

DEP 305: Design Studio Project Report

FIFTH EDITION

Rebooting street food culture post Covid-19; with a focus on paani puri stalls

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Abstract

Paani puri holds a pivotal position in the cultural zeitgeist of India and is almost a key feature of the streets of the Indian subcontinent. Their culture associations have made them a staple of the people however as we move beyond the COVID crisis there is a deep mistrust between the consumers and vendors and the stall's hygiene practices are under scrutiny. Team Dis Ease Business aims to intervene in this atmosphere of skepticism and convince the consumers once again that it is safe to eat outside, delivering both customer satisfaction and stable employment to the vendors, while creating a profitable business for itself and all the stakeholders.

After conducting thorough research and consulting industry professionals, our team had a clear idea of what areas needed intervention to bring the street food culture back. Our solution was to create products that eliminate unhygienic practices and that aim to improve the entire street food experience, and hence build a brand around those products that aims to act as a sole signifier that any street food stall with our branding is hygienic.

We designed products that eliminate the need to use hands in the process of preparing a paani puri to make the overall process perceivably more hygienic, we tried to reduce the crowding at stalls by designing packaging solutions for a dish like paani puri that needs to be consumed immediately, we redesigned the utensils that paani puri is served in such that they are ergonomically better and that make waste segregation easier, and we also modified the paani puri cart such that it reduces the chance of infection of the people and contamination of the ingredients. We then made a business model that details the deployment of these solutions into the real world and the investment and returns for the company, it's vendors and it's investors over a period of 5 years and ensures that the business is profitable and sustainable.

1.0 Introduction

In this current pandemic, many city dwellers have been forced to let go of many of the conveniences that facilitate a fast paced lifestyle. Working from home has drastically changed the nature of urban life and their daily routines. Of course, many of these ‘conveniences’ are simply ways to cope with the rapid rush of life in the city, but to those who have lived with these conveniences, they have become a way of life and a culture.

One such convenience is the fast and easy access to food. Indian street food is renowned for its popularity with every strata of its society. It transcends most boundaries and is a shared culture that unites all urban Indians. From the vada pav of Mumbai to the kati rolls of Kolkata, from the uthappams of Chennai to the parathas of Delhi, the culture of quick street food is pervasive and unifying. But perhaps none of these dishes is more widespread and popular as paani puri.

In this project we will look at the role paani puri plays in the lives of city dwellers all across India and see how we can preserve this important aspect of our lives while keeping the experience of street food safe and hygienic.

2.0 Brainstorming and problem identification

2.1 Mind mapping

We began by making a mind map of all of the aspects of life that were affected by the coronavirus. We identified many of these areas where a shift had occurred, perhaps permanently, in the public perception of these aspects of life.

We came up with quite a few areas where we saw a scope for further investigation:

- Public washrooms
- Restaurants and other public spaces
- Seating and air conditioning
- Ticket booking in queues and other forms of queueing
- Commuting using shared vehicles including public transit, autos and cabs
- Cash management
- Salons
- Dentists
- Street food

We laid out all these ideas visually and drew connections where we saw them. This helped us branch into other ideas. We did not, however spend too much time on this stage as we needed to begin our research.

2.2 Problem assessment and ranking

We fleshed out each of the problem areas on our final list and put down what they would each broadly cover. Then we scored them against a modified version of the *Real-Win-Worth* system.

The *Real-Win-Worth* (RWW) system¹ uses three metrics to categorise the merits of a problem area. Each metric is broken down into two questions. And each of the six questions are asked of each of the problem statements:

1. *Is the market real?*
2. *Is the product real?*
3. *Can the product be competitive?*
4. *Can our company be competitive?*
5. *Will the product be profitable at an acceptable risk?*
6. *Does launching the product make strategic sense?*

Of course, not having a clear idea of a product in our minds yet, questions 3, 5 and 6 were difficult to answer. So we simplified the questions to the three core ideas:

1. *Is this a real problem?*
2. *Is this problem solvable given our resources and skill sets?*
3. *Can the solution we come up with sustain itself in the real world?*

So we made a table and scored the problems on a tiered scale of 1, 3 or 9. (Table 1) The reason behind using this scoring system was to “pop” highly-ranked factors more clearly, while lowering the scores of low-ranking factors.

Table 1: Real-Win-Worth analysis

Problem Area	Real	Win	Worth	Total
Washrooms	9	3	3	15
Local Buses	9	1	3	13
Local Trains	9	1	3	13
Salons	3	3	1	7
Ridesharing	3	9	3	15
Street vendors (commodities)	9	3	9	21
Restaurants (payments, seating)	3	9	3	15
Street food stall	9	9	9	27
Medicine transport and storage	9	3	3	15
Telemedicine	9	3	3	15
Home grown food (aquaponics)	3	9	3	15

Based on our assessments of the problems, we had one clear winner. Street food vendors had a perfect 9-9-9 rating.

3.0 Secondary research

3.1 History

Although there are many myths and legends about the origins of the dish, the actual beginnings of paani puri probably reach back to the end of the 19th century. It seems to have first appeared in South Bihar. It has since proliferated throughout India becoming one of the most recognizable snacks of the subcontinent.

3.2 Local names

There are many names for the dish and they vary in usage mostly by state. These different dishes all share the basic concept of a ball shaped puri stuffed and dipped in diluted chutney. But the filling, chutney and even toppings vary from region to region.

