Point-of-Sale Systems
An Epilogue

An in-depth research project into common restaurant point-of-sale systems and their user pain-points.
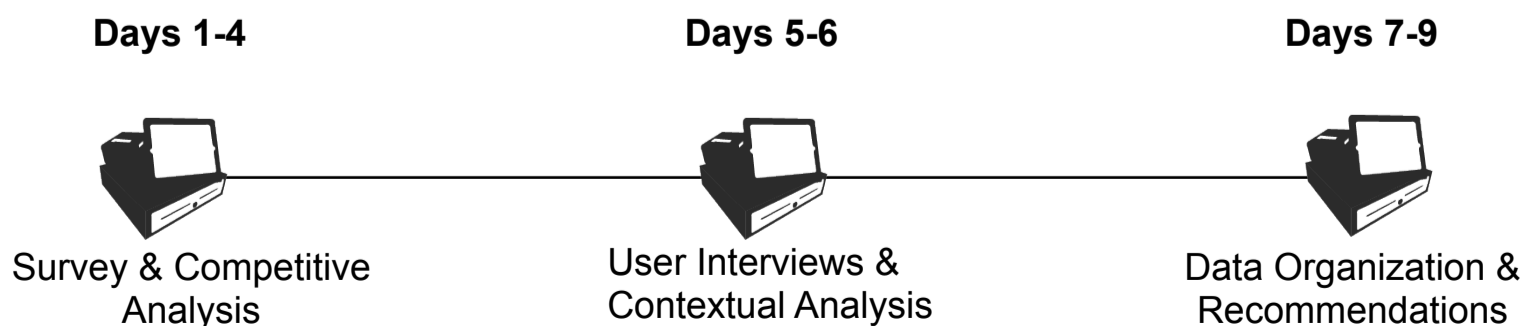
The Goal

To research a variety of popular restaurant POS systems, and conduct surveys and interviews to identify the most common frustrations users experience when using them.

Project Details
My Role: Researcher
Duration: 9 days
Tools: GoogleForms, Restaurant Workers, Affinity Maps

Days 1-4	Days 5-6	Days 7-9
Survey & Competitive Analysis	User Interviews & Contextual Analysis	Data Organization & Recommendations

Competitive Analysis

To get an idea for the variety of POS systems and their features, I researched 4 different systems, and compiled the findings into three different comparison charts.

Infogenesis

Micros

Toast

Square

Market Positioning				
	Infogenesis	Micros	Toast	Square
Business Model	Subscription	Subscription & Module Upcharges	Subscription	Pay-per-Transaction
Target Client	Multi-Outlet & Large Operations	Multi-Outlet & Large Operations	Restaurants	Small Business/Restaurant
Hardware	Microsoft & Third Party	Proprietary	Android	Apple
Start-Up Product	Software and/or Hardware	Software and Hardware	Software and/or Hardware	Software and/or Hardware
Start-Up Costs	About $10k	About $10k	About $1400	About $50-$200

In terms of market positioning, both Infogenesis and Micros are "Legacy" POS systems, meaning they are the oldest systems with the longest-standing reputation. They offer the most comprehensive service, and are well-suited to multi-outlet operations such as resorts and casinos. They are, however, the most expensive. Micros is the least customizable, as they require purchase of both software and their proprietary hardware.

Toast and Square are smaller companies, better-suited to single restaurants and independent owners who cannot afford the large up-front costs of a legacy system.

Feature Comparison				
	Infogenesis	Micros	Toast	Square
Durable Hardware	Yes	Yes	Yes	No
Inventory Control	Yes	Yes ($$)	Yes	Yes
Employee Management	Yes	Yes ($$)	Yes	Yes
Cloud-Based	Yes	Cloud & Server	Yes	Yes
Remote Menu Mods	No	No	Yes	No
Offline Capabilities	Yes	No	Yes	No
Gift Card Capabilities	Yes	Yes ($$)	Yes	Yes
NFC Capabilities	Yes	Yes ($$)	No	Yes
Online Ordering	No	No	Yes	Yes
Multiple Outlets	Yes	Yes	No	No
Internal Account Payment	Yes	Yes ($$)	No	No
24-Hour Support	Yes	Yes	Yes	No
Personnel Support	Yes	Yes	Yes	No

When comparing features, the legacy systems offer the most, however Micros charges a fee for each new feature. We can also see here that newer companies like Toast have features that are a product of the hyper-connected world in which they were created, such as remote modifications to menu items and online ordering.

