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# Reducing the Usage of Disposable Paper Cup: User-Centric Service Design on Reusable Cup and Rental System for Office Building Gathering Area

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# Reducing the Usage of Disposable Paper Cup: User-Centric Service Design on Reusable Cup and Rental System for Office Building Gathering Area


## Abstract

From the perspective of sustainable design, this project aims to provide convenient and accessible reusable on-go cups for office workers and provide them with special coffee shop discounts and membership rewards. This will reduce the use of disposable paper cups in the office gathering, minimise the waste of land resources caused by landfills, and the financial pressure from promoting sustainable development and resource reuse. In the early stage of this design project, quantitative and qualitative research methods were used to investigate the white collars and coffee shop staffs of Suzhou International Science Park (SISPARK). The results show that office workers have a higher demand for coffee, but they will not bring cups to coffee shops to buy coffee, even if they offer discounts for customers who bring their own cups. This phenomenon is mainly due to the limitations of the office environment, which makes cleaning cups is a hassle. In the design process, the target user test was performed many times to confirm that the product design scheme of the cup and the use of the rental service system meets the expectations of users.



Keyword: Sustainable design, Reusable on-go cup, Product design, Rental service system

# 减少一次性纸杯的使用:
# 以用户为中心的办公楼聚集区的多次使用的杯子租赁系统设计以及随行杯的改良设计


摘要

本项目从可持续设计的角度出发，旨在为在办公室职员提供方便可获取的随行杯，并为其提供专门的咖啡门店折扣和会员奖励。这将减少办公楼聚集区域的一次性纸杯的使用，减少了垃圾填埋造成的土地资源浪费，也缓解了政府为促进可持续发展和资源再利用方面的财务压力。本设计项目前期使用了定量和定性研究方法对苏州国际科技产业园的职员及咖啡店员工进行调研。结果表明，办公室职员对饮用咖啡有较高的需求，但并不会携带杯子去咖啡门店购买咖啡，即使门店会为自带杯子的客户提供折扣。这种现象的主要是因为办公环境的限制，导致在办公室清洗杯子是一件麻烦事。在设计过程中多次进行目标用户测试，以确认杯子的产品设计方案以及租赁服务系统的使用符合用户的期待。



关键词：可持续设计，随行杯设计，产品设计，租赁服务系统



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# CONTENT

# Chapter 1 Introduction

## 1.1 Project Scope

It is reasonable that the sales will be incredibly high at coffee shops in office buildings gathering area. But the tricky problem that followed is that the consumption of disposable paper cups is still at a relatively high level in this area, although almost all of the office workers have their reusable cups in their station.

Kolko mentioned in his literature 'Wicked problems: Problems worth solving' that a wicked problem is a social or cultural problem that is difficult or impossible to solve. (Kolko, 2012) Reducing the use of disposable paper cups has often been seen as an emergency issue associated with low cost and low performance in recent years. There are a few ways to strengthen the situation at present:

a) Develop the technology for paper cup recycling and reproduction, which primarily includes investing in the manufacturing factories and equipment.

b) Improve the product packaging design, the redesign of disposable paper cups. For example, two college students in the United States have successfully used origami techniques to remove plastic parts from the lid of a disposable cup.

c) Emphasis on improving the actions of people and developing products or services to cause a meaningful shift in behaviour and provide a better user experience.

Taking into account the feasibility of performing design research within the specified timeframe and with the available help of the participants. This design project would approach the problem in the third direction, which is also important in preventing the problem from being solved. The aim of this project is to use the human-centred

design approach to optimize the consumption process and trigger good consumption habits for office employees in office building gathering area.

## 1.2 Problem Statement

The Wall Street Journal article mentioned that the Goldman Sachs Group cancelled the paper cup business in Europe, the Middle East and Asia, and introduced a paper cup ban in the US office, requiring employees to bring their own mugs.

Cafes such as Starbucks and Barista's have long offered discounts to customers who bring reused cups to buy coffee. The British Legislative Council has proposed to levy taxes on disposable coffee cups at 25 pence per cup to reduce the amount of waste.

However, none of these takes proper account of user experience and mental feelings nor addressing the issue systematically.

## 1.3 Research Question

a) How to help office workers to get clean reusable cup conveniently to reduce the usage of the disposable paper cup?

b) How to optimize the design of the reusable cup to accommodate more usage scenarios and to facilitate cleaning and maintenance?

## 1.4 Research Method and Design Approach

### 1.4.1 Framework for Innovation

As the core design methodology of Design Council, Double Diamond emphasize a simple, detailed and graphic summary of the design process, which reflect a method of exploring the problem more narrowly or more deeply and then taking focused action. However, recently, the Design Council extended the original model, and they

named it as Framework for Innovation (figure 1.1) instead of Double Diamond Model.

In the current model, some other main mental models which are a good aid in innovation programs were introduced under "design principles", including “User-centred design”; “Visual Thinking”; “Collaborate and Co-create”; “Iterate”. It's not a linear operation, but to make and validate theories at a very early stage, continuously receiving feedback and develop them iteratively, no idea is ever 'done.'