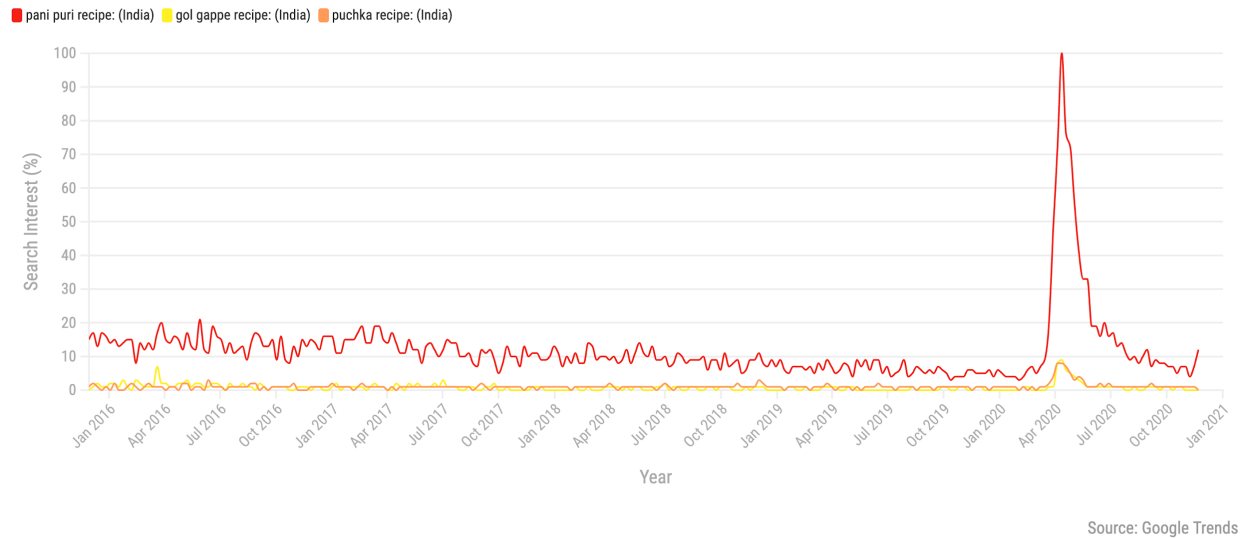
The three most popular versions of the dish are Paani Puri, Puchka, and Gol Gappa(Gappe). Paani puri is used throughout India, fuchka is used in West Bengal and gol gappe is used in the North and Northwest.

3.3 Travel and food blogs and vlogs

We were limited in our access to paani puri stands and restaurants as we are still in some of the worst of the pandemic in our cities, Delhi Bangalore and Aurangabad. We still needed to observe the experience of eating at a stall and so we looked to the next best option we had; travel and food blogs and videos. We looked at videos to observe the workflows of the vendor as well as the customer. Since there are very few good quality videos with decent angles online we were quite limited in our sample. It also didn't help that the videos were from different regions and thus had different recipes and workflows. However we did get some insights as to the prioritization of cleanliness, hygiene and customizability offered by the vendors.

3.4 Google Analytics

Online presence is a great metric to measure recognition of a term and how it changes with time. We ran the terms ‘paani puri’, ‘paani puri recipe’, ‘gol gappe recipe’ and ‘near me’ through google search analytics and got search data from the last five years.



Clearly there is a sharp peak in both of these terms at the beginning of the pandemic which peaked around April. This decline can be explained by two possible factors. One is the fact that once it has been googled once, the user has no more need for the recipe. The other possibility is that the recipe did not provide a good alternative to the real thing.

4.0 Primary research

4.1 Questionnaire

We still had a lot of questions for customers that needed to be answered. We designed a short questionnaire to gauge preferences and priorities in their paani puri experience. Each question was made to give us insight into the users needs and requirements in this experience. We covered topics ranging from taste preferences to location and convenience based preferences to toppings to utensils. We even looked at the social aspect of the experience, looking at the social setting people prefer to eat paani puri. We have received 36 responses to the questionnaire so far.

4.2 Interviews

The quantitative data we got from the questionnaire was useful in validating our idea as well as giving us some broad insights into the problem we were tackling, but we needed some in depth answers that required conversations.

4.2.1 Business Interview

We found an entrepreneur who had set up a paani puri stand in Bangalore in 2008. They had bought the stand and rented it to the person who ran the stand. After a while the stand was given to the vendor. This method was sustainable, but perhaps not very scalable. From this interview we got some numbers on the costs and other factors that go into this operation. While we spoke at length about this topic, we also touched on home food production for urban dwellers using aquaponics and vertical farming. While the idea has some promise, we feel that the present conditions make it impossible for us to follow through with this idea and do it justice.

4.2.2 Paani puri enthusiast interviews

These interviews give us insights into the actual experience of the customer at the paani puri stall. We got detailed accounts of the experience as well as insights into the decision making and prioritization that goes into choosing where to go to get paani puri. We put the insights we got from these interviews into a spreadsheet to analyse them in an affinity diagram.

5.0 Further research

5.1 FSSAI Guidelines

We looked at the published FSSAI guidelines on street vendors. The guidelines were even used by the FSSAI to create a pseudo-business model, but this model failed because it did not give clear incentives to the vendors.

5.2 Cost Analysis

We looked at a 2010 study which outlined the operational costs of a paani puri stand which broke the costs down. This will help us when making our business plan.

