Problem and Solution Overview

Problem

The problem is simple. **Ordering food in a sushi restaurant takes a long time.**

The process starts with the waitress, and goes something like this:

Waitress -> Takes an order -> Goes to Sushi bar to place an order -> Goes to cashier for record -> Waits -> Gets the food -> Serves the food -> Waits -> Goes back to cashier -> Gets receipt -> Goes back to customer

Sushi chefs have to wait until a waiter/waitress brings in an order. During busy hours, waiters can't go to the sushi bar right after he or she received an order because they have to get multiple orders and take them at once. Sometimes sushi cooks take a long time to read all of the waiter's orders, and often they interpret orders incorrectly.

Unorganized Food Making Process:

In a busy restaurant the process can be streamlined. When many orders are waiting, finding items that are common across those orders is necessary to quicken the process. A chef can make many of one item at the same time which will take less overall time then making all of those items separately. However, it is hard to find common items with the existing system because orders are written on many small papers.

Absence of Management System for Sushi restaurant:

Here are some more disadvantages to the current system:

- non-digitalized sales record – employee can steal money after trashing order paper
- lack of statistical data of sales, inventory – hard to analyze restaurant’s current situation or hard to predict future sales because all the record is on paper (do not know when and exact amount of food materials to order from suppliers)

Solution

Sushi Restaurant Cashier – Digitized orders and various statistics of sales

Waiters/waitress – Fill out Anoto recognizable and pre-printed order sheet

Sushi Chefs – Sorted orders by table and grouped by common orders to speed up the process of the making food.

Target Users

Only full time employees were interviewed for this project. The following items were taken into consideration when choosing interviewees.

Size of restaurant: It is important to know the differences between how larger and smaller restaurants operate in order implement an adaptable system efficiently. Our choice of interviewees came from two different sized restaurants: a smaller one of 14 tables, and a larger one of 35 tables.

Working type: There may be different views among employees and employers. Our interviewees held the following positions: business owner, cashier, waiter, waitress, and sushi maker

Experience level: We wanted to view the problem from different levels of experience. More experienced employees could possible be too comfortable with the existing system and not want to change anything. Less experienced employees could have better ideas than more experienced ones.

Meet the Employees

We interviewed employees from two different restaurants which we will for now call Sushi Restaurant A and Sushi Restaurant B. Below are some descriptions of each employee interviewed:

Sushi Restaurant Owner A

- This person has 6 years of experience. He wants to have more time to start a new sushi fast food business but responsibilities of managing the restaurant keeps him busy. Additionally, he has been thinking of adapting to a computer management system.
- He wishes to provide customers with better service: serving food faster, more greetings and communication between waiters/waitress and customers. He values keeping a close track of inventory, sales statistics, and records.

Sushi Restaurant owner B

- She has 20 years of experience and owns 2 sushi restaurants. She wants to start a new business but has no time due to her responsibilities with her currently owned restaurants.
- She views shifting to a computer management system as a means of serving food faster, keep track of inventory more easily, a way to follow sales statistics, preventing employees from stealing money or stocked food (beef or fish), and reducing the number of employees needed.

Waiter/Waitress A

- This person has 3 years of experience.
- Dislikes the occasional miscommunication with the chefs/sushi makers because it leads to wasted orders
- Wants to serve food faster.

Sushi Chef A

- The chief sushi chef in the restaurant, has 11 years of experience.
- He values his tools which allow him to arrange orders (up to 10 pending orders at a time).
- He runs into miscommunications with the waiters and waitresses. Sometimes it verbal and sometimes it is written.

Sushi Chef B

- This person has 8 months of experience and is the assistant to the chief sushi chef.
- He prioritizes easy ways to arrange orders and check inventory.
- He deals with verbal and handwritten miscommunications with the waiters and waitresses.

Contextual Inquiry - Interview Descriptions

Process and environment

The interviews with the two owners were conducted inside the sushi restaurant on the table (we could have observed the daily routines of the owners since the owners frequently paused the interview to do their tasks – ex. Job interviews, cashier check etc). The interviews with the two sushi men were done at sushi bars inside the sushi restaurant, watching the sushi men working. Then we interviewed the waitress outside the sushi bar after she is done with her work (she was too busy to be interviewed during work). However, we observed how she works when we were interviewing the owner. Our interviews were conducted by two people: one person asking questions mainly, and the other typing the rough idea or answer from the customers using a laptop, and possibly asking follow up questions when the other person ran out of questions to ask (we thought silence might distract the owner from focusing on our interviews). The interview starts by asking the owner full order process to until the food is delivered to the customers, and what are the pros and cons to use papers to keep track of money in the cashier. We asked the sushi men that are the pros and cons for using order slips (paper) to make sushi. For waitress, we asked what are the pros and cons for using order slips (paper) to receive order and to communicate with the sushi man. Then the users (owners, sushi men and waitress) talk on and on; from here, we get lots of unexpected information. After that, we asked the 11 questions from the class. Finally, we discussed about the presence of Anoto pen and various concepts and applications using the Anoto pen with the users. We

received quite long and complex, but useful feedback from the users; we thought this will definitely help design our product better (user desires).