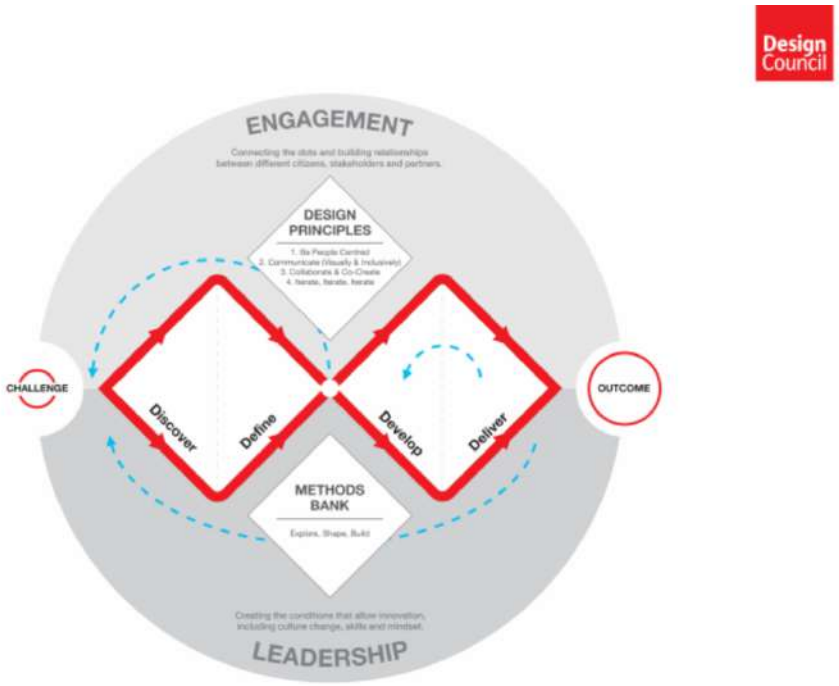



Figure 1.1: Framework for innovation model.

1.4.2 User-Centred Design Approach

The user-centred design (UCD) approach has been embraced throughout the whole design process. According to the journal “User-Centred design” by Chadia Abras et al., User-centred design’ (UCD) is a broad term to describe design processes in which end-users influence how a design takes shape (figure 1.2). This is both a general theory and a collection of methods. UCD users are engaged in a number of ways, but the main idea is that users are involved in one manner or another. Some types of

UCD consult users about their specifications and involve them at particular times during the design process, especially during the collection of requirements and testing of usability. Another reasonable UCD method is that consumers have a deep influence on the product by being involved throughout the design process as collaborators with designers.

The data collection methods for this project include qualitative research, semi-constructive interviews and surveys, and quantitative research, including questionnaire sample study.

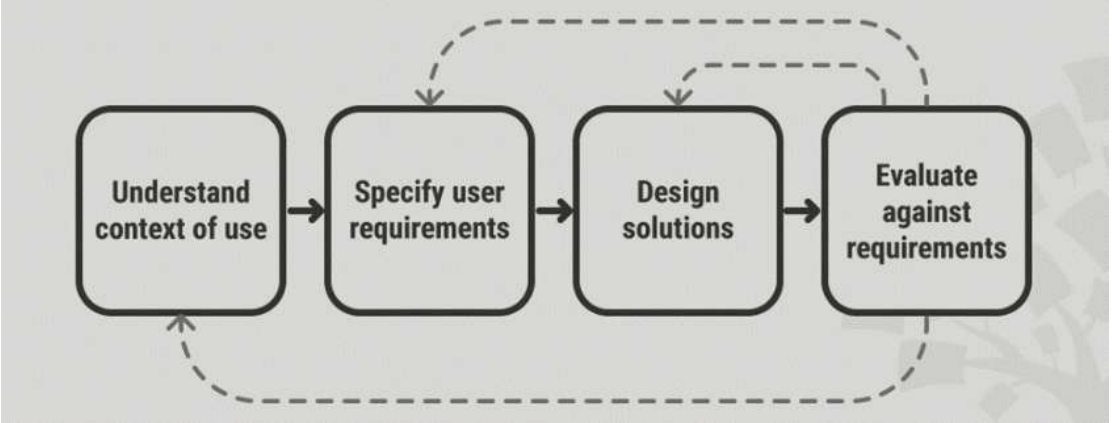



Figure 1.2: User-centred design is an iterative process

## 1.5 Design Objective & Outcome

This design objective aims to create a stable and reliable reusable cup sharing service system which should help to reduce the usage of the disposable paper cup, as well as optimize the user experience. This project will synthesize the application of industrial design, service design, and sharing economy theory. The product of the design involves a series of revamped touchpoints of the reusable cup sharing mechanism, aimed at inspiring the behavioural improvement of the consumer. These types of touchpoints which include, but are not limited to, reusable on-go cups, automated cleaning machines, rental stations, as well as online mobile APPs used during the cup rental process in the office building gathering areas. The outcome of the project

could be a potential implication for system design in other office building campus in the Chinese market in the near future.

# Chapter 2 Literature Review and Market Research

## 2.1 Literature Review

A literature review is a summary of a subject field that supports the identification of specific research questions. (Rowley and Slack, 2004) In this part, the author will mainly elaborate the research and analysis of the current situation of the industry in this design project, as well as relevant academic information about the design concept and system design logic that may be used in the project design process.