Legacy systems, on the other hand, are working to catch up to the new players' features, as is the case with Micros, which is still making the transition from server-based to cloud-based data storage.

Heuristic Evaluation

	Infogenesis	Micros	Toast	Square
Back-of-House Functions	Item-Specific Inventory Management	Ingredient-Specific Inventory Management, Station Closing Checklists	Item-Specific Inventory Management	Basic Inventory Counts
Analytics	Guests & Transactions	Guests, Transactions, Station-Specific	Guests & Transactions	Guests & Transactions
Training	In-Person Onboarding	In-Person Onboarding & Training Modules	In-Person Onboarding	Online Instructions
Configuration	In-Person Customizable	In-Person Customizable	In-Person Customizable	DIY
Transaction Limitations	None	None	None	Officially $50k, Reported problems at $500-$3k
Tablet Ordering	Extra Module	Extra Module	Extra Module	Entirely Tablet-Based
Support	Personnel & 24-Hour Remote Support	Personnel & 24-Hour Remote Support, Only to Original Software Licencees	Personnel & 24-Hour Remote Support	6AM-6PM Phone Support & Social Media/Email

Some features are included by all four competitors, however since features of some systems are more comprehensive than the features of others, it is worth comparing them in a qualitative heuristic evaluation.

Unsurprisingly, the more expensive legacy systems offer more in-depth back-of-house functions, analytics, and support, while less expensive systems offer only basic services in these categories. Of the legacy systems, Infogenesis offers the most comprehensive features while maintaining flexibility. Of the newer companies, Toast offers the most complete services without the legacy price-tag.

To visualize the difference between these competitors, it's helpful to see them on a diagram in terms of affordability and customizability.
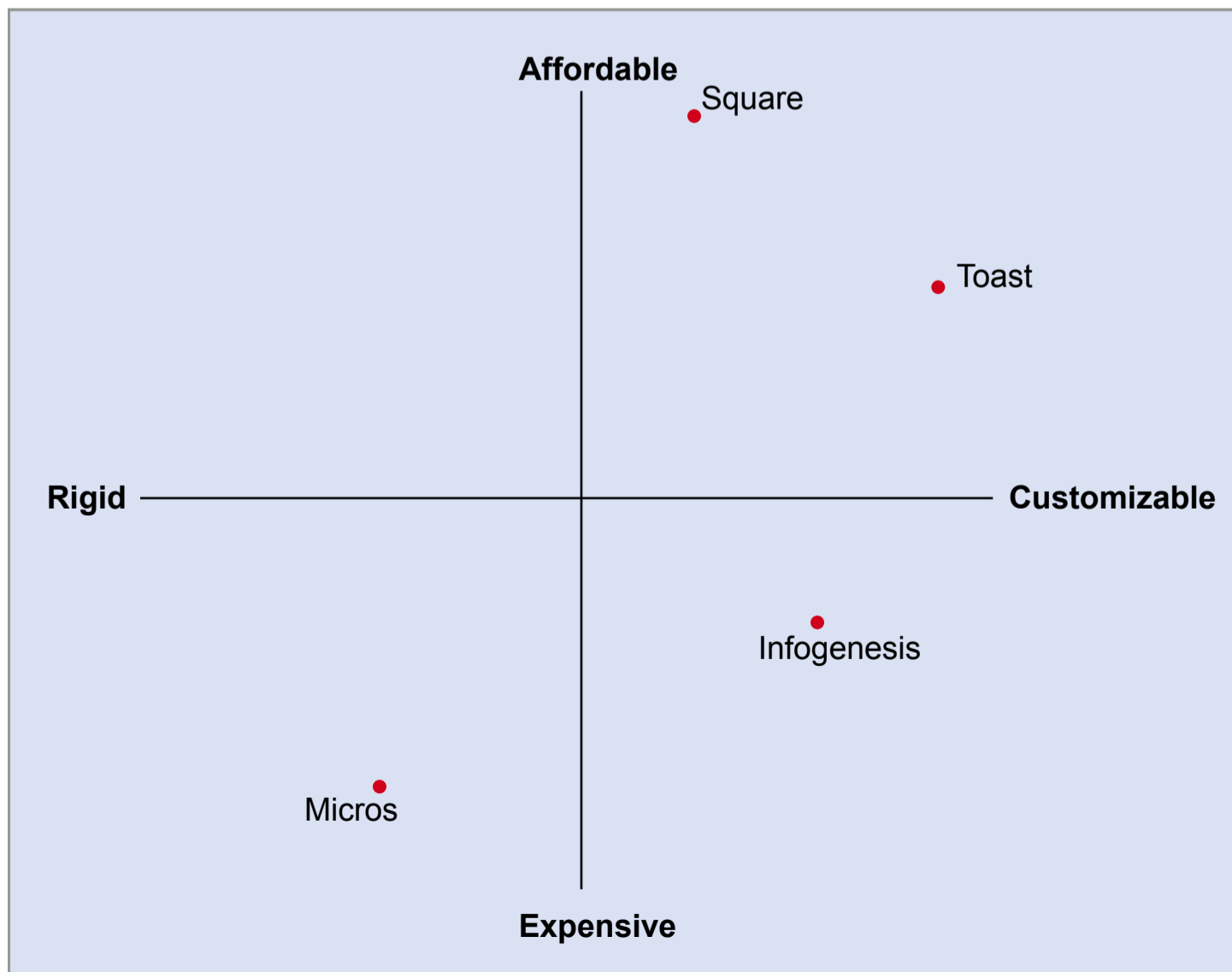
User Research

