Bellabeat Marketing Analysis



**Summary of the business task**:

| **Title** | How Can a Wellness Technology Company Play It Smart? |
| --- | --- |
| **Company** | Bellabeat, a high-tech manufacturer of health-focused products for women. |
| **Industry focus** | Fitness |
| **Problem statement** | Focus on one of Bellabeat’s products and analyze smart device data to gain insight into how consumers are using their smart devices to help unlock new growth opportunities and guild marketing strategy for the company. |
| **Business use case** (*what are we solving for?*) | Human temporal routine behavioral analysis, Recognize pattern/trend in smart device usage, Support users to take informed health decisions, Recommend marketing strategy |
| **Goals/Metrics** |  |
| **Deliverables** | A notebook outlining our findings and recommendations for Bellabeat’s marketing strategy |

**Introduction:**

[Bellabeat](http://https/bellabeat.com/) is a successful small company, but they have the potential to become a larger player in the global smart device market.

Urška Sršen, cofounder and Chief Creative Officer of Bellabeat, believes that analyzing smart device fitness data could help unlock new growth opportunities for the company. Sršen used her background as an artist to develop beautifully designed technology that informs and inspires women around the world.

Collecting data on activity, sleep, stress, and reproductive health has allowed Bellabeat to empower women with knowledge about their own health and habits. Since it was founded in 2013, Bellabeat has grown rapidly and quickly positioned itself as a tech-driven wellness company for women.

This analysis will focus mainly on the Bellabeat app, which has user health data related to their daily activity, sleep, stress, menstrual cycle, and mindfulness habits. This data can help users better understand their current habits and make healthy decisions. The Bellabeat app connects to their line of smart wellness products.

We will mainly work with Bellabeat app health data to gain insight into how people are already using their smart devices. Then, using this information, we would like to suggest some high-level recommendations for how these trends can inform Bellabeat marketing strategy.

Guiding questions:

1. What are some trends in smart device usage?
2. How could these trends apply to Bellabeat customers?
3. How could these trends help influence Bellabeat marketing strategy?

Key tasks:

Using Fitbit health data to analyze trends in smart device usage in order to apply insights into Bellabeat customers and to suggest approporiate marketing strategy.

**Key stakeholders**:

* Urška Sršen - Bellabeat cofounder and Chief Creative Officer
* Sando Mur - Bellabeat cofounder; key member of Bellabeat executive team
* Bellabeat marketing analytics team: A team of data analysts responsible for collecting, analyzing, and reporting data that helps guide Bellabeat’s marketing strategy.

**Prepare:**

Dataset

FitBit Fitness Tracker Data (CC0: Public Domain, dataset made available through Mobius) is an open-source public data that explores smart device users’ daily habits. This Kaggle data set contains personal fitness tracker from thirty fitbit users. It includes information about daily activity, steps, and heart rate that can be used to explore users’ habits.

Addressing licensing, privacy, security, and accessibility of the data

These datasets were generated by respondents to a distributed survey via Amazon Mechanical Turk between 04/12/2016 and 05/12/2016. Thirty eligible Fitbit users consented to the submission of personal tracker data, including minute-level output for physical activity, heart rate, and sleep monitoring. Variation between output represents use of different types of Fitbit trackers and individual tracking behaviors / preferences.

Data organization[¶](https://www.kaggle.com/code/trantabichchau/bellabeat-marketing-analysis#Data-organization)

There are 18 CVS files representing different quantitative data tracked by Fitbit.

| Table name | Description |
| --- | --- |
| dailyActivity\_merged | Tracking daily data of Steps, Distance, Intensities, Active Minutes, and Calories within 31 days of 33 different users; Active Distance data are divided into 4 categories: Sedentary, Lightly , Moderately , Very; It also calculates for every non-sleeping minute of the day whether a person is in one of four states based on the accelerometer reading: sedentary, lightly active, fairly active and very active. |
| dailyCalories\_merged | Daily Calories over 31 days of 33 users |
| dailyIntensities\_merged | Daily Intensity over 31 days of 33 users. Measured in Minutes and Distance, dividing groups into 4 categories: Sedentary Active, Lightly Active, Fairly Active, and Very Active |
| dailySteps\_merged | Daily number of steps over 31 days of 33 users |
| heartrate\_seconds\_merged | Datetime heartrate logs for just 7 users |
| hourlyCalories\_merged | Hourly Calories burned over 31 days of 33 users |
| hourlyIntensities\_merged | Hourly total and average intensity over 31 days of 33 users |
| hourlySteps\_merged | Hourly Steps over 31 days of 33 users |
| minuteCaloriesNarrow\_merged | Calories burned every minute over 31 days of 33 users (Every calory in single row) |
| minuteCaloriesWide\_merged | Calories burned every minute over 31 days of 33 users (Every calory in single column) |
| minuteIntensitiesNarrow\_merged | Intensity counted by minute over 31 days of 33 users (Every intensity number in single row) |