### 2.1.1 Current Usage and Recycling of Disposable Paper Cups

According to data presented by the environmental protection organization 'Stand.earth', only Starbucks coffee shops provide customers with about 4 billion paper cups every year.， and Starbucks 'promises to serve a 100% recyclable cup. (Stand.earth, 2019) But the real situation is that the so-called recyclable paper cups cannot actually be achieved in actual operation. Besides, the Reality Check Team (2018) from BBC claimed that in 2011, there were about 2.5 billion coffee cups were thrown away, it was predictable that the number would be higher because 99.75% of these coffee cups were unable to be recycled.

Although disposable cups are made of paper, they are still very difficult to be recycled. This is mainly related to materials and processing methods.

Food grade paper is used in the production of disposable paper cups. The surface of the paper is coated with a very thin layer of plastic material to make the paper cups resistant to oil and water and to hold beverages for a long time. After coating, the required patterns and colours are printed on the roll paper. The printed paper is cut into the fan-shaped paper by the machine, collected and sent to the forming machine to be rolled into the shape of a paper cup, and at the same time, the seam of the paper is heated to make the PE heat bonded.

The completed paper cups will be sent for inspection to confirm the shape is intact, and the internal surface is clean. Paper cups that are confirmed to be qualified are sent to major beverage stores or supermarkets through the packaging process.

The used paper cups are thrown into the paper product recycling bin. But this kind of recycling box must be emptied by a special big truck. To recycle paper cups, the first step is to clean the paper cups to remove residues, stains and bacteria, and separate the plastic coating from the paper with a lot of water. The ink and other small contaminants are then removed, and the resulting pulp can be used to reproduce paper bags and paper cups. Such a complex recycling process requires a large amount of human resources and water and electricity resources. Obviously, it is not cost-effective from an economic point of view, and no one can afford such a huge cost.

### 2.1.2 Service Design Principles

G. Lynn Shostack first proposed the concept of service design in the papers How to Design a Service (1982) and Designing Services That Deliver (1984) in the 1980s. The International Design Research Association also defines "service design": service design is to set the function and form of services from the customer's perspective. In recent decades, service architecture has evolved as a user-centred, interactive, holistic approach aimed at developing current systems or building new ones (Yu and Sangiorgi, 2018). Marc Stickdorn and Jakob Schneider mentioned five core principles when re-thinking a service in the book "This is Service Design Thinking" which is one of the famous books of service design thinking, including “user-centred”, “co-creative”, “holistic”, “evidencing”, and “sequencing”. Among the five principles, I would like to highlight the first three:

User-centred: a service architecture follows a user-centred design and in this situation, target users are experts in their own lives. (McCarthy & Gillian, quoted in Foley, 2018).

Co-creative: All stakeholders including frontstage and backstage elements, should be involved in the creation of the service. In certain cases of service production, the so-called "co-design" with target customers as well as stakeholders is perceived to be a crucial mechanism for the creation of satisfactory customer interface.

Holistic: The term "holistic" is closely linked to the systemic thinking behind the idea. Through following a holistic approach, the design "will go beyond problem-solving to incorporate all aspects of the ecosystems in which the product is used" ('What is Holistic Design?' n.d.)

Service design must be people-centred and consider all people affected by the service. Stakeholders with different backgrounds and functions should participate in the service design process. Requirements should be investigated in practice, ideas are prototyped in the real world, and have intangible value. It should also be evidenced in the physical or digital real world, emphasizing the needs of stakeholders across the entire service and business entity.

### 2.1.3 Sustainable Design and Circular Economy

The concept of sustainable development, which is defined in terms of the triple bottom line (economic, environmental and social) is becoming increasingly important (Efkolidis, Hernandez, Talon and Kyratsis, 2019). The sustainable design of products should not only satisfy the needs of consumers but also pay attention to the energy consumption and environmental emissions in the manufactory and usage of products.

Initially, the circular economy field mainly focused on materials science and economics. In a circular economy, all products should be designed to be biodegradable, recyclable or both. Meanwhile, the circular design should focus on people's daily activities and market business models. Therefore, in order to make sure the recycling economy to operate successfully, it not only requires an

appropriate system to achieve various recycling goals (reuse, refurbishment, recycling, etc.) but also increases the likelihood that consumers (or users) will act according to the goals (Daae, Chamberlin and Boks, 2018). That means circular behaviour design should encourage actors in the economy to behave in the desired way.

### 2.1.4 Behaviour Change Theory

Human behaviour is an unavoidable cause that has led to an improvement in resource quality. If it comes to finding a way to make people improve their attitudes against recycling, models from behavioural change philosophy are useful with positive ideas.

Among the different behavioural modification theories, the Fogg Behaviour Model (FBM) suggested by B.J. Fogg is the most popular of all. The model defines the three pre-conditions for actions that are incentive, capacity, and cause. Furthermore, with the inclusion of social, cultural and external influences, the implementation of the model could provide users with a comprehensive and inclusive experience of gamification (Fogg, 2009).