Survey Sample Group

23 Participants
96% Aged 25-49
74% 5+ Years' Restaurant Experience
12 Servers
7 Bartenders
2 Management
2 Support Staff

User Interview Sample Group

6 Participants
4 Female
2 Male
Aged 23-60
3 Servers
2 Bartenders
1 Manager

The Survey

A list of general questions was compiled to gain insight into restaurant workers' experiences with point-of-sale systems. These questions were placed into a Google Form and dispersed to a network of my former co-workers. Key findings from these questions included:
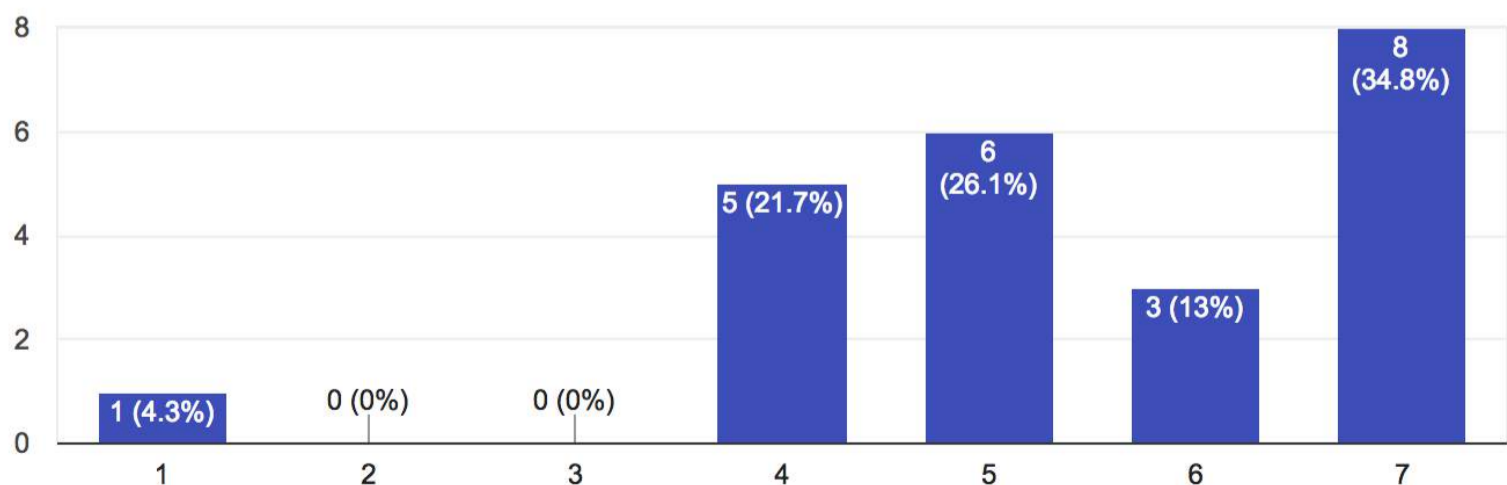
On a scale from 1 to 7, how does the POS affect your ability to perform?

