ANALYTICS SUMMARY REPORT

1. Objective

The objective of this analytics report is to evaluate the recipe dataset generated through the Firebase-based data engineering pipeline. The report aims to:
• Analyze recipe characteristics such as difficulty, preparation time, and ingredient usage.
• Assess user interaction patterns including views, likes, and overall engagement.
• Provide visual and statistical insights to understand trends within the dataset.
• Demonstrate the effectiveness of the full ETL workflow, from Firestore extraction to validated analytics.

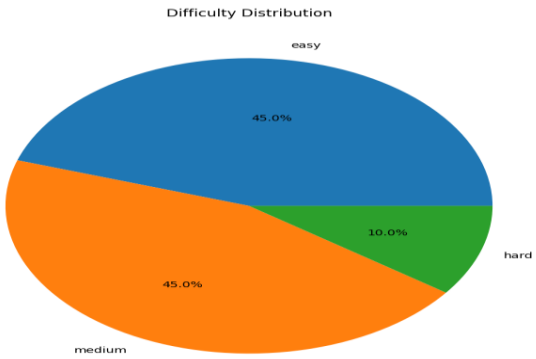
2. Executive Summary

This professional report summarizes key analytical findings derived from a dataset of 20 vegetarian recipes, 10 users, and 120 interactions. Pav Bhaji acts as the primary recipe in the pipeline. Using a structured ETL workflow, raw Firestore data was exported, cleaned, validated, and analyzed to reveal trends in ingredients, engagement, recipe popularity, and complexity.

3. Key Numerical Insights

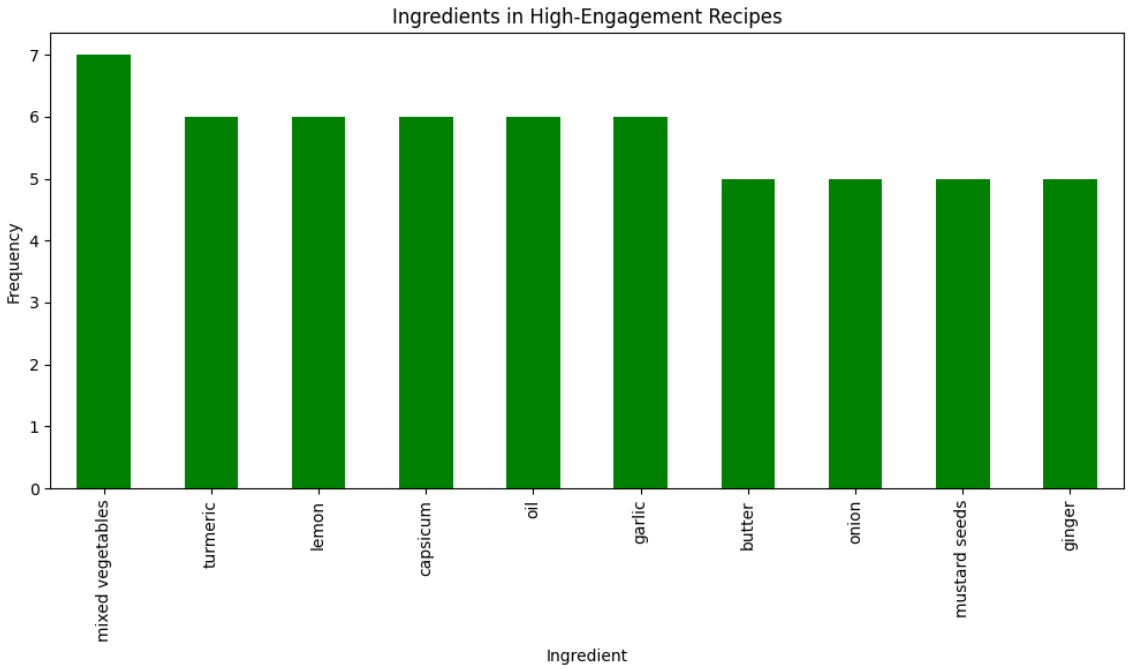
• Average Preparation Time: 18.10 minutes
• Average Total Cooking Time: 47.55 minutes
• Correlation (Prep Time vs Likes): -0.0073
• Average Steps Per Recipe: 7.05