The "CBS Model for Persuasive Systems" is another behaviour modification model. The CBS paradigm holds that there are three design criteria required for persuasive design: material support, interpersonal support and social support (Wong, 2016). This theory was also confirmed in a psychology experiment from an Australian university. As it happens, the experiment has to do with willingness and habit to use reusable cups. Behaviour change interventions were developed to increase the use of reusable hot drink cups on Australian university campuses and their effectiveness was assessed. Participants (N = 156) were randomly assigned to one of the following four intervention conditions: 1) interventions designed to evoke environmental values; 2) Intent-based intervention; 3) Habit-based intervention; And 4) The control group did not intervene directly to increase the use of reusable cups. Participants

used the phone application to record their use of the reusable cups immediately after the intervention was delivered and six weeks after the follow-up. The experimental results showed that:

a) Simple interventions increased the use of reusable cups compared to the control group.
b) In the long run, evoking environmental value will increase the use of reusable cups.
c) The use of reusable cups increased through the habitual strength mechanism.
d) Those who were intolerant of uncertainty showed stronger habits and higher behaviour.
a) Self-monitoring, free reusable cups and environmental values are key to change.

These results include guidelines for setting habits for environmental behaviour improvement strategies, as well as for tailoring habit-based interventions to those that are intolerance to confusion.

In addition, it is not difficult to understand that designers are better off using persuasive techniques (rewards, Suggestions, guidance, goal setting, and reminders) and interactive factors (simplified programs, supporting personality and aesthetic design) to guide users toward certain goals.

### 2.1.5 The Travelling Cup and Cup Lid Design Principles

The instinct to create and nature to the spill are two of the most distinguishing characteristics of mankind. Observing what happens when these two simple narratives collide will give insight into what it means to be human. (Harpman and Specht, 2018) In the past, the development of simple tools, including spoons, bowls and buckets, spillage has been elevated to a concept but has not received much attention. Things are splashing about, sliding and spilling, and generally, they're never going to cause a big fuss. Today, the act of Spilling is seen as careless, impolite,

and an all-around nuisance. Spilling is considered to be one of the leading causes of staining, slipping, and sometimes even bodily harm. (Harpman and Specht, 2018) Our industrial society has made it extremely impossible not to spill over. Cities are more populated than ever. More people are travelling more frequently, farther and quicker. They are doing so with drinks in their hands. The more people there are and the quicker, the more, and the more often they travel, the more likely spilling is to occur. What this means is that as the act of spilling increases, our tolerance and approval of it declines at the same time.

People who travel through the city drink hot drinks like cold drinks - "anytime, anywhere" and don't allow liquids to splash freely. Obviously, the design of the lid is a key point in the design of the travelling cup. The origin of the coffee lid is from American. The drivers and riders and walkers wanted to drink hot coffee without removing the protective cover. They peeled off a small part of the lid, beginning at two points on the outer rim, made the first straight drink coffee lid. They ripped off the lid to make a mouth-sized opening. But this solution was inelegant, unhygienic and time-consuming, and most importantly, it creates usable drinking outlets, but it also creates wedges of garbage.

Another concern is the prevention of burns. McDonald's has been sued for serving coffee too hot with the wrong lid, which led to numerous spills and causing third-degree burns. McDonald's has since lowered the temperature at which coffee is served, and designers have added visual warnings to all hot drinks' lid.

Therefore, the design of the travelling cup lid not only includes a tight lid with a reliable, easy-to-open hole, but also takes into account the need to avoid spills, drips and, most importantly, burns in different use environments and during the “on-go” journey. In addition, in this design project, because the cup is a rental product, which means that the cup will be used by different people, to ensure privacy and hygiene is also a key consideration.

## 2.2 Market Research

It is significant to review the existing products or service in the market and summary the advantages as well as the shortcomings which may guild and improve the design project proposal. In this part, the author will elaborate the research and analysis of the current situation of the cup lid and the cup-washer, as well as some case study about the existing reducing paper cup usage solution and sharing service project.

### 2.2.1 Current Products on the Market

a) Cup Lid Design

The methods for accessing a hot beverage via the lid of a coffee cup including peel, pinch, pucker, and puncture. When each approach appeared, it was followed by the simultaneous creation of other characteristics that gave each lid a distinct (and patentable) personality. (Harpman and Specht, 2018)

The peel type lid (figure 2.1) includes a manually removable portion specified on the cup cover. The main body of the lid remains fixed around the cup before and after removal. Once the lid is removed, the user can drink from the cup's exposed rim.