5.3 NID Research

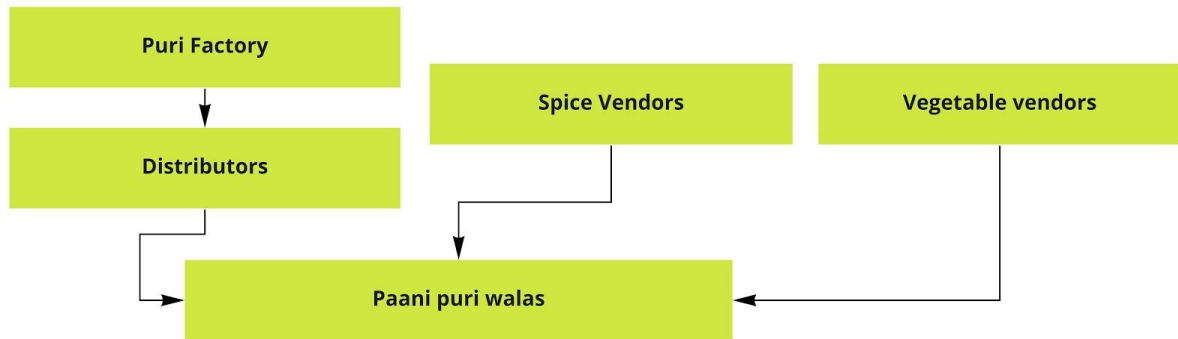
We also found a branding project form a student in NID Ahmedabad which had some interviews with paani puri walas which gave us more insights into the needs of the users.

5.4 Industry professionals

5.4.1 Vivek Kant

We consulted Prof Vivek Kant about the system we were working on for our redesign. He told us about an approach to system redesign where we look at all the elements of the system (users and mechanisms) and analyse how they interact with each other. Next we analyse these interactions and the problems that occur at each level. We are also looking at these interactions through the lens of the hygiene considerations.

5.4.2 B K Chakravarthy



We spoke to Prof Chakaravarthy about the existing ecosystem around chaat and street food. He told us to consider every level of the ecosystem and look at how our solution affects the existing solution. We also have to see if the solution we propose will be accepted as part of the ecosystem. He also connected us to various other industry leaders in street retail and design.

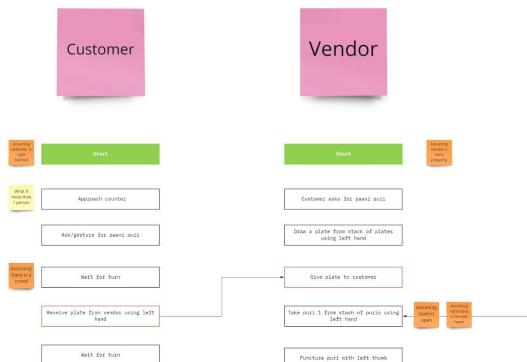
5.4.3 Richa (Food blogger at andtheniate.com)

We spoke to a food blogger because food bloggers primarily analyse eating experiences for a living. She told us about the importance of the group experience in street food, such as eating with friends and family. She also stressed the fact that people are not going to street vendors because of hygiene concerns, but because of the taste and experience factors.

6.0 Journey Mapping

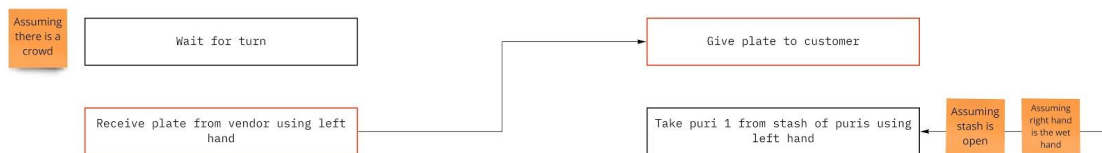
6.1 Customer-Vendor interaction map

We analysed many youtube videos and our own notes to create a comprehensive interaction journey map.



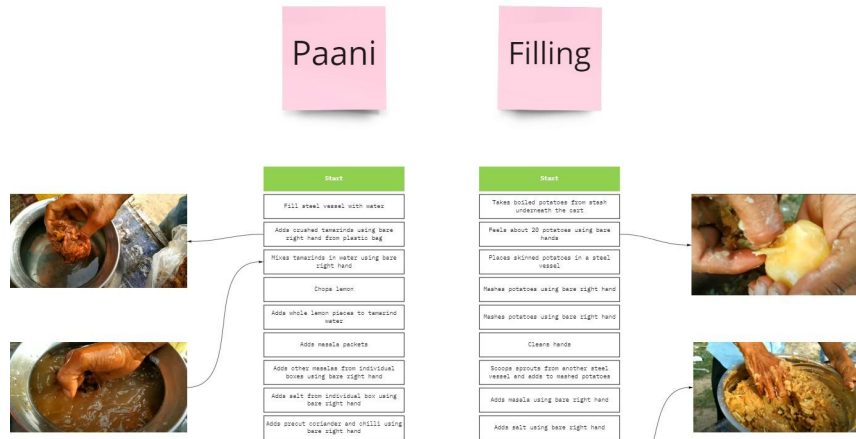
The entire map can be seen on our [Miro board](#). We also looked at the assumptions we had to make, the conditional steps and the direct contact interactions between the user and the vendor.

We used the Actor → Scenario → Journey stage → Mindset → Opportunities model.



6.2 Vendor preparation map

We also journey-mapped the vendor’s preparation of the ingredients. This gave us the weak and unhygienic stages of the preparation.