Difficulty Distribution



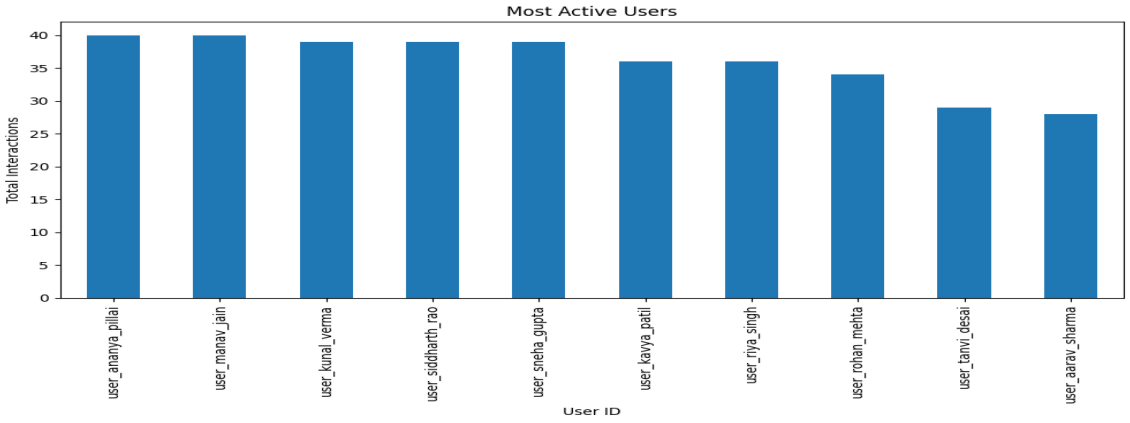
This pie chart displays the distribution of recipe difficulty levels. The dataset consists of 45% easy, 45% medium, and 10% hard recipes. The balance between easy and medium difficulty indicates the dataset is beginner-friendly while still offering moderate complexity.

High-Engagement Ingredients



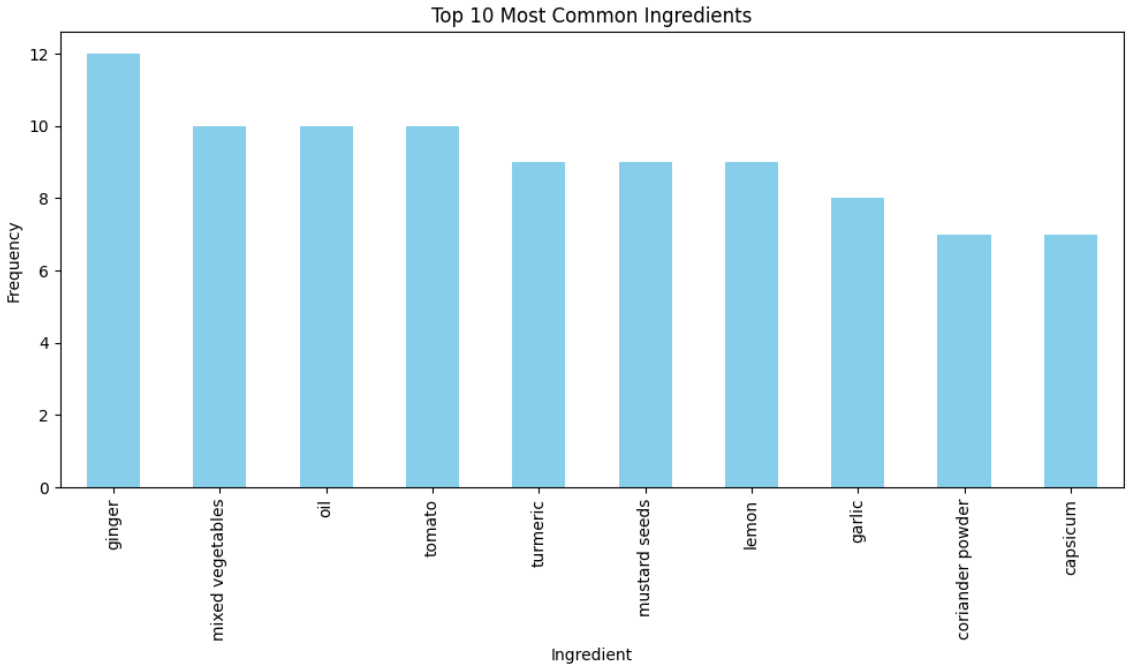
This bar chart highlights ingredients found most frequently in high-engagement recipes (i.e., recipes with above-median likes). Common masala components like turmeric, garlic, and mustard seeds appear frequently, showing that rich-spiced dishes draw greater user interest.

