SMARTSCAN DESIGN PROJECT PROPOSAL

Executive Summary

Based on Waste360.com, nationwide we toss 103 pounds of food in the trash per year due to spoilage alone. Furthermore, a "food waste" study showed that the average American will throw away four spoiled perishable items every week, and based on a survey issued by OnePoll, the "average American has about $102 worth of product in their fridge at any given time…. [and] ends up chucking out $53.81 worth of spoiled food a week from their fridge, or $2,798 every year," (Staff, W, 2023).

My design will answer the call of many Americans who must constantly make the hard decision to throw away groceries that spoiled in their refrigerators because they were not cooked, prepared, or eaten in a timely enough manner. This is due, in part, to a lack of proper organization and utilization of the appliance, and simple forgetfulness that the freshness of the foods is limited to a certain timeframe. This is a widescale dilemma that costs average citizens sometimes hundreds of dollars a month and does no favors for the food shortage issue in this country. Families also sometimes suffer from foodborne illnesses due to the consumption of spoiled foods, particularly those that cannot afford to just toss expired groceries in the trash. But this new design will serve to mitigate all these issues.

The SmartScan design will be a digital application that can be downloaded to Smart phones, equipped with a PLU code reader. This will allow shoppers to scan their groceries, enter an expiration date and upload their grocery list to the application database. It will then send reminders to cook or eat foods when the assigned expiration date is near. So many Americans families can benefit from this application, saving themselves vast amounts of money to allocate elsewhere, and help minimize food waste.

Introduction

Most innovations in technology are derived from problems uncovered in everyday life among average individuals. From my assessment, these innovations give way to constant improvements and/or upgrades and forge ever expanding avenues down which passionate minds journey to pioneer fresh inventions, whose births owe a great debt to the revisions of pre-existing design models, all of which have improved the lives of everyday people.

This project seeks to stand on the shoulders of Smart Device innovators and provide further improvements in day-to-day life in terms of health and economics by designing a downloadable application from Smart phones called, SmartScan, that will allow grocery shoppers to keep track of expiration dates on perishable groceries. SmartScan will allow them to either scan the PLU code stickers on their perishable items or upload the information manually. Next, they would enter an expiration date of their choosing and then upload the list of all scanned items to the application database. The nearing of these dates would prompt the app to send out a notification via text message to the phone number associated with the account reminding the user to cook and/or consume the food. In this way, individuals can take better control of their eating habits by making more informed decisions around whether to dine out or prepare meals at home; the stress of "remembering" can be alleviated, as it has now been assigned to SmartScan.

Research Question and Hypothesis

Due to the food waste epidemic in this country and the amount of foodborne illness experienced by individuals who have consumed expired foods from their own refrigerators, what technological design can be rolled out to alleviate this issue?

This application has the potential to save consumers money that would be spent repurchasing groceries due to spoilage of already purchased products that have to be discarded and helps to prevent foodborne illnesses due to the consumption of expired foods.

Design Objectives:

- Downloadable to Smart Phones
- Allow users to scan PLU codes on products and set expiration dates
- Allow users to manually enter product information and set expiration dates
- Upload information to application database
- View information stored in database
- Track expiration dates of food and send out notifications within two days of product expiration
- Send notification to user when product has expired

Proposed Research Methodology

The target audience for the SmartScan application will be adults aged eighteen and up and will include families and adult members of different household types.

To conduct the research necessary around the issue of food waste to due spoilage, I have completed a literature review (see references). I have also conducted an interview with end-users to gain insight into their personal refrigeration practices to see if thet have led to food waste in their households.

For the interview, participant consent was granted.

The following describes the plan for the interview that was conducted to corroborate my claim that poor refrigeration practices contribute a great deal to food waste.

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Interview Setup:

This interview will be conducted using adult women (since no men were available for it) between the ages of 43 and 71 via a WhatsApp group discussion, each participant in the privacy of their own personal spaces. Since some may choose to have their cameras turned off, recorded audio will be the primary means of data collection and storage with some video recordings as a secondary mode of collection. This will be an open-ended semi-structured interview where participants will be encouraged to speak freely as they offer their responses and elaborations.

Intro & Participant Background:

Good day! As you all know, my name is Meah Hopkins, and I thank you for taking the time to meet with me today. First, I would like to know if I have everyone's permission to record this interview, as this will be my means of data collection and storage. And please be assured that you will not be asked to provide any personal information, and all the information you share will be protected and stored on my Android phone and will not be shared with any third-party solicitors. It will be strictly used for my research purposes and involving this project only. If there is anyone uncomfortable with being recorded, please understand that is ok, as your comfort throughout this process is paramount – just note that data collection will then be done via notetaking, which may prolong this interview. If I have everyone's permission to record, I want to extend my thanks, as this helps to better capture everything said here, significantly minimizing the chance that something pertinent will be missed. The purpose of this interview is to examine your refrigeration habits. But before we begin, I'd love for each of you to share some feedback as to how this research may resonate with you and what you hope to see happen because of this study. I appreciate all your sharing, and without further ado, I'd like to commence with the interview. Everyone ok with that? Great!