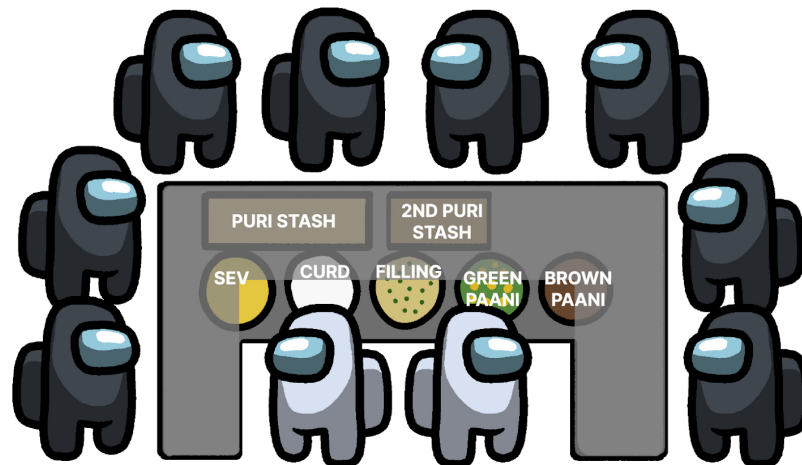


7.0 Workspace models

We analysed the physical space that the stalls take as well as the workspace of the vendors. We saw three main types of stalls.

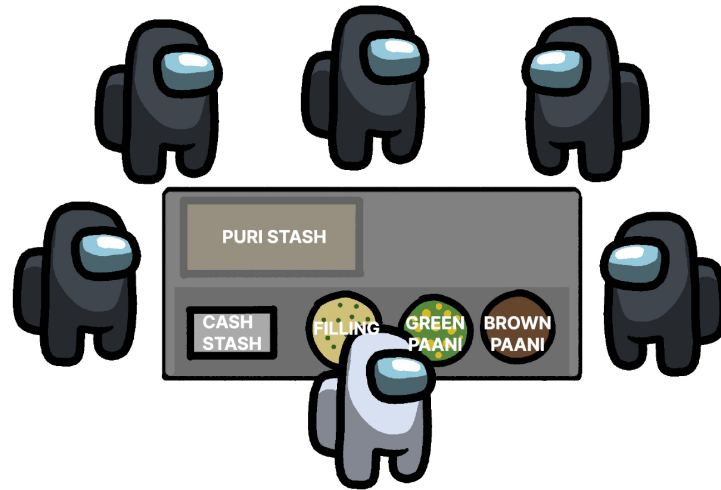
7.1 Large permanent stalls

The first type of stall is the large format chaat stall, usually found in front of restaurants and sweet shops. These are usually two man operations. They have more options and usually cost more. They also usually have a cleaner environment. They have multiple options for the chaat, and serve a lot of variations.



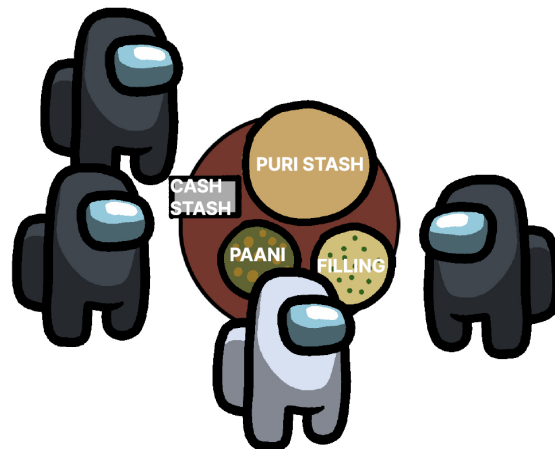
7.2 Medium sized carts

The second type of establishment is the push cart vendor. This is a mobile station, but usually operates from just one location. It is smaller than the permanent stalls and is usually operated by a single vendor. These carts can be moved in case the police ask them to leave and they can also help in moving the carts between the markets and the homes of the vendors.



7.3 Small stand stalls

The final type of stall is the single cane stand stall. This hourglass shaped stall is a very common sight in all major Indian cities. They are operated by a single vendor and pose a pretty large hygiene risk as the vendors are in extreme proximity with the users.



8.0 Finalised user needs

From these insights, we arrived at two sets of user needs; the vendor's needs and the customer's needs.

8.1 Vendor needs

- Needs to communicate that they can be trusted
- Needs customers to follow hygiene guidelines
- Needs a way to keep their environment clean
- Some vendors need to minimize the bulk of their apparatus
- Needs a way to minimize contact between themselves and customer
- Needs to manage payment in a hygienic manner
- Needs clean water for drinking and washing
- Needs to protect himself from potential infection

8.2 Customer needs

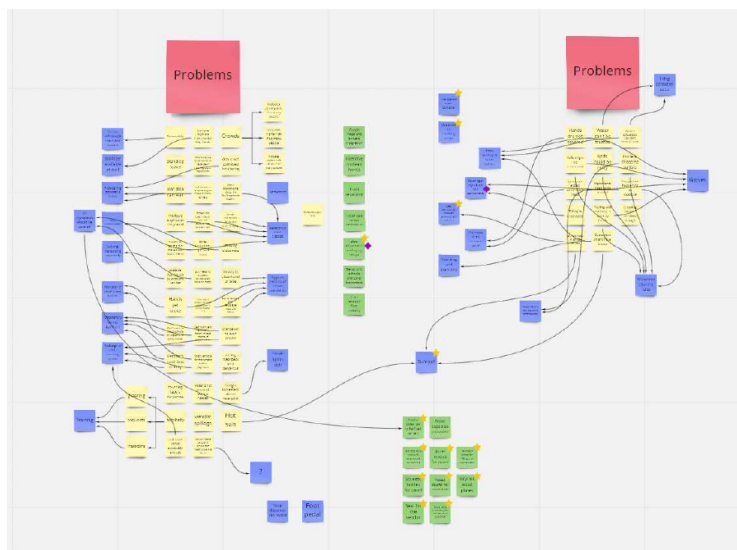
- Needs to protect themselves from infection from the vendor
- Needs to protect themselves from infection from other customers
- Needs to clearly and hygienically indicate their order to the vendor
- Needs to receive dish from vendor safely
- Needs to trust the quality of the food
- Need the food to taste good
- Need a safe way to pay
- Need a clean place to dispose of dishes
- Need a way to clean hands and face

9.0 Brainstorming from Journey Mapping

Based on the journey maps, we identified several actionable problem areas. We listed them all down under both the journey maps. We then brainstormed potential solutions to the individual problems. We looked at the roots of the problems to see if we could solve an underlying issue of which the problem was just a symptom. We also found many potential solutions which solved multiple problems and linked them up.

