

Bellabeat case study

How can a wellness technology company play it smart?

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Business Task

Objective:

This report presents key insights and actionable recommendations for the marketing team regarding our Fitness Smart Device. The analysis is based on data collected from 33 customers over the months of April and May 2016. Our aim is to optimize marketing strategies and enhance user engagement with the device, with a focus on improving health outcomes.

The objective from this case study is to analyze the smart device usage patterns, with a purpose of concluding business recommendation for the next marketing campaign.

Questions:

- How engaged are the users with the app?
- At what frequency the app features are being used?
- What outcomes of the user behavior that can be detected?
- Based on the findings, how can we use this information for the marketing strategy?

Data

Data source

- The dataset link <https://www.kaggle.com/datasets/arashnic/fitbit>

The dataset used is FitBit Fitness Tracker Data which contains personal fitness tracker from 33 customers over the months April and May 2016. Each customer fitness data is recorded over a month and identified by a unique id.

The data is somehow outdated so further analysis could be done, since smart devices industry has been advancing and for sure other features have been added later, this should be taken into consideration when applying the findings to new devices via looking to the new achievement in this industry.

The database is composed of 18 tables, they are mainly records of fitness data like sleep, activity, calories, weight, and others. The daily_activity table summarizes a good range of features of each customer per day, the other table are mainly details of each feature or even the same data but in other units like minutes, which provide more liberty to analyst to choose which unit to utilize that of course aligns with his objectives. So, in this analysis, we have used variety of tables depending on the units that serves best the analysis.

For the accuracy, generally the data seemed to be accurate but some tables (weight, MET, heart rate) there are missing customers which should be revised since it impacts the findings; these customers can be considered missing or enabled this feature, in conclusion further details had to be present.

Data manipulation

In order to verify the number customer in the table the following query was used

```
SELECT COUNT(distinct Id) AS total_users FROM `week-3-394210.project.daily_activity`
```

The same concept was used with each table to check for missing records

Errors verification was feasible since many measures were related:

-
- We have 1444 minutes a day so we can vary the actives durations per day
 - We have the total distance and the detailed steps so they could be verified

Some records were unnecessary like recording the distance per minute which resulted in almost zero entries, many other tables containing details like calories per minute or step per minute can just be used for verification of the data but for analysis they finally express the same findings as per day units but just with further details.

But, as mentioned, the analyst chooses which unit to work with based on his scope and objective.

Analysis

User Engagement

In order to understand for which extent users are engaged in the app, we build our analysis based on these metrics.

- Usage time
- Features Usage rate
- Manual logging

Usage time

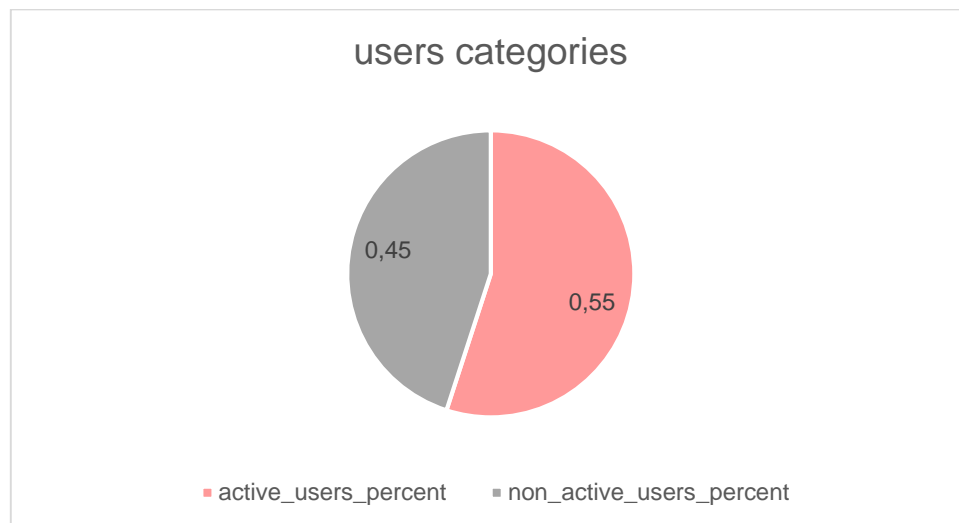
First, we want to classify our users as active and non-active users, non-active users can be detected by the sedentary minutes per day, the following query were used.