Common Tasks and Themes

A typical day in a sushi restaurant looks something like this. Waiters go to tables and writes down orders from their customers on an order slip (dual-paper). Usually the customers customize the orders by adding or subtracting particular ingredients. The slip on top goes to the sushi man, and the slip on the bottom goes to the cashier for calculating the total amount the customer owes. The chefs refer to the orders on paper (order slip) to make the sushi, possibly making multiple common sushi items together to save time. The chefs communicate by talking to each other to partition the tasks.

From the restaurant owners we gathered that usually a big sushi restaurant with 4 to 5 chefs can take about 10 orders at a time, whereas a small sushi restaurant with 2 to 3 chefs can take 3 to 4 orders at a time. When the cook is done making all the ordered items for one table, they ring the bell and the waitress brings the sushi to the customer table. After all the customers on a table are done eating, the waitress writes down the price for each ordered item on the guest check (the slip on the bottom) and uses a calculator to sum up and write down the subtotal and total amount due. To save time, memorizing all the items and their prices is a required step during waiter training (2.5 weeks to a month). At the end of the day, the owner of the sushi restaurant matches up the total amount of money in the cashier with the total amount summed up from the guest checks for the day to balance it all.

Unique features of individual interviews

The sushi slip was present but it is no longer used because of all the hassles: waitress puts the ordered item into a computer, and the data is transferred to the sushi man's touch screen and so forth. One of the owners seemed very interested after seeing the prototype of the product; he picked out many potential error sources to us. The other owner seemed enthusiastic about this product; she recommended adding some more features like: canceling an order, making additional order, letting the waitress use the Anoto pen and paper, instead of letting the customers use it and so on. One of the sushi men also mentioned that long time ago, sushi man directly received order. Because sushi men are expensive to hire, most sushi restaurants hired waitress to replace the job. Main sushi man, subsidiary sushi man, and helper were present in one of the sushi restaurants we went to interview, whereas only one sushi man and a helper were working in the other sushi restaurant. So where many sushi men are present, good communication (articulation) skill and partitioning the work according to their levels of skills were necessary. Lastly, the waitress as well as sushi men has his or her own customers; these customers come to the restaurant because of them – maintaining friendly relationship, hugging and so on. Therefore, one of the owner mentioned that reducing the number of waitresses is a negative effect (will not save the owner much money).

Concerns on the applications using the Anoto Pen

The following are notes of concerns that were brought up during the interviews:

- Have to train waitress
- Fast food works, but this is full service. The feeling of full service lost.
- The customers coming sushi bar are for leisure and talking. But if there's no waitress, they will feel awkward.
- It might turn out to be like Mexican restaurants, number card on table – no tip no waitress
- Ordering additional items (although only about 10%) – should customers write on the same slip again or on a different slip?
- How to cancel?
- Computer error – worries (must maintain stable) – backup needed
- Waitress, chefs, must have their own customers – friendly relationship, hugging – a lot of people look for that
- Where to put the monitor would be a problem
    - Sushi bar: can't be on the back, probably close by
- Main cook, subsidiary chefs, helper (different level of skills)
- Partitioning the work – dividing the work equally will be a problem
- Water may get all over the place
- Using PDAs: expensive, longer for waitress to be trained, and maintenance issues.
- Inventory cheating possible (stealing ingredients)
- Separate checks for dutch pay

Recommendations

The following were Recommendations received from talking to employees of Sushi restaurants:

- Work directly with one restaurant for testing
- Don't bother trying to replace waiters. This is a deeply engrained behavior and customers don't like filling in their own orders on paper. The restaurant feeling disappears.
- Waitress taking orders and using this system will work better than customers ordering themselves
- One monitor for a sushi bar is probably enough – communicate between chefs by word
- Prefer touch-screen; but if expensive, number pad would be sufficient
- Menu alphabetically ordered

Expected Benefits

There are a lot of benefits that our proposed system can bring about:

- A customer complains: "I've waited for 40 minutes" and then asks for a discount
    - System easily allows giving discounts to them if waited for too long
- Handwriting on slips is often unrecognizable; our system eliminates that

- Color Coding: we can use different colors for different items to streamline the process
- Increased productivity: customers always want their food as fast as possible
- Fishes are ordered everyday to retain its freshness. If the system is used for a month, or a year (for better statistics), it will be useful to set the amount to order each day.
- When selling the place, can exactly give the amount of “food cost” to the potential buyers
- Owners do not have to worry about waitresses cheating on cashiers (90% of restaurants with owners absent are being cheated).
- Remote access to restaurant statistics from home for owner.

Task Analysis Questions

We have interviewed 2 owners, 2 chefs, and 1 waitress from Matsu sushi and Damo sushi in Pleasant Hill, CA.