23 responses

Scale	Responses
1	0 (0%)
2	0 (0%)
3	0 (0%)
4	2 (8.7%)
5	9 (39.1%)
6	6 (26.1%)
7	6 (26.1%)
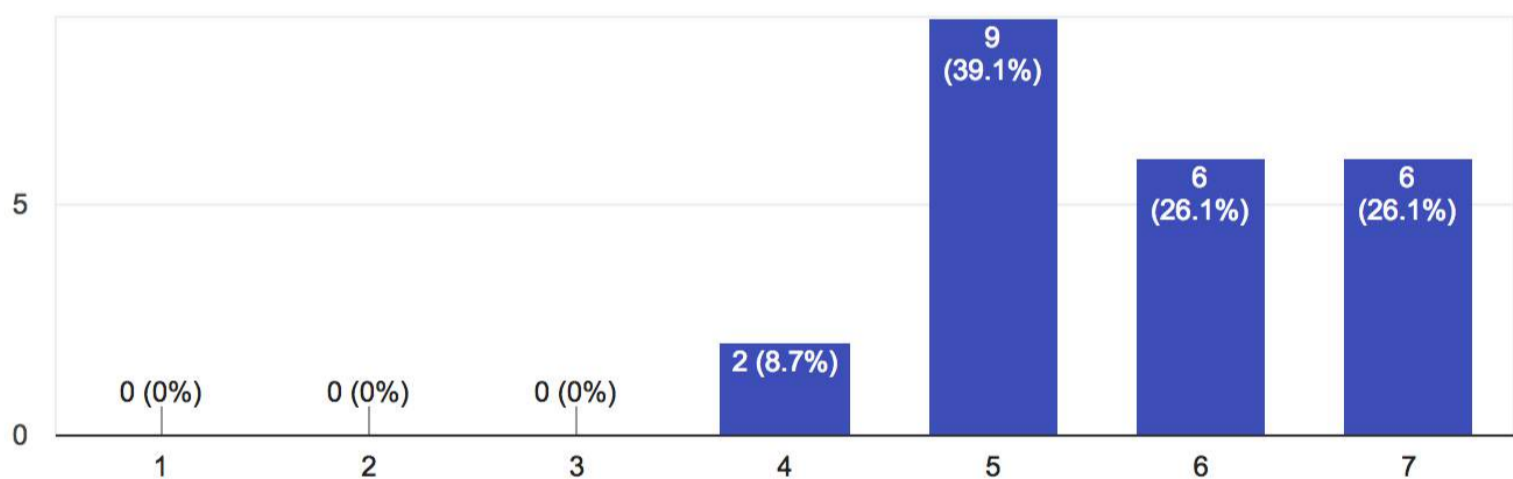
Is a POS experience capable of affecting your workplace happiness?

