

# Identifying Key Engagement Features in a Mobile Fitness App

## 1. Background and Problem Statement:

A mobile fitness app offering features such as step tracking, workout logging, diet planning, and goal setting had seen rapid user acquisition through paid promotions but was struggling with user retention. Despite strong download numbers, 30-day active usage dropped below 25%. The product team lacked clarity on which features contributed most to user engagement. To address this, they sought to identify **key features that drive engagement and retention** using behavioral data and user feedback.

## 2. Objectives:

- To analyze feature usage patterns and determine which features are most frequently used
- To correlate specific feature interactions with short- and long-term retention
- To prioritize features for improvement, promotion, or redesign
- To produce a feature impact report that informs roadmap and user experience optimization

## 3. Methodology:

### Data Collection:

- In-app event logs tracked via **Firebase Analytics** over a 90-day period
- Features analyzed:
  - Step Tracker
  - Diet Planner
  - Workout Logger
  - Goal Setting
  - Daily Health Tips
- Supplementary user survey (n=421) conducted using Google Forms to validate preferences

### Analysis Tools and Techniques:

- **Python (pandas, seaborn)** for log parsing and visualization
- Retention cohort analysis using Firebase's built-in reports
- Event frequency and session length correlations by feature
- Feature retention impact score = (Feature Usage % × Retention Contribution %)
- Feedback classification via thematic tagging from open-ended survey responses

## 4. Results:

- **Step Tracker** was used by 84% of users within the first 3 sessions; associated with a **+19% increase in 7-day retention**
- **Goal Setting** had lower frequency (only 32% of users), but was the **strongest predictor of 30-day retention**
- **Diet Planner** saw high initial interest but led to drop-offs after Week 2 due to manual input fatigue
- 74% of surveyed users cited "auto-sync with wearables" as their most liked feature
- Feature impact scores (normalized):
  - Step Tracker: 0.87
  - Goal Setting: 0.74
  - Workout Logger: 0.61
  - Diet Planner: 0.42
  - Daily Health Tips: 0.26

## 5. Interpretation and Insights:

- Features that offered **passive engagement** (like automatic step tracking) led to better daily activity
- Users who set goals within the first week were 2.5x more likely to complete 30+ sessions
- Manual-intensive features like diet logging were less sustainable without automation or gamification
- Many users appreciated motivational content but did not return to the "Health Tips" feature regularly

## 6. Recommendations:

- **Promote goal-setting prompts** within the onboarding flow for all new users
- Add **automation to diet tracking** (e.g., barcode scanning, pre-filled meal plans)
- Introduce **wearable compatibility badges** for early adopters
- Rework the “Daily Health Tips” into a notification-based format or interactive quiz
- Establish **weekly feature usage A/B tests** to validate UI changes and copy improvements

## 7. Future Work:

- Use machine learning to cluster users by engagement profiles and personalize feature suggestions
- Launch in-app feature ratings to collect qualitative data at the point of use
- Monitor post-feature optimization impact on retention using rolling cohort reports

## 8. Stakeholder Relevance:

### Academic:

- Demonstrates application of retention analysis and feature usage metrics in app-based product strategy
- Valuable for courses in UX analytics, mobile product design, and consumer behavior analytics

### Corporate:

- Enables mobile app teams to optimize development based on measurable usage behavior
- Reduces churn by focusing on features that users value most during their lifecycle