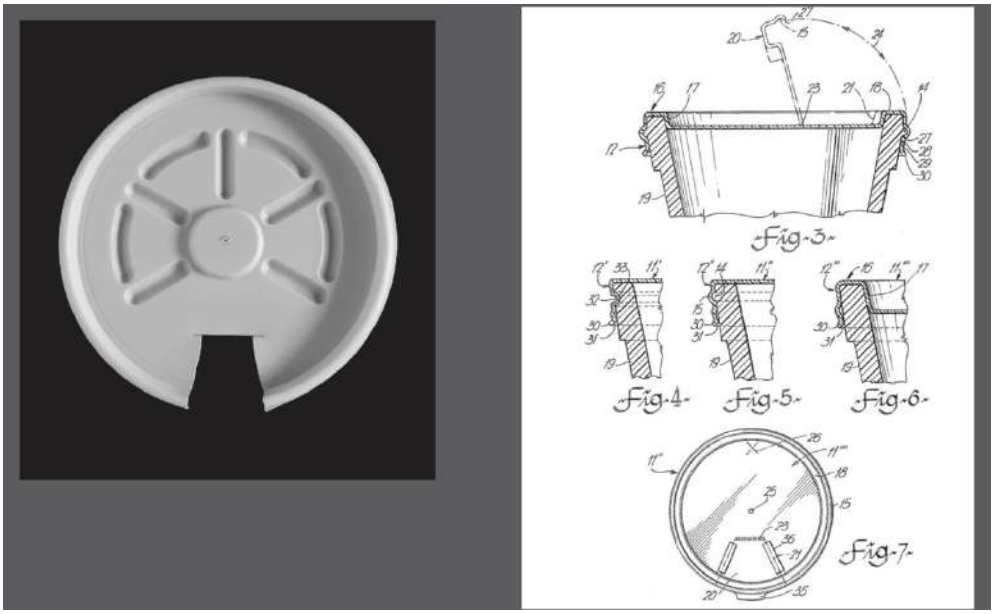



Figure 2.1: Peel type lid

Some of the lids in the "pinch" category (figure 2.2) are similar to the early peel-type coffee covers. The scored section can be removed from the deck of the lid to allow the lips of the drinker to reach the edge of the cup.

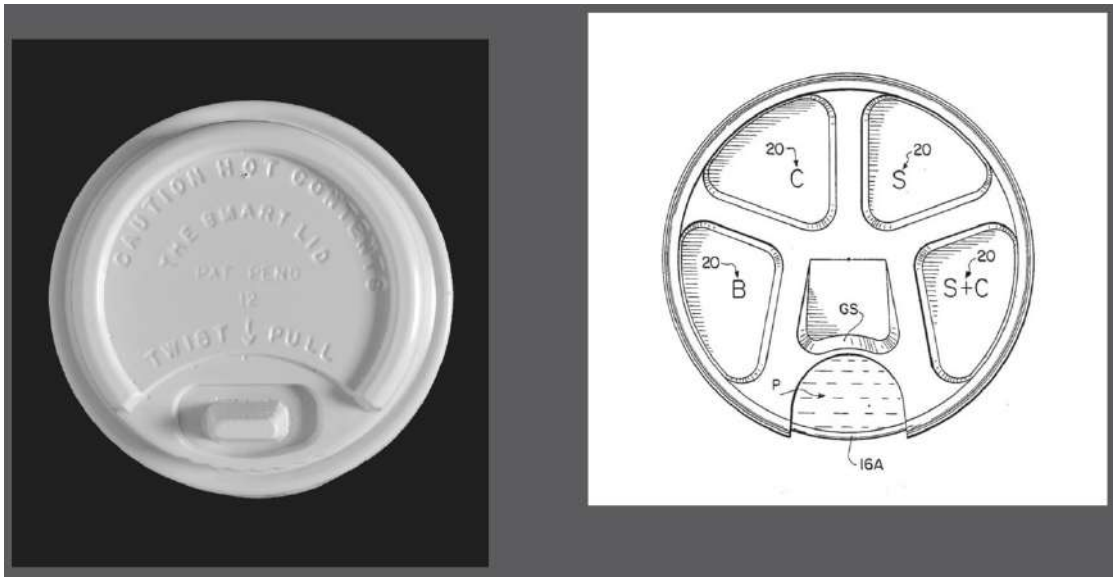



Figure 2.2: Pinch type lid

The lid, classified as a “pucker” (figure 2.3) requires the user to drink through the lid instead of the cup as opposed to the peel-type and pinch-type lids. Drinkers don’t have to break the lid; Instead, place mouth over a pre-punched hole in the lid surface.  Many lids are filled with this category as designers keep offering size improvements to address pet annoyance while also providing a better drinking experience. Many of the cup lids patented in recent years claim to offer a more “natural drinking experience” that simulates drinking from the rim of a cup. A designer, Douglas Fleming, patented a similar lid in 2015. The Viora lid (figure 2.4) has a thin raised edge that moves the coffee hole into a nearby but distinctive position. In this design, the drinking hole is not aligned with the position of the lips. This decoupling solves the "slow flow" problem that occurs when the drinker's lips fully cover the drinker's mouth.


Figure 2.3: Pucker type lid


Figure 2.4: The Viora lid

When the user presses down, the lid in the "puncture" category (figure 2.5) allows fluid to be transported, causing part of the plastic lid to break, while the lid itself remains intact and fully secured to the cup. The peel and pucker lids guide the user to pull part of the lid away from the heat source, while the puncture lids require the user to push his fingers towards the hot drink to further approach the potential harm. The puncture lid is designed to withstand enough downward force to create a "crack" or "gap" in the raised portion of the lid without destroying the "crimped integrity" of the lid, a term that describes the edge of the lid and the container. Once

punctured, the small drinking port in this example remains attached to the cap and prevents spatter and spillage. In order to maintain structural integrity, these LIDS are often overdesigned, as their activation requires additional reinforcement to resist downward pressure placed on the lid surface while maintaining a firm connection to the rim of the cup. For example, the out-of-the-box cover can be started with one hand but requires no less than five horizontal supports in the "mesh structure" to ensure its safe and correct use.