23 responses

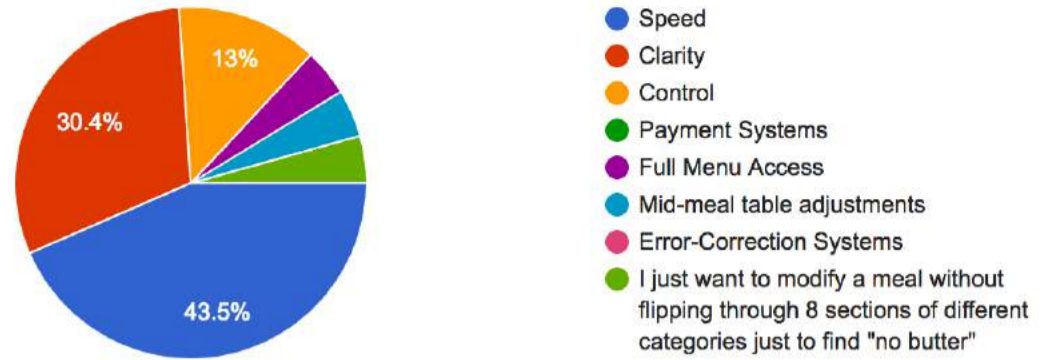| Scale	Responses
1	1 (4.3%)
2	0 (0%)
3	0 (0%)
4	5 (21.7%)
5	6 (26.1%)
6	3 (13%)
7	8 (34.8%)

From these results, we are able to establish that considering a user's POS experience is a worthwhile endeavor, because it has reported effects on the user's ability to do their job (that is, manage guest satisfaction) as well as the employee's overall workplace happiness. Both of these points can affect a guest's experience, and play a part in the maintaining of repeat clientèle.

What is most important to you in a POS?

23 responses

I also found that speed was overwhelmingly the most important aspect of a POS to the user.

Legend:
- Speed — 43.5%
- Clarity — 30.4%
- Control — 13%
- Payment Systems
- Full Menu Access
- Mid-meal table adjustments
- Error-Correction Systems
- I just want to modify a meal without flipping through 8 sections of different categories just to find "no butter"

On average, how long would you say you spend at a POS when entering an order for a guest/table?

23 responses

Unsurprisingly, I also found that the majority of users spent less than a minute at the POS when entering an order.

Legend:
- Under 1 minute — 65.2%
- 1-2 minutes — 26.1%
- 2-3 minutes — 8.7%
- 3+ minutes
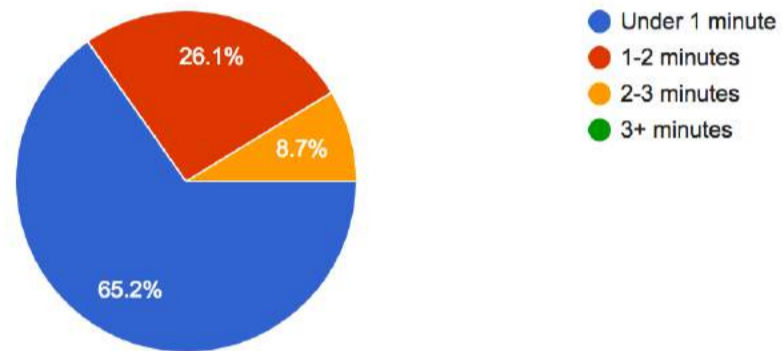
When you encounter a problem at a POS, how much time do you spend trying to solve it before seeking help?

23 responses

I also discovered that in the event of a problem, users will *double* their time spent at a POS, before even seeking help to fix the issue.

Legend:
- 30 seconds
- 31-60 seconds — 34.8%
- 1-2 minutes — 47.8%
- 2-5 minutes — 8.7%
- 5+ minutes
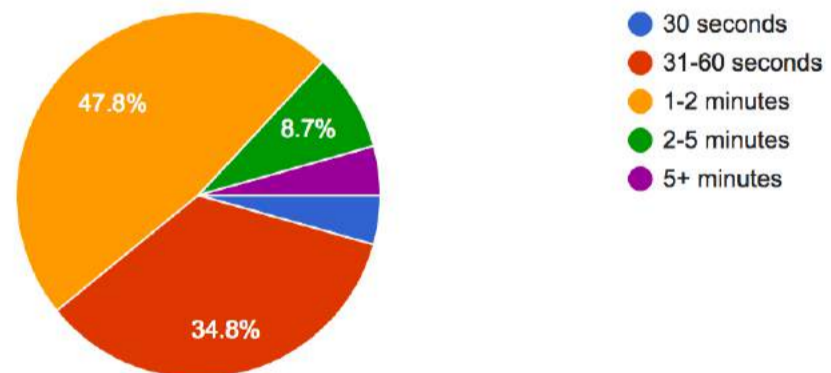
A restaurant rule-of-thumb is that 60 seconds of real-time is roughly equal to 5 minutes in the guest's perception. If the problem is isolated, this can add 5 minutes of perceived time - but if there are multiple issues at once, guests can easily be made to wait for what feels like 20 minutes.