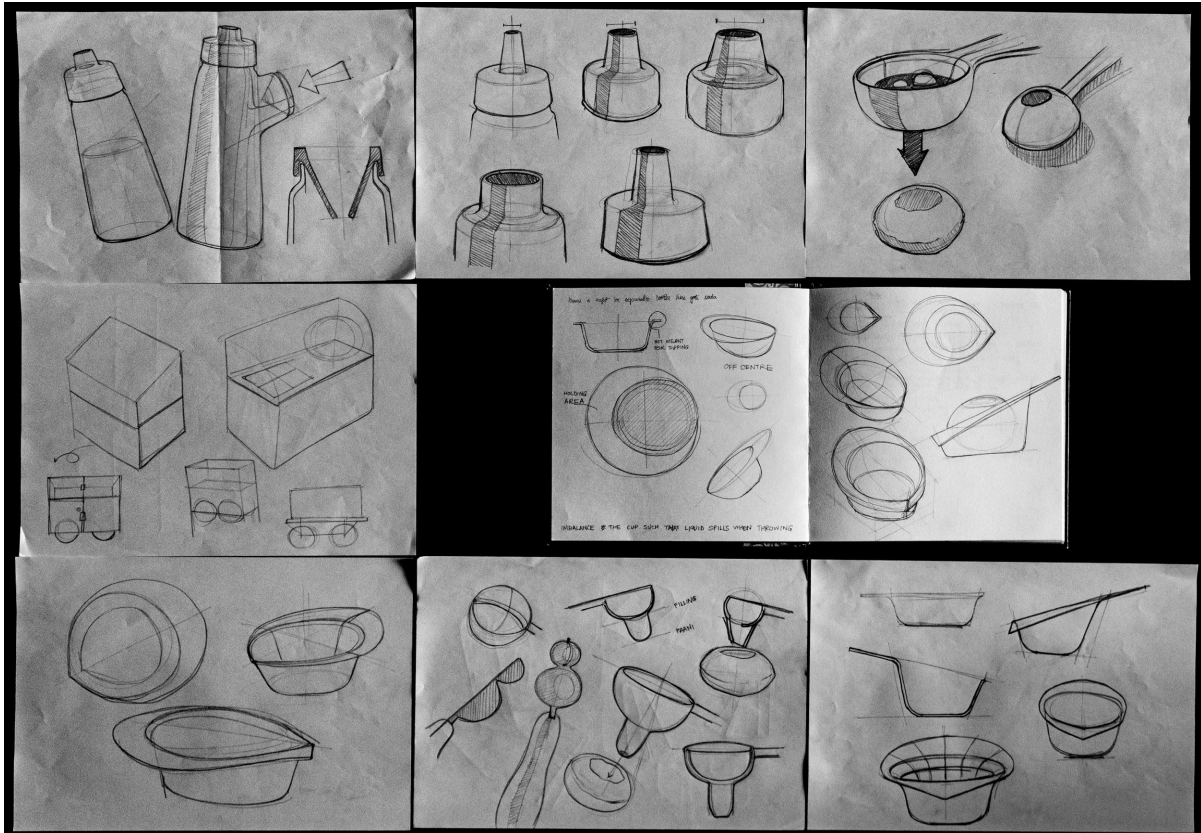
9.1 Preparation problems

The main issues faced by the vendors during the preparation stage were related to cleanliness and hygiene. Some other problems included storage and the surrounding environment and ambience of the cart. Separating the ingredients from the contaminants on the street were also a concern we looked at. We thought of potential solutions such as depressed containers on the cart which could be lidded when not in use, closed paani enclosures which can be dispensed from, sealed storage and safely stored dishes.



9.2 Ideation

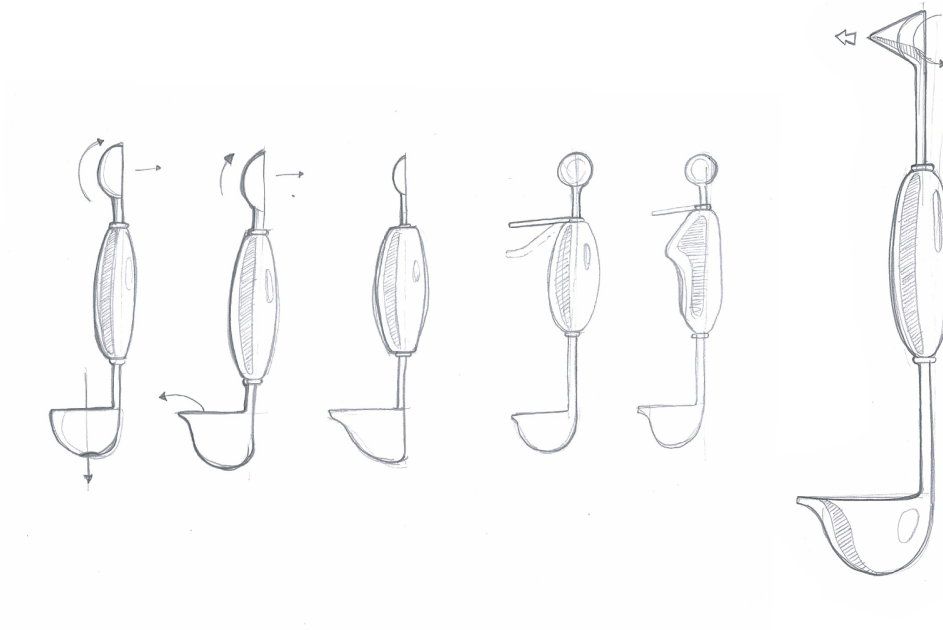
Most of the customer-vendor interaction problems stem from the issues of separation of food from vendor, vendor from customer, and customer from customer. These separation issues were the focus of our brainstorming. The vendor-food separation issues needed to be solved by providing interfaces between them, such as scoops for the filling, ladles or nozzles for the paani, gloves for the puri itself and other separators. We looked at various options for the scoops as well as the paani dispensers.



