurants and food categories can highlight differences in customer experiences.

Review analysis provides additional information beyond numerical ratings. Textual feedback can contain comments about food quality, delivery speed, packaging, order accuracy, and customer service. Natural Language Processing techniques can be used to identify common topics and sentiment within customer reviews.

Delivery time is another factor that can influence customer satisfaction. Analytical systems can compare delivery duration with customer ratings to identify possible relationships between delivery performance and satisfaction. Time-based analysis can also identify periods when delivery delays or lower ratings occur more frequently.

Data visualization is widely used for presenting customer feedback and rating information. Dashboards can display KPIs, rating distributions, restaurant comparisons, review trends, and category-level performance. Interactive filters allow users to examine specific restaurants, locations, time periods, or rating ranges.

Machine Learning and Natural Language Processing can extend rating dashboards with advanced capabilities. Sentiment classification can categorize reviews as positive, neutral, or negative, while predictive models can estimate potential ratings based on order and delivery attributes. The proposed Food Delivery Ratings Dashboard follows this analytical approach by combining rating analysis, visualization, and a foundation for future intelligent review-analysis capabilities.

III. SYSTEM ANALYSIS

The Food Delivery Ratings Dashboard is designed to process customer rating and review data and generate meaningful insights about food delivery service performance. The system accepts information such as restaurant name, food category, customer rating, review text, delivery time, order value, location, and order date. The input dataset is first validated to ensure that required fields and supported formats are available. A preprocessing module removes duplicate records and handles missing, invalid, or inconsistent values. Rating values are standardized to a consistent scale for

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analysis. Date and delivery-time fields are transformed into useful features for trend and comparative analysis. The analytics engine calculates average ratings, total reviews, rating distributions, and positive or negative rating percentages. Restaurant and category analysis is performed to compare customer satisfaction across different segments. Delivery-time analysis examines patterns between delivery performance and customer ratings. Visualization components present results through charts, graphs, tables, and KPI cards. Users can apply filters to analyze specific restaurants, categories, locations, rating ranges, or time periods. The system can generate analytical reports containing selected rating and customer-satisfaction insights.

Existing System

Existing food delivery platforms generally provide customer ratings and review features as part of their ordering systems. Customers can rate restaurants or orders and provide textual feedback after receiving their food. These ratings are useful for customers when selecting restaurants and for restaurants when monitoring individual reviews. However, basic rating systems may not provide comprehensive analytical capabilities for examining large volumes of feedback. Restaurant managers may need to manually review ratings and calculate average performance. Comparing restaurants, food categories, delivery times, and time periods can require additional processing. Traditional systems may provide an overall rating but limited information about rating trends and distributions. Textual reviews may also remain largely unstructured and may not be analyzed systematically. Identifying recurring customer complaints can therefore be difficult. Delivery-time information may not be directly connected to rating analysis. Static reports may provide limited filtering and visualization capabilities. Management teams may need separate analytics tools to obtain detailed customer-satisfaction insights. These limitations create a need for a centralized dashboard that combines rating analysis, review insights, delivery analysis, and interactive visualization.

Disadvantages of Existing System

- Limited analytical processing of customer ratings.
- Manual review of large numbers of customer feedback records.
- Limited rating-trend visualization.
- Difficult to compare multiple restaurants efficiently.
- Limited category-wise rating analysis.
- Delivery-time and rating relationships may not be clearly analyzed.
- Textual reviews may remain unstructured.
- Difficult to identify common customer complaints.
- Limited interactive filtering capabilities.
- Static reports may provide insufficient insights.
- Limited predictive analysis of customer ratings.
- Separate tools may be required for advanced analytics.

Proposed System

The proposed Food Delivery Ratings Dashboard provides a centralized platform for analyzing customer ratings, reviews, and food delivery performance. Users can upload historical rating datasets or connect the dashboard to an authorized data source. The system validates the incoming data and performs preprocessing to remove duplicates and handle missing, invalid, or inconsistent records. Rating values are standardized and review information is prepared for analytical processing. The system calculates important KPIs such as average rating, total reviews, rating distribution,

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positive-rating percentage, and low-rating percentage. Users can compare restaurant performance across different food categories, locations, and time periods. Delivery-time analysis can be used to examine patterns between delivery performance and customer ratings. Interactive charts, graphs, tables, and KPI cards provide a clear representation of customer satisfaction data. Filters allow users to focus on selected restaurants, categories, rating ranges, locations, or dates. The reporting module can generate summaries for restaurant managers and authorized administrators. An optional Natural Language Processing module can analyze review sentiment and identify common feedback topics. Overall, the proposed system combines customer-rating analysis, delivery analysis, visualization, and reporting in a unified platform.

Advantages of Proposed System

- Provides centralized customer-rating analysis.
- Automates rating and review-data processing.
- Calculates important rating KPIs automatically.
- Provides restaurant-wise performance analysis.
- Supports food-category comparison.
- Identifies rating distributions and trends.
- Analyzes delivery-time patterns.
- Provides interactive dashboards and charts.
- Supports filtering by restaurant, category, location, and date.
- Reduces manual review-analysis effort.
- Supports analytical reporting.
- Provides a foundation for sentiment analysis and rating prediction.

IV. METHODOLOGY

The methodology begins with collecting historical food delivery ratings and review data from an authorized dataset or platform. The collected dataset is validated to check its structure, required fields, data types, and completeness. Data preprocessing is performed to remove duplicate records and handle missing, invalid, or inconsistent values. Rating values are standardized into a common numerical scale for accurate comparison. Date, location, restaurant, and delivery-time fields are transformed into suitable analytical features. Exploratory Data Analysis is performed to understand rating distributions and customer feedback patterns. Restaurant-wise and category-wise analysis is conducted to identify differences in customer satisfaction. Delivery-time analysis is performed to examine patterns between delivery duration and customer ratings. Trend analysis identifies changes in ratings and review volumes across different time periods. Visualization techniques present results using bar charts, line graphs, pie charts, tables, and interactive dashboards. Users can apply filters to examine selected restaurants, food categories, locations, ratings, or time periods. The complete methodology combines data collection, validation, preprocessing, feature engineering, exploratory analysis, rating analysis, delivery analysis, visualization, filtering, and reporting.