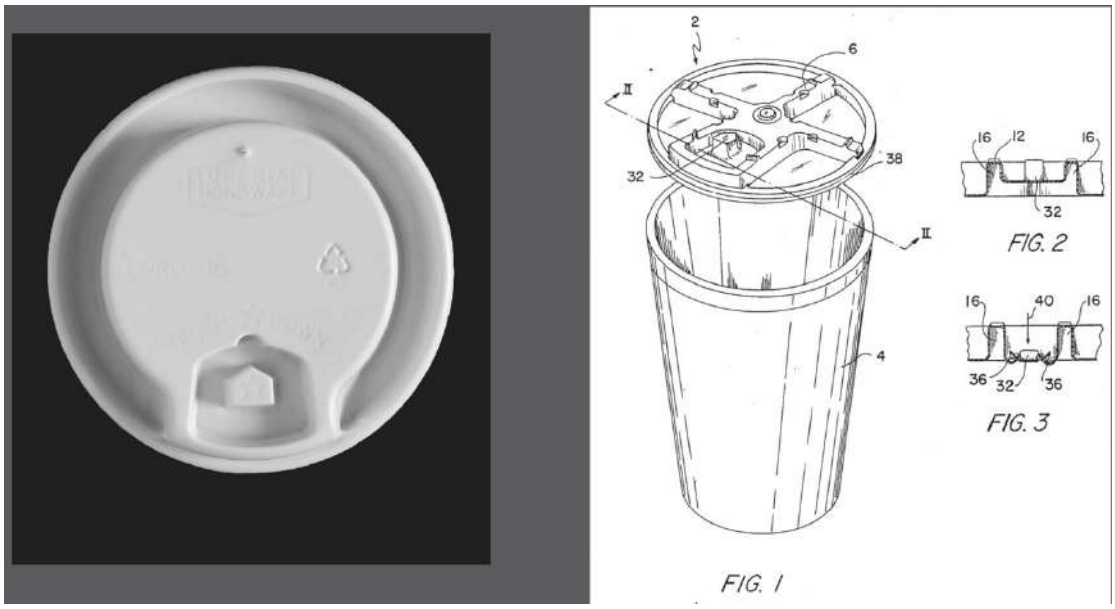



Figure 2.5: Puncture type lid

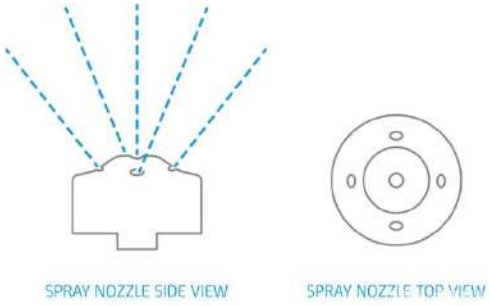
b) Glass Rinser

The deeper the cup, the harder it is to clean, and stains such as milk tea and coffee make cleaning more difficult. First Wave in the United States proposed a brand-new cup cleaning solution: Glass Rinser. (figure 2.6) The cup can be cleaned easily, efficiently and quickly. Glass Rinser's principle (figure 2.7) of washing cups is very simple, that is, water is sprayed out through pressure to achieve the effect of 360° cleaning of stains inside the cup. When the mouth of the cup is aligned with the Glass Rinser and squeezed downwards, water will spray out of the nozzle to wash the walls of the cup vigorously. After cleaning, remove the cup and the nozzle will automatically shut off the water. The overall design of Glass Rinser is compatible

with standard faucets, sprayers, and soap pumps for benchtop installation, and only needs to be connected to the water supply pipe.

Figure 2.6: Glass Rinser

Figure 2.7: Glass Rinser's principle




2.2.2 Service System Case Study

"Product Service System" (PSS) is one of the important concepts of the circular economy. Most classifications distinguish PSS into three main categories, which are product-oriented, user-oriented and result-oriented. One of the important categories is service-oriented services. Here, traditional products still play a central role, but the business model is not suitable for selling products. The product belongs to the provider and is provided in different forms, sometimes shared by many users (Tukker, 2004).

As a kind of User-oriented program, product rental or sharing pay more attention to the everyday behaviour and experience of the customer. It is also easier for the public to embrace this form of service business model, which means that it is easier to encourage and produce positive performance. One of the examples of design based on people's involvement in re-use is that Royal Dutch Shell offers consumers the option to use their own preferred cups instead of handing away new cups when they ask for a coffee, timing it with the moment when they subscribe.

Another relevant case is that a company from Boston provides a service called "USEFULL" which offer stylish, high-quality reusable stainless-steel cups and actively distribute, track, and clean them so that they are available to subscribers at

participating locations. This service has nothing to do with leasing or sharing. They provide a cup cleaning service which means the organization should build up enough collection station and customers must be at a specific station so that they can get their own cup. Therefore, the flexibility and user experience level of this service still needs to be discussed.

# Chapter 3 User Research

The exploration of user experience starts from entering the field and conducting observations, interviews and online surveys to understand the use of disposable paper cups among white-collar workers, creating user roles and user journey maps, and conducting in-depth interviews with coffee shop staff.

The exploration will focus on the core research issues of this project. The general question is the reusable cup design and rental system design with user-centric service design principle in the office gathering area.