The vendor customer separation is a little more tricky, because it needs to address the passing of the dish to the customer as well as the returning of the dish for a refill. We solved a part of this by proposing a transparent barrier between the customer and the vendor which would have a small slot at the bottom for passing the dishes. This at the very least prevents the customers from breathing into the vendors space as well as onto the food being prepared. Another aspect we looked at was the eating and disposal experience. We explored designs for the puri dish which allowed for sanitary disposal as well as easy sipping, something which the current design prevents.

The bins for disposal were also unsanitary as the liquid pooled at the bottom and caused a stench. We brainstormed potential solutions to this issue as well. The overall cart also clearly needed a redesign as there was a lot of unused space.

9.3 Multi Scoop



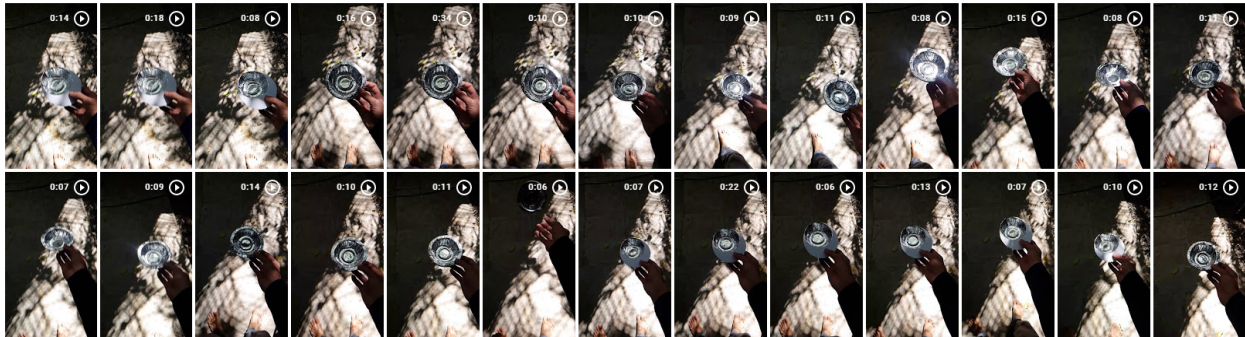
In the existing workflow one of the main identified problems was the contact that the vendor made with the paani and the filling. To remedy this problem, we ideated on several options. We considered automatic dispensers, foot pedal operated machines, squeeze bottles and several types of multitool.

We considered several designs, each with a large ladle to dispense the paani and another one to collect and dispense the stuffing. It needed to be easily flippable while not being unstable in the hand. We also implemented a secondary use for the smaller, stuffing scoop, to pierce the puri. So the tip was sharpened, but the internal shape remained optimal for scooping.

However, more iterations are needed to finalize the exact dimensions.

12.0 Bowl redesign testing

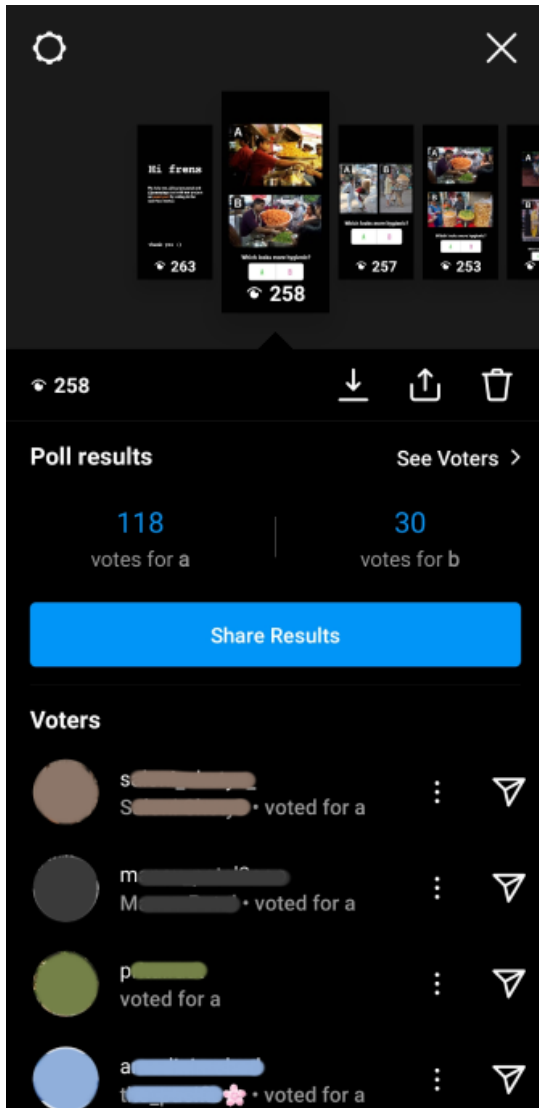
We also conducted a series of tests on our redesign concept for the bowl. We made a physical model out of the cardboard and tin foil. It is deliberately imbalanced so that it would tumble mid air and spill any leftover paani in it. We then did a series of drop tests with liquid in it and analysed the falls with slow motion footage.