Most Active Users



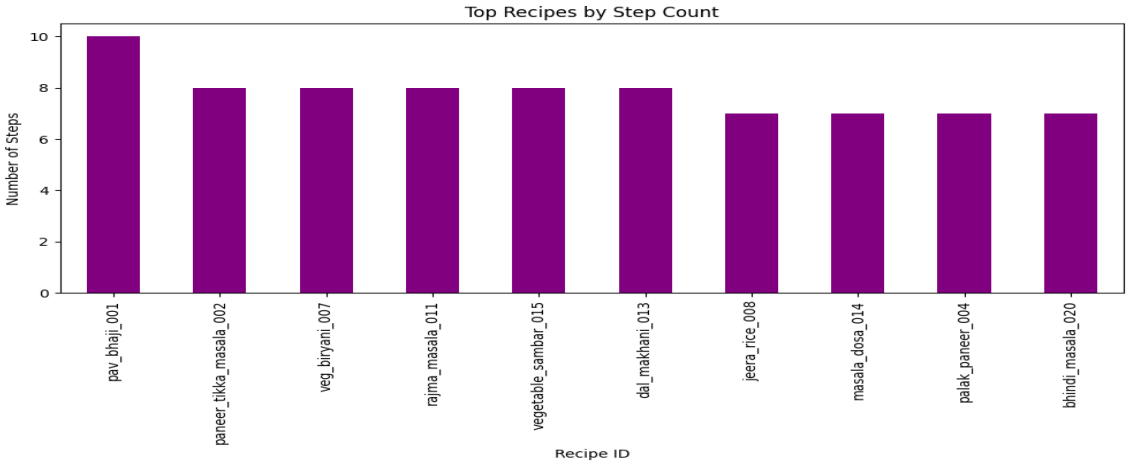
This visualization shows users with the highest number of interactions. Users such as Ananya Pillai, Manav Jain, and Kunal Verma exhibit the highest engagement, contributing over 35–40 interactions each. This helps identify power users within the dataset.

Top 10 Most Common Ingredients



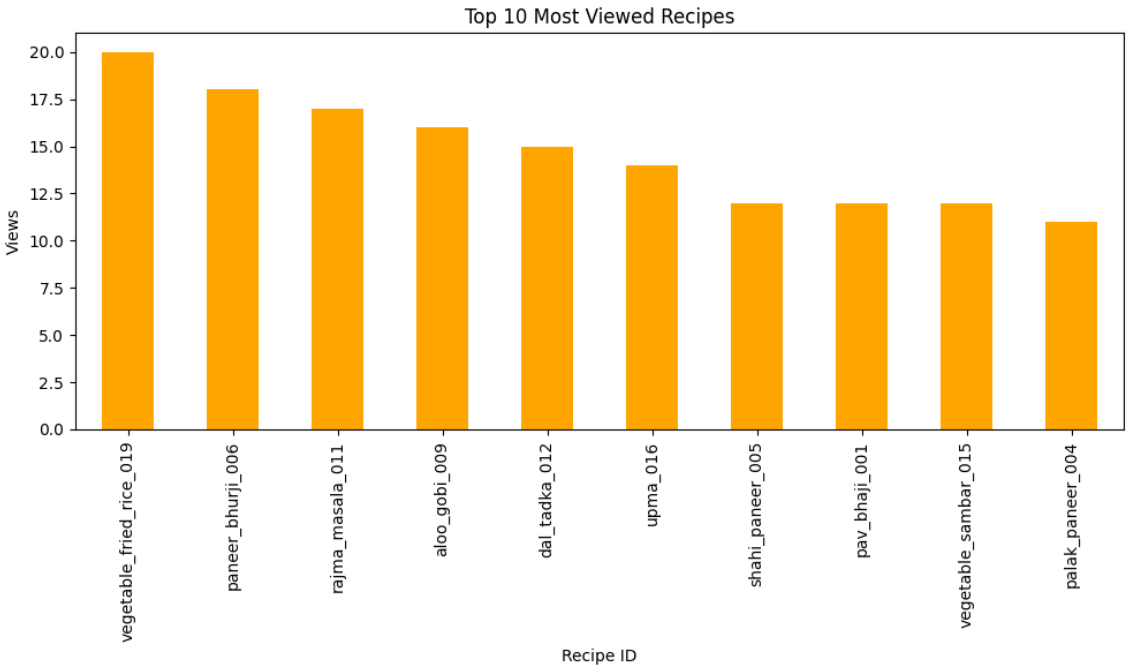
This chart shows the most frequently used ingredients across all recipes. Ginger ranks highest, followed by common Indian cooking staples like mixed vegetables, oil, tomato, and turmeric. These ingredients form the base of many vegetarian dishes.

Top Recipes by Step Count



This bar graph illustrates recipe complexity based on step count. Pav Bhaji has the highest number of steps (10), suggesting it is the most detailed recipe in the dataset. Several others average around 7–8 steps, indicating moderate complexity.

Top 10 Most Viewed Recipes



This visualization shows the most viewed recipes. 'Vegetable Fried Rice' leads with 20 views, followed by 'Paneer Bhurji' and 'Rajma Masala'. Pav Bhaji also ranks in the top viewed list, consistent with its position as the primary recipe.

4. Conclusion

The analytics highlight strong patterns across ingredients, recipe engagement, and user activity. The dominance of Indian masala ingredients demonstrates their central role in vegetarian cuisine. User engagement trends show a balanced distribution of interactions across multiple recipes, indicating diverse user preferences.

Overall, the ETL pipeline demonstrates successful data extraction, transformation, validation, and insight generation. The dataset is clean, consistent, and suitable for machine learning, business intelligence, or further analytical modeling. The report effectively captures both the performance and value of the recipe pipeline.