Following the central question, few sub-questions are proposed as below:

a) How to help office workers to get clean reusable cup conveniently to reduce the usage of the disposable paper cup?

b) How to optimize the design of the reusable cup to accommodate more usage scenarios and to facilitate cleaning and maintenance?

Given that the new product framework solution will involve multiple stakeholders, this section will also define who these stakeholders are and the associated customer expectations, which will have a direct effect on the design of the solution.

## 3.1 Investigation of Office Gathering Area

The target group in this design project is the young urban white-collar workers in the office gathering area. Therefore, it is meaningful to observing and investigating their working environment, which may be helpful for understanding their real needs and behaviour.

Suzhou international science park (SISPARK), which is a flagship software park invested by the government is the main target location of this research project.

SISPARK is located in Suzhou industry park, including creative industry and nanotechnology park, gathering 60% of software development enterprises, 90% of integrated circuit design enterprises and 78% of Chinese software export project pilot enterprises from Europe and America in Jiangsu province. Based on the field investigation of SISPARK, it is found that most of the enterprises in the park are not large in scale, most of them have less than 100 employees, and do not have a pantry or relevant facilities in the office. The bitter coffee demand of employees in the campus mainly relies on 2 Starbucks stores, 3 FamilyMart shops, 2 Luckin coffee stores, and one costa coffee in the park.

Considering the unique consumer groups and geographical location, coffee shops use a huge amount of paper cups to pack coffee every day. Therefore, it is appropriate to take SISPARK as the experimental research object of this project.

## 3.2 The Customers' Perspective

This is a system design project for individual consumers, and consumers are the most direct stakeholders. Therefore, understanding consumers' views and attitudes is a very important part of the design process. The author spent a lot of time studying user behaviour, habits and mentality in the preliminary research phase of the project. The survey was conducted in early 2020. Affected by the new crown virus epidemic, the survey mainly relied on online questionnaire surveys and small-scale offline interviews. In addition, the author also conducts offline field research through some non-contact methods, including long-term observation of the behaviour of office employees and observation of the behaviour of consumers dining in coffee shops.

### 3.2.1 Online Questionnaire Survey

In order to gain insight into the reasons behind the huge use of disposable paper cups among white-collar workers, the author sent out survey questions to white-

collar workers through the Chinese social media platform WeChat. The purpose of this survey is to find out their habits of buying and drinking coffee and their attitudes towards the use of disposable paper cups, their views on the current state of paper cup recycling and potential motivations for behaviour changes. (The content and results of the questionnaire are shown in the appendix)

The online questionnaire was uploaded in March 2020, received 36 answers in total. And the result shows that:

- Many people, especially office workers, drink coffee on a daily basis.
- Many people have an awareness of being eco-friendly.
- Reusable cups are inconveniently to carry.
- Some customers also worry about whether the reusable cups which provided by coffee shops are clean enough to reuse.
- Most prefer using paper cups, even though they drink coffee in coffee shops.

### 3.2.2 Interviews

The goal and advantage of the interview are to discover the nature of identified and unidentified needs and desires in different situations and life stages. So, this is a critical starting point for innovation, especially user-driven innovation.

Then after the data collection, the author also interviewed some office workers from different age and gender in SISPARK to get some information about their habits of buying and drinking coffee.

The main questions are followed by:

- Do you drink coffee?
- How often do you drink?
- Where do you drink coffee? (stay in or take away?) why? If take away – where do you prefer? (indoor or outdoor?)

- How many kinds of coffee cup do you know?
- What kind of coffee cup do you prefer? (Why)
- How do you deal with the coffee cups after used? (Why)
- Do you have any experience of using your own reusable coffee cups?
- Do you know 99% of recyclable paper cups still do not be end up being recycled?

The results of the interview are demonstrated in the charts (figure 3.1):