We can extract the following results.

```
SELECT COUNT(distinct Id) AS non_active FROM `week-3-394210.project.daily_activity`  
WHERE SedentaryMinutes=1440 AND TotalSteps=0
```

```
SELECT COUNT(distinct Id) AS active FROM `week-3-394210.project.daily_activity`  
WHERE VeryActiveMinutes>=60
```

```
SELECT ROUND(18/33, 2) AS active_users_percent, ROUND(15/33, 2) AS  
non_active_users_percent
```



What can explain the sedentary behavior of certain customers?

-Are these customers disabling all the app features? Or are there any errors about the data

-If not, what can we do to help them become active.

Further data checking should be made available.

Through the observation of the duration of usage, the usage rate is high at the end of April and the beginning of May, plus users seemed to be engaged at the first 5 days of the week.

Engagement rate per feature

The app provides a range of fitness features that could be tracked and of course the user selects the ones that he wants to be tracked such as calories, heart rate, steps, sleep and so on. In this section we want to dive deeper into the user behavior and determine the rate at which the feature is used, to do so we run the following queries.

```
SELECT ROUND((count(id)/941),2) AS distance_feature_frequency FROM `week-3-394210.project.daily_activity`  
WHERE TrackerDistance!=0
```

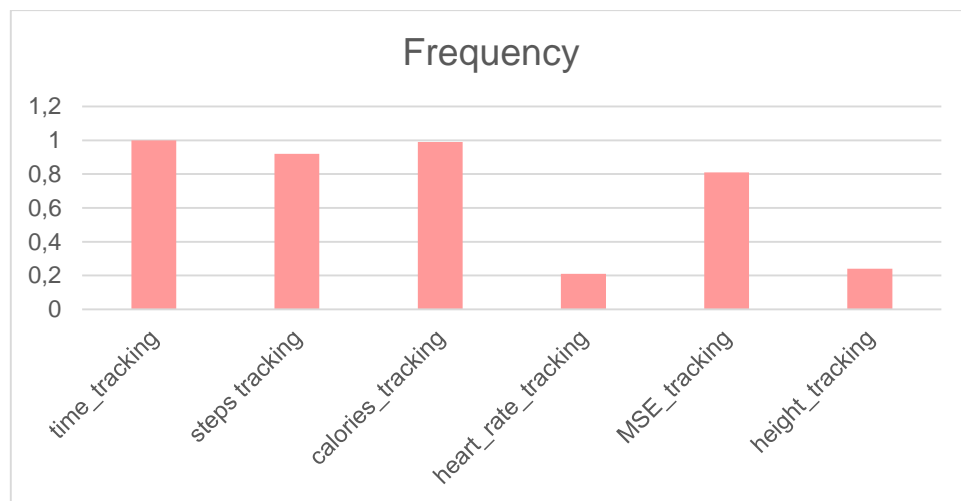
```
SELECT ROUND((count(id)/941),2) AS Steps_feature_frequency FROM `week-3-394210.project.daily_activity`  
WHERE TotalSteps!=0
```

```
SELECT ROUND((count(id)/941),2) AS calories_feaure_frequency FROM `week-3-394210.project.daily_activity`  
WHERE Calories!=0
```

```
SELECT ROUND((count(id)/941),2) AS activity_duration_frequency FROM `week-3-394210.project.daily_activity`
WHERE SedentaryMinutes!=0
```

```
SELECT ROUND((count(id)/941),2) AS logged_activities_frequency FROM `week-3-394210.project.daily_activity`
WHERE LoggedActivitiesDistance!=0
```

The results can be illustrated through the following bar chart



Manual logging

The app also provides some manual data entering, we want to examine the rate of deploying these features, we obtain the following results

```
SELECT ROUND((count(id)/941),2) AS logged_activities_frequency FROM `week-3-394210.project.daily_activity`
WHERE LoggedActivitiesDistance!=0
```

```
SELECT ROUND((count(id)/941),2) AS logged_activities_frequency FROM `week-3-394210.project.weight`
```

```
WHERE IsManual="True"
```

The query resulted in 0.67% of customers manually entered their weight while only 3% did for their activity.