SYSTEM ARCHITECTURE

The system architecture consists of several interconnected layers that process food delivery ratings and generate customer-satisfaction insights.

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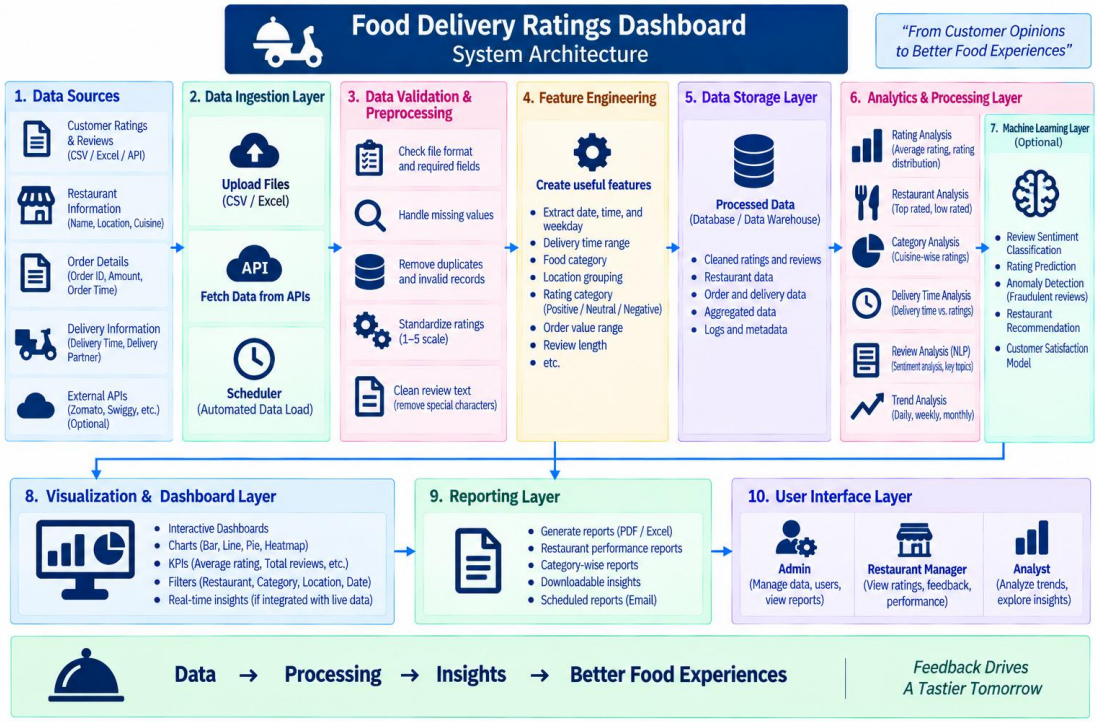

The Data Source Layer provides customer ratings, reviews, restaurant information, order details, and delivery records from authorized sources. The Data Input Layer accepts data through CSV, Excel, databases, or APIs. The Data Validation Layer checks file formats, required fields, data types, and basic data quality. The Data Preprocessing Layer handles missing values, duplicate records, invalid ratings, and inconsistent formats. The Feature Engineering Layer creates useful attributes such as rating category, delivery-time range, review date, food category, and location group. The Data Storage Layer securely stores cleaned rating, review, restaurant, and delivery information. The Analytics Processing Layer calculates average ratings, review counts, rating distributions, positive-rating percentages, and other KPIs. The Restaurant and Category Analysis Layer compares customer satisfaction across restaurants, food categories, and locations. The Delivery Analysis Layer examines relationships between delivery duration and customer ratings. The Visualization Layer presents results through dashboards, charts, graphs, tables, and KPI cards. The Reporting Layer generates analytical reports for authorized restaurant managers and administrators. An optional NLP and Machine Learning Layer can provide sentiment analysis, review classification, rating prediction, and anomaly detection in future versions.

V. RESULT AND OUTPUT

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VI. CONCLUSION

The Food Delivery Ratings Dashboard provides a data-driven solution for analyzing customer ratings, reviews, restaurant performance, and delivery-related information. The system transforms raw food delivery data into meaningful insights through data preprocessing, analysis, visualization, and reporting.

The dashboard analyzes important factors such as average rating, total reviews, restaurant-wise ratings, food categories, delivery time, customer sentiment, and rating trends. This helps users understand customer satisfaction and identify patterns that may influence the overall food delivery experience.

Interactive visualizations such as rating distributions, rating trends, restaurant comparisons, category-wise ratings, and delivery-time analysis make complex data easier to understand. KPI cards and filters allow users to quickly examine important performance indicators and focus on specific restaurants, categories, locations, or time periods.

The proposed system can help restaurant managers and delivery-service administrators monitor customer satisfaction, identify areas that require improvement, and understand customer feedback more efficiently. It also reduces the effort involved in manually analyzing large volumes of ratings and reviews.

In the future, the system can be enhanced with real-time review monitoring, advanced Natural Language Processing, sentiment analysis, rating prediction, complaint classification, personalized restaurant recommendations, anomaly detection, and automated alerts. These improvements can make the dashboard more intelligent and useful for improving food delivery services and customer experience.

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ISSN: 3068-272X www.ijdim.com Original Research Paper

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