1. Who is going to use the system? The chef, the owner and the waiters are going to use the system.

2. What tasks do they now perform?The task is basically paper and pen based. The waitress goes to a table and takes down the orders on an order slip (dual paper). Then one paper goes to the chef and the other goes to the cashier. Chefs use these slips to fulfill orers. After the customers are done eating, the waitress notes the prices for each item ordered for the table and sums up to write down subtotal and total amount due. Later at the end of the day, owner checks whether the amount of money in the cashier matches up with the amounts written on all the order slips.

3. What tasks are desired?The owners want the process of making sushi or cooking to be as quick as possible. So a streamlined system to take orders is desired. Also other tasks the owners wanted were mostly concerning security issues. Waiters trying to steal money is a common problem – the waiter trashes or rips off the guest check and keeps money for herself. Consequently the owner has to be present at the restaurant most of the time to prevent stealing. So the owner wants a system that can secure the cash register without his or her presence.

The chefs want to make sushi as fast and efficiently as possible. They can do this by using a more systemized way to pick out common item orders to make them together, especially during the busiest hours. The chefs also want to improve their communication while working in the kitchen.

The waiter similarly wants to communicate better with the chef and the cook in the kitchen.

4. How are the tasks learned?Waiters and chefs receive formal training. In order to learn how to take orders and memorize the prices of all the items, waiters needs to be

trained at least 2 and a half weeks. The rookie chefs need to be trained to make multiple sushi items together with other chefs as well.

5. Where are the tasks performed?The tasks are performed at the floor (dining hall) for taking orders by the waiters, at the sushi bar or kitchen for making sushi, and at the cashier's register for writing bills.

6. What's the relationship between user & data? Chefs & data: Chefs refer to the data (order slips) to make sushi.

Owner & data: Owner refers to the data (order slips) to balance the cashier.

Waiter & data: Waiters refer to the data (order slips) to ensure that every item on the slip gets to the customer. Also she refers to the data to calculate total amount due by the customers.

7. What other tools does the user have? Owner – Computer monitor Chefs – Touch-screen Waiters – PDAs

8. How do users communicate with each other? The waiter lists off the names of the items ordered to the chefs or hands over papers (the order slip) to them.

9. How often are the tasks performed? Depends on the number of customers.

Approximately 1.2 orders per table

10. What are the time constraints on the task? Need to limit the time from when the customer sits down to when he receives his food.

Max time limit for Mastu sushi: 20 minutes Max time limit for Damo sushi: 10 minutes

11. What happens when things go wrong? There are several things that can go wrong:

- Waiters or chefs make a mistake and the incorrect amount or type of food is served to a customer.
    - If extra food is made, often employees or owner just eat it later (never give them out to customers)
    - If less food is made, it will often take extra time to finish the customer's order and hence a discount is given

Analysis of Tasks

Our application lends itself to three different categories of users: the waiters/waitresses, sushi makers, and the owner/cashier of the restaurant. Six tasks can be identified thus far which involve the waiters/waitresses, sushi makers, and the owner/cashier.

Easy:

(1) The first task our application requires is for the waiter/waitress to fill out a sushi order form on a customized sheet of digital paper. The waiter/waitress writes the quantity of each sushi and roll that customers want, identify the current table at which they are sitting (this information is needed when the waiter/waitress deliver the food or the bill to the customer), and check a 'Send Order' box indicating waiter/waitress completed to get customers' order.

(2) A second task our application supports allows the owner/cashier to view the total amount of money each table owes. This function will require software to optically recognize the number the customer wrote indicating the number of sushi rolls they wanted and convert it into an integer. Each integer will be multiplied by the price of the given sushi roll and summed up to reveal the total amount spent.

Medium:

(3) The owner/cashier will need to be able to alter his or her menu and prices from time to time. This could be a result of supply and demand for the different types of sushi and also the cost of ingredients that go into food preparation. A separate interface should be provided to allow the owner/cashier to simply change his or her menu without worrying about the dynamics involved with the digital pen, paper, and optical recognition.

(4) Functionality should be provided to allow the owner to view different various statistics based on information gathered from the order forms. Such statistics, for example, could include which item such as sushi or roll was the most popular last month, or which month brought in the most money last year.

Hard:

(5) Information on order forms that have been completed by the waiter/waitress should appear on the computer screen in some kind of queue fashion which would allow the sushi maker to determine the next table in line to receive their food. Once the food was delivered, the order form would be removed from the queue and placed on a separate list for further processing, see task (6).

(6) Information regarding how much each given table owes remains on this list until the customer has paid and left. All orders would be grouped by table number for the possibility of a given table ordering multiple times during one sitting. Additionally, functionality should allow this information to be exported to a separate format which would be used to process a receipt. Also, a method to distinguish individual orders and printing separate checks is needed for the customers who want to have separate checks on the same table.

Division of Labor

Student 1: Interviews, Questions, Images, Target User Group, Problem and Solution Overview and Task Analysis Questions
Student 2: Interviews, Questions, Images and Contextual Inquiry - Interview descriptions
Student 3: Interface Design and Overall Final Compilation
Student 4: Analysis of Tasks and Analysis of Approach