Health outcomes after usage

In this section we seek to discover some of health trends based on this sample

- Calories burned:

The results showed a positive correlation between calories and steps, which means that the more active the user is, the more likely to burn calories.



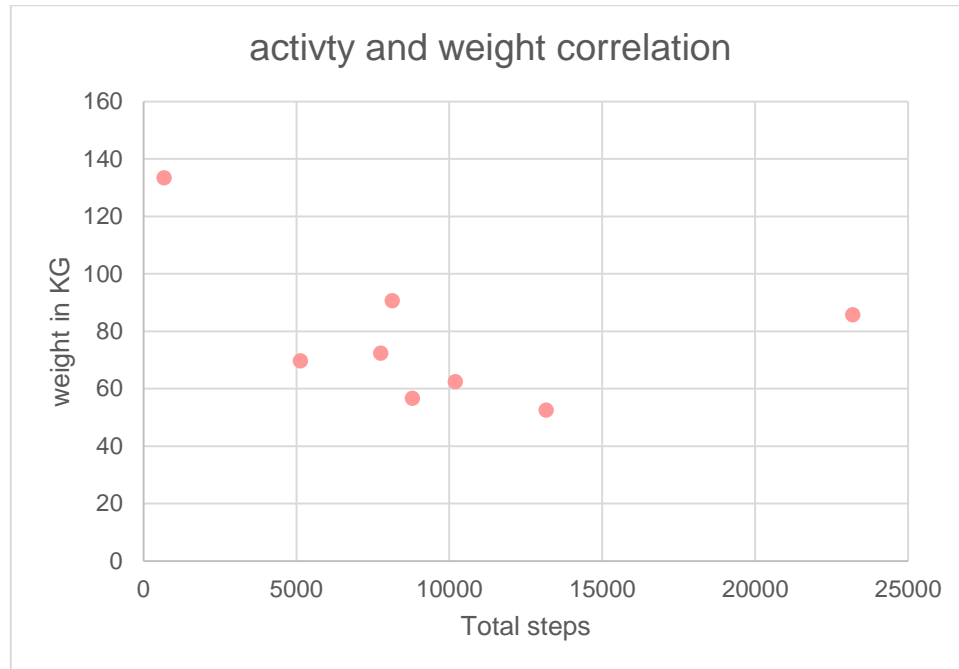
- Weight:

The table shows weight results only for 8 customers, which can mean that others might be disabling the weight feature, or the data is missing.

Assuming that only 8 customers used the weight features we will use the following query as we want to study the relationship between weight and activity

```
SELECT ROUND((count(id)/941),2) AS logged_activities_frequency FROM `week-3-394210.project.daily_activity`  
INNER JOIN `week-3-394210.project.weight`  
ON daily_activity.id=weight.id
```

The relationship can be proven by the following chart



So a negative correlation exists between the weight and activity.

- Sleep patterns

Through sleep tracking the general sleeping period lies between 9 PM and 9 AM
Users sleep the most time in bed, the device is a valuable tool for sleep quality

Recommendations

The insights gathered from our data analysis provide valuable guidance for optimizing our marketing strategies with a focus on improving health outcomes. By implementing these recommendations, we aim to increase user engagement, enhance the user experience, and position our Fitness Smart Device as a key tool for achieving holistic well-being

- **Promote Active Engagement for Better Health:**

Develop campaigns emphasizing the benefits of an active lifestyle and how our device supports activity tracking to achieve improved health outcomes.

- **Health and Activity Tracking Emphasis:**

Educate users on the advantages of tracking health-related data and how it contributes to overall well-being.

- **Leverage Positive Correlation with Activity:**

Create personalized wellness plans and goals based on the correlation between physical activity and health improvements.

- **Balancing Health Goals:**

Encourage users to maintain a balanced approach to health and fitness, promoting holistic well-being.

- **Sleep Tracking Insights:**

Position the device as a tool for enhancing sleep quality and overall health.

- **Time-Sensitive Promotions:**

Plan marketing campaigns to coincide with the high-engagement period at the end of April and beginning of May, highlighting their potential impact on health outcomes.

- **Weekday Engagement Focus:**

Tailor marketing efforts to concentrate on the first 5 days of the week, supporting users in their journey toward better health.