Subject: Summary of Data Analysis Findings and Next Steps

Dear Mr. Fetch,

I hope this message finds you well. I'm writing to share key findings from my recent analysis of Fetch's data, highlighting data quality issues, an important trend I uncovered, and next steps to address outstanding questions. The goal is to help you and the leadership team understand areas where we can improve our platform and better engage users.

1. Key Data Quality Issues

During the data exploration, I identified several data quality issues across the products, transactions, and users datasets that may be impacting the accuracy of our insights and decision-making:

- **Missing Data**:
  - **Products Table**: Approximately 226,000 records are missing values in both the **Brand** and **Manufacturer** fields, and there are about **4,000 missing Barcodes**. Barcodes are essential for linking product and transaction data, and this gap affects our ability to accurately track sales
  - **Transactions Table**: The data shows **12,500 missing Final Sale values**, even when there's a valid Final Quantity. Additionally, there are nearly **6,000 missing Barcodes**, preventing us from linking these transactions to products
  - **Users Table**: **3,675 missing Birth Dates** and **5,892 missing Gender values** were found, though these gaps likely have less impact on demographic analysis compared to the product and transaction tables
- **Data Consistency Issues**:
  - **Duplicate Barcodes**: I found two duplicate Barcodes that represent different brands (Schwarzkopf vs. Göt2b), which likely reflect a product catalog inconsistency
  - **Final Quantity**: There are **321 transactions** where the Final Quantity is greater than 1, but the Final Sale is zero. These could indicate data entry errors, or potentially reflect free product offers, which should be confirmed
- **Formatting Errors**:
  - **Store Names**: There are inconsistent entries for store names (e.g., "Dick's" vs. "Dick's Sporting Goods") that should be consolidated for clearer analysis

2. Key Trend: User Loss in 2023 and 2024

One concerning trend is the **significant drop in users during 2023 and 2024**. User growth, which had been strong in previous years, reversed in these two years:

- **2023**: A **42.31% decline** in users compared to 2022
- **2024**: A further **24.79% decline** in users compared to 2023

This user loss suggests potential challenges in user acquisition and retention, which may stem from:

- **Increased Competition**: If competitors are offering better rewards or experiences, Fetch may be losing users to other platforms
- **Product Fatigue**: Users might be disengaging due to lack of updates or features on our platform. Investigating whether **inactive accounts** or **receipt scans** have dropped could provide further insights
- **Service Issues**: Technical problems or unpopular changes might also be contributing to user attrition

3. Request for Action: Additional Help Needed

To fully address these data quality issues and uncover deeper insights into the user loss trend, I would appreciate the following support:

- **Clarification on Business Rules**: Understanding why **some transactions have Final Quantity but a Final Sale of zero** would help determine if these are valid (e.g., free products, returns) or errors. Similarly, guidance on the meaning behind **decimal values in Final Quantity** would clarify whether these represent products sold by weight
- **Standardization of Product Data**: A review of the **duplicate Barcodes** and inconsistent store names is needed to ensure that our product and transaction data accurately reflects reality. Additionally, input on how deeply products should be categorized (given that many products lack CATEGORY_4) would help refine our category analysis
- **Further User Research**: It might be worth conducting a **user survey** to better understand why we are seeing this significant drop-off in 2023 and 2024. Are users dissatisfied with the current rewards structure? Are competitors offering better incentives? Gaining this insight could inform future strategies for retention

Thank you for your time, Mr. Fetch. I'm happy to discuss these findings further or provide additional analysis as needed. I believe addressing these issues will significantly improve our data quality and help Fetch recover from the recent user loss.

Best regards,
Abinav Bharadwaj