Our initial assumptions were confirmed; the redesigned dish tumbled as expected and prevented any excessive spillage after impact, while spilling its own liquid.

13.0 A-B perception testing

We needed to confirm many of the assumptions we had made so far in customer perception. We sent out a large survey consisting of many questions which asked users to select one of two pictures. The questions were formulated to gauge perception of certain identified hygiene factors. The factors were not explicitly mentioned in the questions, so the users were not biased. We received more than 150 responses, We then tabulated the responses and made a series of inferences from them.



13.1 A-B Testing inferences

From the testing, we made the following inferences.

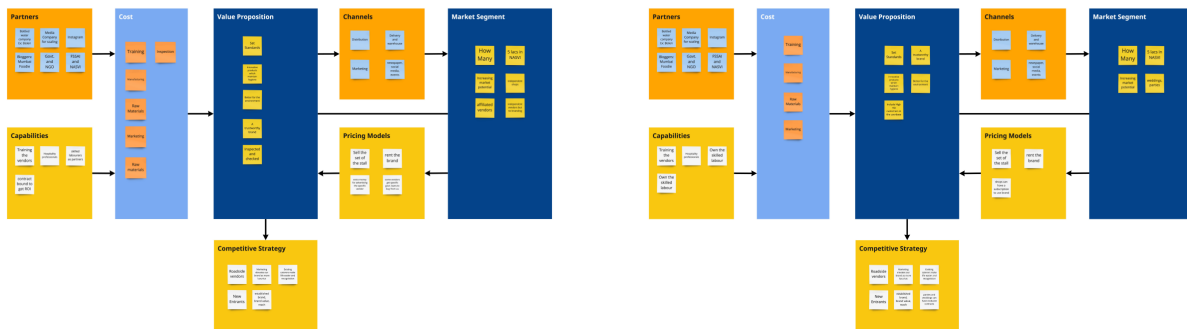
- Uniformed vendors are seen as more hygienic
- Ambient cleanliness plays a role in perception of the cart
- Vendors need to wear gloves at all costs
- Use of a tool to pour the paani is preferred
- Hairnet is also mandatory
- From a hygiene standpoint, customers prefer paani served separate
- Covered ingredients are preferred to uncovered

14.0 Business models

We consulted Prof Arti Kalro from the School of Management to help us formulate our business plans. We made two plans, one B2B and one B2C. The models were built to analyse all the aspects and potential future setbacks we may face. The models featured the following :

1. Partners
2. Capabilities
3. Costs
4. Value Propositions
5. Competitive strategy
6. Channels : Marketing and Distribution
7. Pricing Models
8. Market Segment
9. Flow of Value

14.1 Vendor and Caterer Model



Vendor model

Caterer model

The Caterer business model was designed to utilise the already established caterers as the main customers of our stalls and their business would rent our stalls for wedding and parties. This model had more one time earnings rather than earnings per day and also did not rely on the vendor to look for customers and also the need for the vendor to move his cart would be reduced. This proved beneficial in reducing the marketing costs however also reduced the total earnings significantly.

This model also brought lower cost in terms of competitive strategy as the environment of caterers did not have many competitors in the current space and the distribution would also be more centralized as we are catering to another business and one business has more capital to invest in one time dealings.

The Vendor model relied upon utilising the reach of individual vendors who also have the ability to serve a larger customer base. Thus the volume and reach would allow for more revenue than the previous option. The individual vendors also have the ability to adapt to their given environment and create a more customised experience to their user base. The vendors can travel and adjust their timings to suit the rush hours in the evening as well as school timings.

15.0 Scenarios

We developed scenarios based on the following principles:

- Context — A person's goals, motivations and drivers. The internal and external factors that incite them to action.
- Context helps us Understand - By understanding the context around a person's interaction, we can better understand their behavior and identify how to best serve their needs.
- Scenario — The actions that a person takes. How they interact with products and services to accomplish their goals.
- Scenarios help us Correlate - By correlating a person's actions with their context, we can determine how to design interactions that satisfy their needs in optimal ways.
- Outcomes — A person's state of being after interacting with a product or service. How they feel and what they do next.
- Outcomes help us Tie-it-together - By understanding a person's state of being after they take action, we can round out our understanding of their behavior by connecting outcomes with context and actions.

We used the context as the user needs we created and the outcomes to be the user goals and came up with the following scenarios :

Scenario 1

'Rohan' usually travels in a bus. On one such day he gets off on his regular stands and realises that he is hungry. He craves food and suddenly smells delicious smells on the

street. He sees a crowded stall and is put off by the risk of Covid and other contagious diseases. He then notices a branded Gupchup stall, and associates it with trust. He orders a packaged Pani puri plate and takes it home to enjoy.

Scenario 2

In the year 2025, the existing vendor, 'Rajesh', is resilient and sticks to his old ways of selling paani puri. He feels the effects of covid in the long term and has noticed a shift in user perception. Therefore, he invested in gloves but that is not enough to attract customers. He constantly sees people flocking to our stalls. He also notices that the crowds at the stalls are middle class and upper-middle-class who pay more for hygiene. He sees that there is more money to be earned. After enquiring about becoming a franchisee after seeing our ad on the Cart itself, he is trained and boarded onto our vendor network and provided with proper equipment.