How do you prefer to have information organized throughout a POS system?

23 responses

Presumably motivated by speed, users also largely prefer fewer clicks to get to where they need to go.
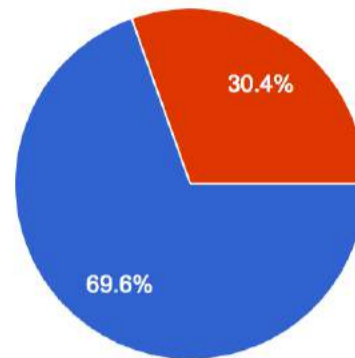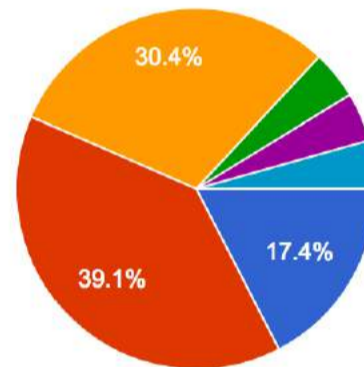
- ● Few pages, each containing many items.
- ● Many pages, each containing few items.

30.4%

69.6%

On a single screen, how do you prefer information to be organized?

23 responses

The largest percentage of users surveyed preferred items to be color-coded, making for an easily scannable interface.

This feature would also be heralded by participants in user interviews.

- ● Alphabetically
- ● Categories, Separated by Color
- ● Categories, Separated by Location on Screen
- ● Categories by color but also alphabetized per category
- ● and alphabetically
- ● Table Map > Categories > Alphabetically-listed items in that category

30.4%

39.1%

17.4%

User Interviews & Contextual Inquiry

I compiled a series of specific questions and conducted user interviews at a 5-Star resort on Cape Cod. Here I was able to get detailed accounts of user pain points, specifically regarding the POS system Infogenesis. Questions asked included:

- What were some of your favorite features of a POS system that you've worked with?
- What were some of your least favorite features of a POS system that you've worked with?
- Can you tell me about the last issue you encountered with a POS, and how you worked through it?
- What is the most common roadblock you've run into with a POS system?
- Has a POS ever affected the service your guest received? Can you tell me about this experience?