**Problem with the data:**

This dataset has only 33 users and therefore it might not be representative of the whole smart device user population. Furthermore, not all 33 users reported in each available file, for example only eight users are listed in the weight file.

As the data is from 2016, it is already five years old (year of analysis: 2021) and therefore it is obsolete as the user trend and technological advancement have changed dramatically since. The data tracks 33 users over 30 days from 4/12/2016 to 5/12/2016 which is a very short window of time to detect any usage pattern and trend considering a user health cycle.

The data also has incomplete records which meant either the user did not wear their Fitbit or the data was not able to be collected. This makes the reliability of the data low.

Some key demographics were not included with the data such as gender, age or location, which is important for Bellabeat because they main target is to empower women with knowledge about their own health and habits.

**Load the dataset:**

This dataset includes the records of 33 users and it is best to find data that has a complete set of data for all of those 33 users across all categories.

We already know that weight requires users to log their data, but only eight users entered this data. Heartrate log only contains records of 7 users. Sleep was also not recorded consistently, as only one user actively captured all data.

To answer our business task, we will mainly use these data:

* Daily Activity (including Steps, Distance, Intensities, Active Minutes, and Calories)
* Daily & Hourly Calories
* Daily Sleep
* Daily Intensities
* Daily & Hourly Steps

Although Heart rate and Weight log have missing data, we might still include for reference only.

Act[¶](https://www.kaggle.com/code/trantabichchau/bellabeat-marketing-analysis#6.-Act)

linkcode

Before anything, we want to clarify about the quality and completeness of this dataset. The problem with this dataset is that it might not be representative of the BellaBeat's target user segment. It is better that we can also record how much a user eat and whether they drink enough water. A water drinking reminder might be a fun thing to try to promote healthy lifestyle. For sleep data, Sleep Score has the highest correlation with Minutes REM Sleep, so it is better if we somehow can collect more data on these features (Sleep Score, REM and Deep Sleep) to better understand the user trend.

we would advice to use own tracking data for further analysis. Datasets used have a small sample and can be biased since we didn't have any demographic details of users. Knowing that our main target are young and adult women we would encourage to continue finding trends to be able to create a marketing stragety focused on them.

Some insights that we were able to derive from analyzing this dataset:

* There is a clear distinction of user activity across different days of the week: They tend to be most active on Tuesday and Saturday, and less active on Wednesday and Sunday
* The average number of steps taken daily is around 7670. According to the CDC:

...higher daily step counts were associated with lower mortality risk from all causes.

=> If our product can output the number of steps in real time, we can motivate users to reach a certain number of steps daily!

* If the goal is to burn some calories, there is a linear relation between steps taken and calories burned. Our step monitor could use user data to fit a model and predict how many steps a user should take to reach a certain amount of calories burned.
* There is a great scope in creating awareness about Metabolic Equivalents of Task(METs) and providing our consumers with the smart products which measure them accurately. It is promising when compared to the conventional calories measurement as new researches are being carried out regarding METs. It is effective especially for women.
* Regarding sleeping habits, there was a clear decrease of sedentary minutes as the number of minutes asleep increased. So, another goal of the product could be to motivate users to keep a consistent and sufficient sleeping schedule.

**Conclusion:**

Women who work full-time jobs (according to the hourly intensity data) and spend a lot of time at the computer/in a meeting/ focused on work they are doing (according to the sedentary time data).

These women do some light activity to stay healthy (according to the activity type analysis). Even though they need to improve their everyday activity to have health benefits. They might need some knowledge about developing healthy habits or motivation to keep going.

As there is no gender information about the participants, I assumed that most users are female, because Fitbit counts on Women as Device Buyers, since their market research indicates over two thirds of its customers are women.