Main Interview Questions:

1. Are you familiar with the issue of food waste? If so, what is your perspective on it?
2. What do you feel is the biggest contributor to food waste?
3. What are some ways you feel this problem can be solved?
4. Have any of you gotten sick from eating bad food? If so, how many times did it come from your own refrigerator?
5. What type of refrigerator do you have and how long have you had it?
6. Describe your food shopping experience. For instance, how much do you typically spend in one haul and about how many bags of perishable groceries do you leave with?
7. How is your grocery list compiled if you create one?
8. Do you prefer frozen foods to fresh foods? Why?
9. Does all the food purchased during a single haul usually fit easily in your refrigerator, or do you have to clean it out first? Expound on that, please.
10. How often do you clean out your refrigerator? When you do, how much food do you usually throw away, and why?
11. How do you feel when you have to get rid of food because it went bad in the refrigerator?
12. When do you usually learn that food has spoiled/expired in the refrigerator?
13. Describe how and where you place your perishables.
14. What kinds of practices do you implement to help you remember to eat food stored in the fridge? How has this affected your food waste?
15. Finally, what are wishes that you developed due to frustrations around having to throw food away?

In Closing:

Thank you for participating in this interview. Would any of you like a copy of this interview? Would you like to receive updates as to how this interview has impacted my project? Do you have anything else you would like to share? Thank you again for your time, and as a token of

my appreciation, I'd like to offer you each a gift of $25. If you spend it on groceries, try not to let it go to waste! Have a great day!

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The following is the plan for the interview that will be conducted to test the initial design proposed.

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Setup:

This interview will be conducted using five adults between the ages of 18 and 71 via separate WhatsApp video calls, each participant in the privacy of their own personal spaces. This will be an open-ended unstructured interview where participants will be instructed to complete specific tasks involving scanning, manually entering, setting expiration dates, uploading, and viewing lists. They will be invited to speak freely as they offer their responses to questions. The purpose of the interview is to identify user perspectives, needs, and frustrations to help improve the design of SmartScan.

Intro & Participant Background:

Good day! As you all know, my name is Meah Hopkins, and I thank you for taking the time to meet with me today. First, I would like to know if I have everyone's permission to record this interview, as this will be my means of data collection and storage. And please be assured that you will not be asked to provide any personal information, and all the information you share will be protected and stored on my Android phone and will not be shared with any third-party solicitors. It will be strictly used for my research purposes and involving this project only. If there is anyone uncomfortable with being recorded, please understand that is ok, as your comfort throughout this process is paramount – just note that data collection will then be done via notetaking, which may prolong this interview. If I have everyone's permission to record, I want to extend my thanks, as this helps to better capture everything said here, significantly minimizing the chance that something pertinent will be missed. The purpose of this interview is to examine your refrigeration habits. But before we begin, I'd love for each of you to share some feedback as to how this research may resonate with you and what you hope to see happen because of this study. I appreciate all of your sharing, and without further ado, I'd like to commence with the interview. Everyone ok with that? Great!

TASKS:

1. User will download the app and create an account
2. User will sign in to the app
3. User will scan their groceries then assign expiration date
4. User will upload grocery list
5. User will manually enter items then assign expiration date
6. User will upload grocery list
7. User will view their stored lists
8. User will sign out

Main Interview Questions:

There will be no set questions for this interview. Users will be given specific tasks to complete (different combinations of the task list above) and will be asked general questions about how they felt as they navigate the application and what suggestions they have to improve the app.

In Closing:

Thank you for participating in this interview. Would any of you like a copy of this interview? Would you like to receive updates as to how this interview has impacted my project? Do you have anything else you would like to share? Thank you again for your time, and as a token of my appreciation, I'd like to offer you each a gift of $25. If you spend it on groceries, try not to let it go to waste! Have a great day!

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Proposed Data Collection Instrument

For data collection, a document analysis will be conducted to gather information from website articles containing information relative to this study.

List of website articles researched:

1. **Study Shows How Much Food Americans Waste Every Year**
   A new study examining the food waste habits of 2,000 Americans found average Americans discard four spoiled items from their fridge every week.

2. **Smart Appliances Promise Convenience and Innovation. But Is Your Privacy Worth the Price?**

   Manufacturers collect data every time you run your dryer and open your refrigerator, but most of them don't want to talk about it

3. **Smart Refrigerators: How They Work, What They Cost, and More**

As indicated above the interview will be conducted by way of a WhatsApp recorded video of a group discussion fueled by questions that will be posed to the participants and that will encourage the sharing of expanded thoughts on the matter at hand.

Notes will be taken during the interview, and the completed recording will be reviewed to analyze participant responses.

Project Planning Report Sample

PROJECT PLAN &
TIMELINE.pdf

Summation

This project design is one that I find myself becoming very passionate about and I hope to have much success with its design, but more importantly, I hope to see this design implemented in Smart refrigerators nationwide in the not-too-distant future. I look forward to working on this project despite the challenges I am sure I will face along the way.

References

Just Energy. (2024, April 9). *Smart refrigerators: How they work, what they cost, and more*. https://justenergy.com/blog/smart-refrigerators

Staff, W. (2023, December 13). *Bosch studies how much food Americans waste every year*. Waste 360. https://www.waste360.com/food-waste/study-shows-how-much-food-americans-waste-every-year

Wroclawski, D. (n.d.). *Smart appliances promise convenience and innovation. but is your privacy worth the price?* Consumer Reports. https://www.consumerreports.org/electronics/privacy/smart-appliances-and-privacy-a1186358482