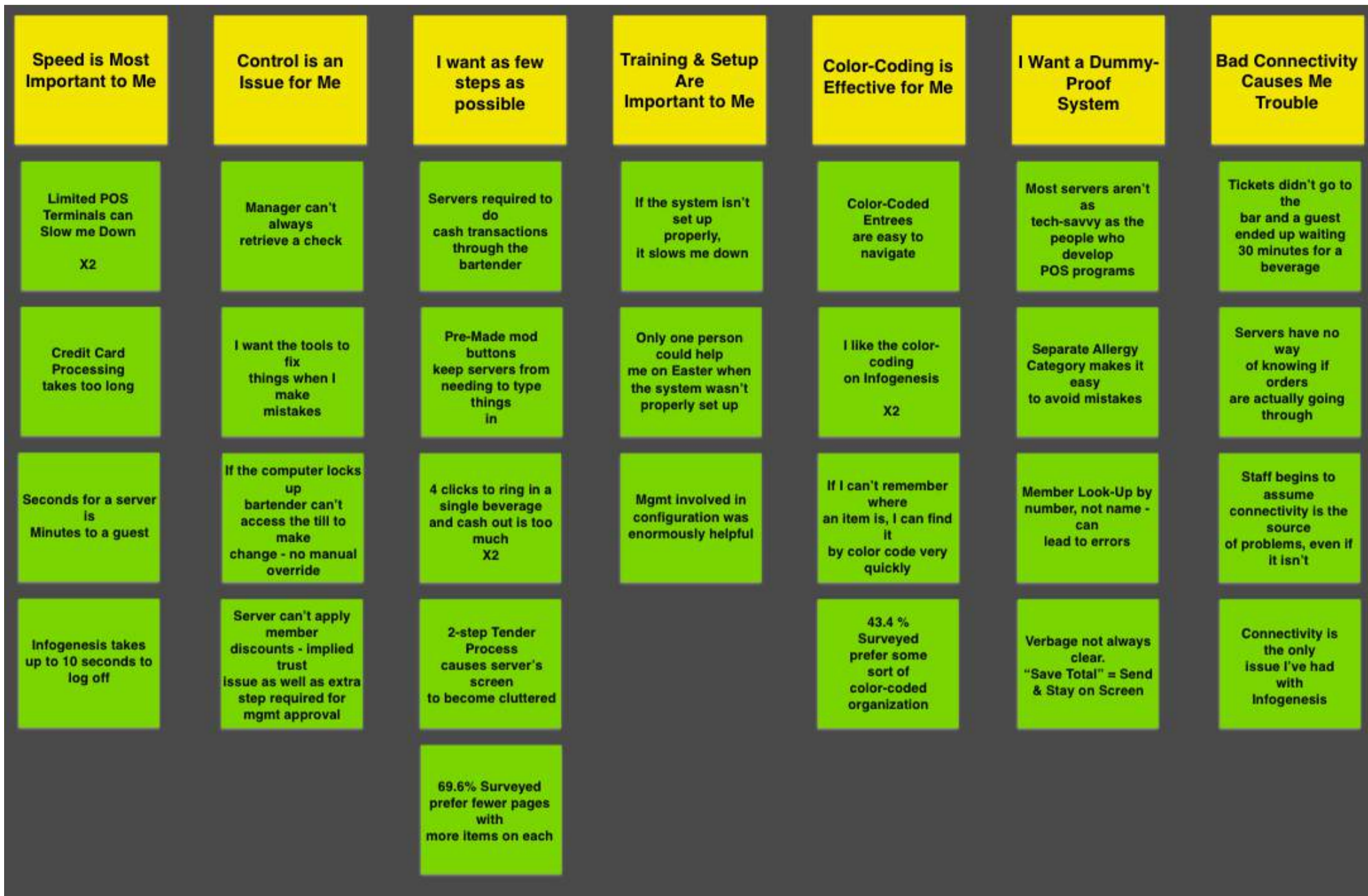# Wequassett Resort & Golf Club - Chatham, MA

Poolside POS Station

Contextual Inquiry

User Interviews

Affinity Map & Key Takeaways

Speed is Most Important to Me	Control is an Issue for Me	I want as few steps as possible	Training & Setup Are Important to Me	Color-Coding is Effective for Me	I Want a Dummy-Proof System	Bad Connectivity Causes Me Trouble
Limited POS Terminals can Slow me Down X2	Manager can't always retrieve a check	Servers required to do cash transactions through the bartender	If the system isn't set up properly, it slows me down	Color-Coded Entrees are easy to navigate	Most servers aren't as tech-savvy as the people who develop POS programs	Tickets didn't go to the bar and a guest ended up waiting 30 minutes for a beverage
Credit Card Processing takes too long	I want the tools to fix things when I make mistakes	Pre-Made mod buttons keep servers from needing to type things in	Only one person could help me on Easter when the system wasn't properly set up	I like the color-coding on Infogenesis X2	Separate Allergy Category makes it easy to avoid mistakes	Servers have no way of knowing if orders are actually going through
Seconds for a server is Minutes to a guest	If the computer locks up bartender can't access the till to make change - no manual override	4 clicks to ring in a single beverage and cash out is too much X2	Mgmt involved in configuration was enormously helpful	If I can't remember where an item is, I can find it by color code very quickly	Member Look-Up by number, not name - can lead to errors	Staff begins to assume connectivity is the source of problems, even if it isn't
Infogenesis takes up to 10 seconds to log off	Server can't apply member discounts - implied trust issue as well as extra step required for mgmt approval	2-step Tender Process causes server's screen to become cluttered		43.4 % Surveyed prefer some sort of color-coded organization	Verbage not always clear. "Save Total" = Send & Stay on Screen	Connectivity is the only issue I've had with Infogenesis
		69.6% Surveyed prefer fewer pages with more items on each				

