**Bellabeat Data Analysis Case Study**

You will produce a report with the following deliverables:

1. A clear summary of the business task.
2. A description of all data sources used.
3. Documentation of any cleaning or manipulation of data.
4. A summary of your analysis.
5. Supporting visualizations and key findings.
6. Your top high-level content recommendations based on your analysis.

**Ask**

Guiding questions:

1. What is the problem you are trying to solve?
   * Looking for any insight into how consumers use NON-Bellabeat smart devices.
2. How can your insights drive business decisions?
   * Finding out what specific features consumers of smart devices use the most and determining if Bellabeat products need to improve, or pivot marking toward those desired features.

Key tasks:

1. Identify the business task.

These questions will guide your analysis:

* + What are some trends in smart device usage?
  + How could these trends apply to Bellabeat customers?
  + How could these trends help influence Bellabeat marketing strategy?

1. Consider key stakeholders.
   * Urška Sršen: Bellabeat’s cofounder and Chief Creative Officer.
   * Sando Mur: Mathematician and Bellabeat’s cofounder; key member of the Bellabeat executive team.
   * Bellabeat marketing analytics team.

**Prepare**

Guiding questions:

1. Where is your data stored?
   * Stored all the provided data in SQL.
2. How is the data organized? Is it in long or wide format?
   * Both
3. Are there issues with bias or credibility in this data? Does your data ROCCC?
   * No
4. How are you addressing licensing, privacy, security, and accessibility?
   * Thirty eligible Fitbit users consented to the submission of personal tracker data, including minute-level output for physical activity, heart rate, and sleep monitoring.
5. How did you verify the data’s integrity?
   * Ran queries to look for missing/bad data.
6. How does it help you answer your question?
   * Making comparisons between users and timeframes is easier when there are no missing data points.
7. Are there any problems with the data?
   * Data is extremely limited.
   * There were more than 30 (~36) users included in the datasets, I removed users that had missing data and it ended up 30 users with verified clean data.

Key tasks:

1. Download data and store it appropriately.
2. Identify how it’s organized.
3. Sort and filter the data.
4. Determine the credibility of the data.

**Process**

Guiding questions:

1. What tools are you choosing and why?
   * I’m using SQL to clean and organize the data in ways to do the analysis.
   * Exporting those queries into Google Sheets for some quick data manipulation/visualization.
2. Have you documented your cleaning process so you can review and share those results?
   * Collected my desired tables, such as daily activity and sleep, and made sure there was good data for each user.

Key tasks:

1. Check the data for errors.
2. Choose your tools.
3. Transform the data so you can work with it effectively.
4. Document the cleaning process.

**Analyze**

Guiding questions:

1. How should you organize your data to perform analysis on it?
   * Given the lack of relevance and inconsistency in much of the Fitbit data, organizing the data for analysis should prioritize identifying and extracting the most important variables.
2. What surprises did you discover in the data?
   * The most surprising is how irrelevant most of it is.
   * The Fitbit sleep data is wildly inconsistent and has interesting usage patterns – could mean people find using them to track sleep uncomfortable.
3. What trends or relationships did you find in the data?
   * In analyzing the Fitbit data, I noticed some clear trends. Steps taken and calories burned showed a straightforward positive correlation, which wasn't surprising. However, when I looked at sleep data, things got interesting. There was a slight positive relationship between average sleep duration and metrics like calories burned and steps taken, suggesting that better sleep might lead to more activity.
   * What really caught my attention was the difference in sleep quality between those who tracked their sleep consistently and those who didn't. Consistent trackers slept significantly more on average, suggesting that simply monitoring your sleep could lead to better rest. This led me to conclude that emphasizing the importance of sleep tracking could be a valuable strategy for Bella Beat to help its customers improve their overall well-being.
4. How will these insights help answer your business questions?
   * Understanding user preferences for passive data collection can guide product development efforts, ensuring that Bellabeat devices prioritize seamless integration and ease of use to enhance user engagement and satisfaction.
   * The identification of potential reluctance in using Fitbit for sleep tracking underscores the importance of user experience research and product iteration to address usability issues and improve overall user satisfaction.

Key tasks

1. Aggregate your data so it’s useful and accessible.
2. Organize and format your data.
3. Perform calculations.
4. Identify trends and relationships

**Share**

Guiding questions

1. Were you able to answer the business questions?
   * Yes, through analyzing the Fitbit data, I uncovered significant trends that provide valuable insights into consumer behavior and preferences, directly addressing the business questions posed by Urška Sršen.
2. What story does your data tell?
   * The data (and lack thereof) tells a compelling story of how various factors, such as steps taken, calories burned, and sleep habits, interplay and influence each other. It highlights the importance of sleep tracking and its potential impact on overall well-being.
3. How do your findings relate to your original question?
   * The findings directly address the original question by uncovering key trends in smart device usage and their implications for Bellabeat's marketing strategy. Specifically, the emphasis on sleep tracking aligns with the company's mission of empowering women with knowledge about their health and habits.
4. Who is your audience? What is the best way to communicate with them?
   * The audience includes the Bellabeat executive team, including Urška Sršen and other key stakeholders.
5. Can data visualization help you share your findings?
   * Data visualizations play a crucial role in conveying complex information in a clear and engaging manner. Visual representations of the trends identified in the Fitbit data can facilitate better understanding and decision-making among the executive team.
6. Is your presentation accessible to your audience?
   * Absolutely. Data visualizations play a crucial role in conveying complex information in a clear and engaging manner. Visual representations of the trends identified in the Fitbit data can facilitate better understanding and decision-making among the executive team.

**Key tasks**

1. Determine the best way to share your findings.
2. Create effective data visualizations.
3. Present your findings.
4. Ensure your work is accessible.

**Deliverable: Supporting visualizations and key findings**

Follow these steps:

1. Take out a piece of paper and a pen and sketch some ideas for how you will visualize the data.
2. Once you choose a visual form, open your tool of choice to create your visualization. Use presentation software, such as PowerPoint or Google Slides; your spreadsheet program; Tableau; or R.
3. Create your data visualization, remembering that contrast should be used to draw your audience’s attention to the most important insights. Use artistic principles including size, color, and shape.
4. Ensure clear meaning through the proper use of common elements, such as headlines, subtitles, and labels.
5. Refine your data visualization by applying deep attention to detail.