16.0 Final products

Our final line of products is as follows -

1. Multiscoop
2. Paper glasses
3. Redesigned bowls
4. A redesigned cart
5. Set of guidelines
6. Brand Identity
7. Final Business Model

16.1 Multiscoop



The Multiscoop

- One end is a butter curler
- Other end is a ladle for paani
- Can also puncture puris
- Eliminates getting hands wet
- Easy to manufacture

The multiscoop is meant to eliminate the ‘wet-hand, dry-hand’ practice while preparing paani puri by providing a singular tool to do all the tasks that the ‘wet hand’ does- The butter curler at one end can be used to scoop filling and scrape it into the puri, while the ladle at the opposite end can be used to pour water into the puri; both of which are tasks done by using bare hands in some cases and is considered unhygienic.

16.2 Paper glasses

Paper Glasses



- Stackable; saves space
- Fast and easy operability
- Can be used for takeaway
- Cheap to manufacture
- Biodegradable

Because puris start getting soggy as soon as paani is poured into them, paani puri takeaway is very difficult. A possible solution to that is to pack a plate of puris with the filling added, but serve the paani separately. Paper glasses are the optimal solution to

serving paani for takeaway because- They are stackable so they won't occupy a lot of space on the vendor's cart, they are currently being mass produced and they are very economical, the nozzle can be clamped shut when it is manufactured and can be popped open when the customer wants to use it (without having to need any additional cap or mechanism) and the materials are biodegradable.

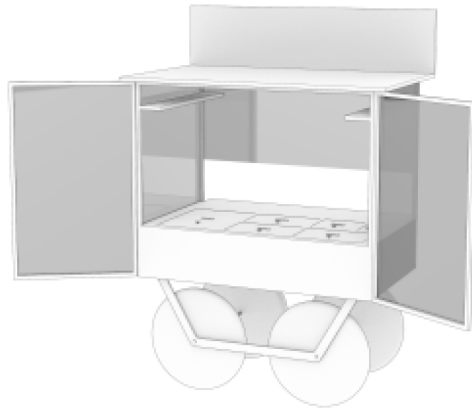
16.3 Redesigned bowls



The bowls currently being used to serve paani puri are made of recycled materials and are extremely easy to manufacture. But they don't have a big enough rim to be gripped confidently, they aren't built for pouring/sipping and tend to spill the paani, and also retain the leftover paani when tossed into the trash, which leads to stagnation and possible contamination of the environment. We simply off-centred the deprecation which provided the same design with better grip, there is a slight spout which helps in pouring/sipping and since the weight is imbalanced, the bowl tumbles mid air when you toss it in the trash, hence segregating your waste for you.

16.4 Modified cart

The Cart



- Transparent barriers on 3 sides
- Glass doors for separation
- Simple blueprint
- Locally available materials used
- Can be placed on any pushcart

The reason behind modifying the cart was to protect the vendor from infection, and hence protecting the hundreds of customers he comes in contact with henceforth. We added transparent barriers on 3 sides of the cart, so all transaction has to take place through one small window in the front. The doors serve the purpose of covering up the cart when closed, but when they are open, they serve as a barrier so that customers don't try to come in from the sides and back. We kept the blueprint as close to the common blueprint as possible, so that local vendors have no problem constructing it. We also added gastronorm containers to the cart instead of the traditional vessels, because they have a mental association with the catering industry, so they have a higher perceived level of cleanliness than typical street food. The containers feature a halfway hinge such that the lid doesn't have to be removed in order to access the internals and thus it protects the food by always covering it.

17.0 Conclusion

Given the Scope of the 5 week project, we set out to design for the post-Covid world and translate this design into a viable business. Through our initial ideations and explorations we discovered that the informal sector of paani puri vendors is a worthwhile area to focus on. This sector had a lot of potential and also faced an uncertain future due to the change in attitudes of people towards unhygienic street food. We chose paani puri as it had one of the maximum chances of infection out of the many street foods and their any design intervention here will surely inspire a greater

change in the other businesses too. Our testing and inquiry led us towards discovering that in the post COVID world the biggest hurdle these vendors will face will be the issue of hygiene and that this issue will surely turn people off the food or at the very least will push them towards bigger restaurants and outlets with higher food standards. Therefore we studied how the idea of perception works in terms of portraying the hygiene of the stalls and how the different factors such as lighting, colours and behaviour can be modelled to alter the customers' mindset.

Our solution was to create products that eliminate unhygienic practices and that aim to improve the entire street food experience, and hence build a brand around those products that aims to act as a sole signifier that any street food stall with our branding is hygienic. Thus creating a design system which encapsulated the principles of perceivable hygiene. We designed products that eliminate the need to use hands in the process of preparing a paani puri to make the overall process perceivably more hygienic, we tried to reduce the crowding at stalls by designing packaging solutions for a dish like paani puri that needs to be consumed immediately, we redesigned the utensils that paani puri is served in such that they are ergonomically better and that make waste segregation easier, and we also modified the paani puri cart such that it reduces the chance of infection of the people and contamination of the ingredients. Our idea delivers a net revenue of 22 lakhs per cart and if invested in will double the given investment over a period of 3 years. We project our business to grow significantly over a period of 5 years to over 110 vendors and generate a net revenue of 22.4 crore in year 5 of continuous operations.

Acknowledgements

1. Prof. B.K. Chkravarthy (Professor, IIT Bombay)
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6. Sejal Parnami (Chef)
7. Ms. Richa K. (Food Blogger)
8. Ms. Purvanshi Shende (PaniPuri Connoisseur)
9. Dr. Shobhit Jain (Executive Director, FSSAI)
10. Mr. Rajesh Bhai (PaniPuri Vendor)

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