I organized the information gathered in user research into an affinity map, as shown above. Key points that restaurant staff addressed were:

- Serving staff needs the system to be fast, above all else
- Color-coding and reducing steps needed to complete a given task are ways to achieve speed.
- Thorough training is needed to onboard a new system
- Serving staff wants a dummy-proof system.
- As POS systems move to tablet-based ordering, connectivity is becoming a prominent issue.

Conclusions & Recommendations

In the competitive analysis, I discovered that Micros is both expensive and rigid, and Infogenesis is a little less rigid. They, however, offer the most comprehensive features. Toast and Square, on the other hand, are both significantly less expensive, and while some features are not as robust as their legacy counterparts, their platforms are being designed from the ground up to be relevant in today's market. The larger and older companies will take time to adapt to cloud-based systems and online ordering - but if their existing components are any indication, once they establish state-of-the-art features they will likely be more robust than their less expensive competition.

In the second portion of my research, I learned from users that speed is paramount in the restaurant world. I also discovered that to this end, color-coding and limiting the number of clicks necessary to complete a task are highly desirable qualities. These two points should be kept in mind when configuring the information architecture of a new system. On the development side, shaving off seconds can be addressed by eliminating interface lag. Additionally, user testing should be practiced throughout the design and configuration processes, to ensure that the final system is as dummy-proof as possible.

Extensive training and testing should be practiced after the system is configured on property, but before it goes live, to ensure any final bugs are worked out, and that staff can perform with the new system. Issues such as mobile connectivity can be addressed here, and a better-informed staff will always make for happier guests.

For owners/operators of a hotel, casino, or franchise, I recommend Infogenesis, because of its cloud capabilities, flexibility, and customizability. For those running a smaller, single-front operation, I recommend Toast, because it offers the most features appropriate for such a business.

In either case, designers and developers from the POS companies should conduct user interviews and testing to set up effective frameworks for restaurant owners to choose from and customize to their specifications. From my research, color-coding and click-reduction could help to improve the service user experience.

Once in the hands of the restaurant operators, user testing could be conducted with their own staff to ensure their customizations make sense. Additionally, resources should be allocated to extensive training of the managment and staff to make live service run smoothly.

Moving Forward

Next Steps

Problem & Solution Statement - use the research gathered to develop a problem and solution statement to identify and address specific issues within the POS interface.

Develop Personas - use the research gathered to create personas - perhaps servers of 2 different experience levels, and owners/operators of restaurants of different sizes.

Design & Test User Interfaces - using personas and problem/solution statements, design sample user interfaces, and test them on serving staff to evaluate their efficacy.

Improving My Research Process

Ensure Survey Questions Are Clear & Specific - one of my survey questions was intended to inquire what role the participant had played in a restaurant for the longest period of time. Three people responded with the length of time they had spent in a single position, rather than the position itself.

User Interview Questions As Guidelines - during interviews, I found myself sticking to my interview script, even when participants had taken a turn away from my original question. It's important to keep the interviewee on task, but abruptly shifting the conversation actually interrupted their train of thought, and may have kept me from extracting a few extra bits of information.

Play Business Owner to Get Better Research - Micros and Infogenesis are both quote-based services, and there were several reports regarding their features which I was unable to access without going further into the purchase process. If I had more time, and a few company email handles, I could likely get this detailed information straight from the horse's mouth, rather than sifting through comparisons and reviews by third parties.