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1. Overview of the Problem

Food waste is a huge problem around the world. It causes 8–10% of global greenhouse gas emissions from landfills and the loss of 1.05 billion tons of food each year, or 132 kg per person in 2022 alone. Households are responsible for the most food waste, making up 60% of it. Food services and retail come in second, making up 28%. Every day, Metro Manila throws away 2,175 tons of food scraps. This trash hurts the environment and makes it harder for people to get enough food.

BiteBack is an app that helps reduce food waste by letting businesses sell extra food at lower prices. This helps businesses avoid losing money while giving customers access to cheap meals. The app's goal is to help the UN reach its Sustainable Development Goals (SDGs), especially SDG 2 (Zero Hunger) and SDG 12 (Responsible Consumption and Production).

2. Description of the Important Characteristics of the **Potential Users**

- **Consumers:** Budget-conscious individuals such as students, families, and working professionals looking for affordable, eco-friendly meals. These users often prioritize value and sustainability in their food choices.

- **Vendors:** Small business owners, such as food stalls, cafes, restaurants, grocery stores, and buffets, that are left with unsold food. They are looking to minimize loss by selling surplus food, reducing waste, and improving sustainability efforts.

These users have varying levels of technological proficiency. Consumers and vendors both need a platform that allows them to perform their tasks with minimal complexity.

3. Task Analysis

3.1. Description of Important Characteristics of the Tasks Performed by Users (10 pts)

- **Consumers' Tasks:**

    - Search over the available food listings: The user should be able to filter food options by price, category, and proximity to make sure they find deals in their area.

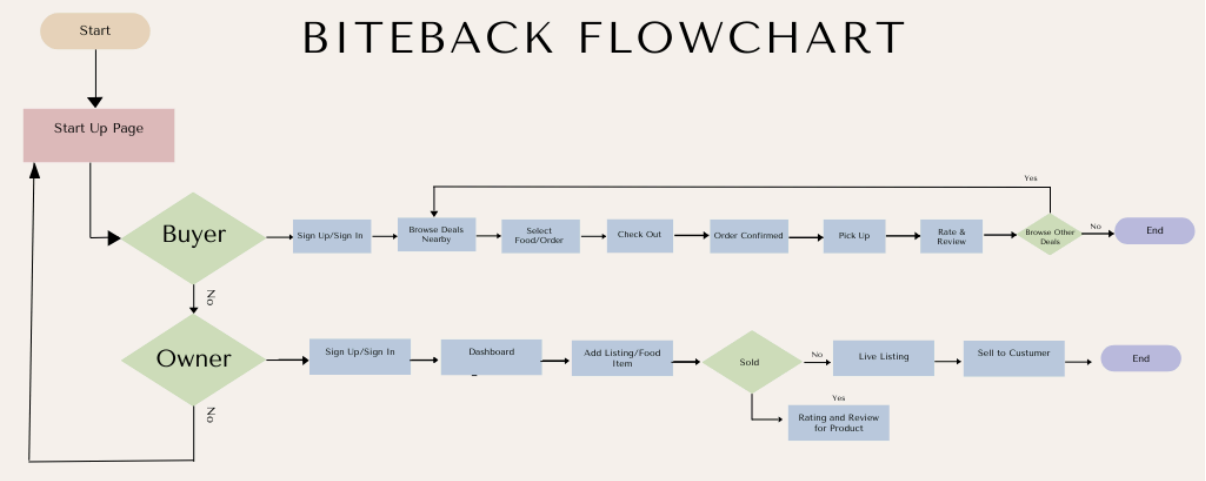
    - Reserve or purchase food: After choosing their meal, customers should be able to quickly reserve it for pickup at a specified time and finish the payment process within the app.

    - Pick up the food: Customers must pick up their purchases in person from the vendor; for security purposes, a QR code or Order ID should be used to verify the transaction.
- **Vendors' Tasks:**
    - Upload leftover food: On the app, vendors have to list their unsold food along with details about its type, quantity, cost, and expiration date.
    - Manage listings: Vendors need to update listings when items are sold or removed.
    - Review sales and analytics: Vendors should be able to see information about how much food they have sold, how much money they have made.

3.2. Description of Important Characteristics of the Task Environment

- **Consumers' Environment:**
    - Customers use the app on their smartphones, which they often do when they are short on time or the go. They probably use the app on their way to work or while they're on break and looking for places to eat.
    - The app must be designed for quick browsing and ease of transaction completion to accommodate busy schedules.
- **Vendors' Environment:**
    - Vendors will use tablets or smartphones to keep track of extra food listings. They will need an easy-to-use interface that lets them quickly upload and change the availability of food, especially when they are closing and time is short.
    - Vendors will rely on mobile networks, so the app must be responsive even on low-speed data connections.

3.3. Structured Task Analysis



- Too Good To Go: This app connects consumers with restaurants and stores to buy surplus food at discounted prices. It has been successful in parts of Europe and North America, but is still limited in certain regions and lacks a **dedicated system for** vendor analytics.

- Foodpanda: Primarily a food delivery app, it doesn't focus on reducing food waste but offers discounts on some items. It's a well-established platform, but it doesn't integrate surplus food into its system effectively.

Strengths:

- **Too Good To Go** has a strong model for surplus food distributio,n but lacks localized adaptations, and the surprise nature of the food bags isn't always well-received by customers.

- **Foodpanda** is highly efficient for meal delivery but doesn't help reduce food waste, so it misses out on eco-conscious users.

Deficiencies:

- **Too Good To Go** is not available everywhere and lacks personalized vendor profiles or insights into sales trends.

- **Foodpanda** lacks focus on sustainability or promoting eco-friendly practices for surplus food.

5. Description of the Larger Social and Technical System

This app will connect with larger social systems, like local food policies, efforts to make things more sustainable, and how people act when it comes to reducing food waste. To make sure that users have a good experience, the system will need to work with payment gateways, vendor management software, and location-based services (GPS).

6. Usability Criteria for Evaluation

Usability Criteria:

- **Ease of Use:** The app should have a clear, intuitive interface for both consumers and vendors.

- **Efficiency:** Users should be able to complete key tasks (e.g., finding food, reserving, and purchasing) within a few taps.

- **User Satisfaction:** The app should generate positive feedback from users on both the Android and iOS platforms.

How to Measure:

- **Task Completion Rate:** How easily users can complete tasks without external help.
- **Time on Task:** Measure how quickly users can navigate through the app.
- **Customer Surveys:** Collect feedback through built-in surveys on the app.

7. Discussion of the Implications

The analysis of current systems and the user tasks shows that businesses and consumers need a system that is easier to change and more localized. This app will fix the "last-mile" problem that makes it hard to get food to people who want it, and make it easier to move food around. With the system for measuring the effects and user rating,s and reviews, there will always be feedback loops. This will help to improve how food waste is handled over time.

Conclusion: This app is designed to be a key part of the fight against food waste. It will help the environment and society by making food cheaper and easier to get.