| Q1: Do you drink coffee? | | | | |
|---|---|---|---|---|
| 01 Yes | 02 Yes | 03 Yes | 04 Yes | 05 Yes |
| 06 Yes | 07 Yes | 08 Yes | 09 Yes | 10 Yes |
| 11 Yes | 12 Yes | 13 Yes | 14 Yes | 15 Yes |
| 16 Yes | 17 Yes | 18 Yes | 19 Yes | 20 Yes |
| | | | | |
| Q2: How often do you drink? | | | | |
| 01 Everyday | 02 Once a day | 03 Everyday | 04 Everyday | 05 Once a day |
| 06 Everyday | 07 Everyday | 08 Everyday | 09 Depends | 10 Once a week |
| 11 Twice a week | 12 Everyday | 13 Four times a week | 14 Everyday | 15 Depends |
| 16 Once a day | 17 Everyday | 18 Depends | 19 Once a day | 20 Everyday |
| | | | | |
| Q3: Where do you drink coffee? (stay in or take away) (Why)<br>Take away – where do you prefer? (indoor or outdoor) | | | | |
| 01 Both | 02 Stay in | 03 Stay in | 04 Stay in | 05 Outdoor |
| 06 Both | 07 Outside | 08 Outside | 09 Outside | 10 Both |
| 11 Outside | 12 Stay in | 13 Both | 14 Both | 15 Both |
| 16 Outside | 17 Stay in | 18 Both | 19 Both | 20 Both |
| | | | | |
| Q4: How many kinds of coffee cup do you know? | | | | |
| 01 2(paper/china) | 02 2(paper/china) | 03 2(paper/china) | 04 2(paper/china) | 05 2(paper/china) |
| 06 2(paper/china) | 07 2(paper/china) | 08 2(paper/china) | 09 2(paper/china) | 10 2(paper/china) |
| 11 2(paper/china) | 12 2(paper/china) | 13 2(paper/china) | 14 2(paper/china) | 15 2(paper/china) |
| 16 2(paper/china) | 17 2(paper/china) | 18 2(paper/china) | 19 2(paper/china) | 20 2(paper/china) |
| | | | | |
| Q5: What kind of coffee cup do you prefer? (Why) | | | | |
| 01 Reusable | 02 Paper | 03 Own cup | 04 Paper | 05 Paper |
| 06 Paper | 07 Paper | 08 Paper | 09 Reusable | 10 Paper |
| 11 Own cup | 12 Paper | 13 Paper | 14 Reusable | 15 Paper |
| 16 Own cup | 17 Paper | 18 Paper | 19 Reusable | 20 Paper |
| | | | | |
| Q6: 6. How do you deal with the coffee cups after used? (Why) | | | | |
| 01 Clean | 02 Leave | 03 Leave | 04 Leave | 05 Throw |
| 06 Throw | 07 Throw | 08 Throw | 09 Clean | 10 Throw |
| 11 Throw | 12 Throw | 13 Throw | 14 Throw | 15 Clean |
| 16 Clean | 17 Leave | 18 Leave | 19 Leave | 20 Clean |
| | | | | |
| Q7: 7. Do you have any experience of using your own reusable coffee cups? | | | | |
| 01 Yes | 02 No | 03 No | 04 future plan | 05 No |
| 06 No | 07 No | 08 No | 09 No | 10 No |
| 11 Yes | 12 Don't remember | 13 No | 14 No | 15 No |
| 16 No | 17 Probably | 18 Yes | 19 No | 20 Yes |
| | | | | |
| Q8: Do you know the 99% recycled paper cup still do not be end up being recycled? | | | | |
| 01 No | 02 No | 03 No | 04 No | 05 No |
| 06 Yes | 07 No | 08 Yes | 09 No | 10 Yes |
| 11 Yes | 12 Yes | 13 Yes | 14 Yes | 15 Yes |
| 16 No | 17 Yes | 18 Yes | 19 Yes | 20 No |

Figure 3.1: Interview results

### 3.2.3 Observation on Employees in Office and Coffee Shop

An insight is a statement based on a deep understanding of your target consumers' attitudes and beliefs (Conroy, 2008). By observing target customers which can find

problems, and then solving problems through design, problems will not be solved well without deep insights.

Targeting at 20 Office workers who have a long time worked in SISPARK. For these 20 Office workers, the author found most of the office workers doesn't will bring their own cup to coffee store which they need to clean. They will directly choose the coffee cup in the coffee store even they won't take away. When they finished, some of them will put coffee cup to the trash immediately or just left the paper cup on the coffee table when they are leaving.

Also, there are some white-collar would take away coffee. Most of them hold the cup with cup sets in hand. There are also some of them who choose to ask the clerk to use paper bags to pack them, which will be easier in the transfer process. They will throw the coffee cup in the office trash, (if the trash has divided into recyclable and non-recyclable, they will throw it to recyclable).

## 3.3 Opinions from Coffee Shop Staff

In the process of buying coffee, another stakeholder is the staff of the coffee shop, so it is necessary to understand their opinions. The author conducted interviews with two baristas. The main questions are followed by:

- How much is the average daily sales?
- Customers prefer to enjoy in the shop or take away?
- Why do you usually use disposable paper cups for coffee when the consumers have no special requirements?
- Have you ever met customers who bring their own cups?
- Under what circumstances do customers usually request to use a mug?
- How do you deal with used disposable paper cups?
- Do you know how these paper cups will be handled in the end?

- How about the affection of Starbucks's discount policy for customers who use their own cup?

The conversation with the Starbucks barista took place in the Starbucks store located in SISPARK. Here, an average of 30 cups of coffee is sold every hour every day. Most consumers would choose to use paper cups for coffee and take it away, which the staff here said this might be related to the store's location in the office area. Baristas also encounter serval consumers who bring their own cups, but most of them are employees of foreign companies nearby who patronize almost every day, often sitting in the store for a while. Regarding the use of paper cups, baristas said that most of the time they would not ask customers but directly use paper cups for coffee, unless consumers actively request the use of reusable cups. The used cups of these cups will be gathered together and be taken away by someone every, but the staffs never cared how these paper cups would be handled in the end. In their opinion, the discount policy introduced by Starbucks did not work well, perhaps because a 4 RMB discount is not attractive for a 35 RMB cup of coffee.

Another conversation with store staff took place at FamilyMart convenience store in the Hanlin community. As FamilyMart is not a shop specializing in coffee, the above interview questions are not suitable for this conversation. The author only records the key information of the conversation here:

- Coffee sells best between 7 and 9 a.m. Consumers buy a cup of coffee with their breakfast in the morning.
- The people who come here every morning to buy coffee are relatively the same group.
- Most consumers buy hot coffee.
- Convenience is the most important feature of the service provided by convenience stores. The paper cup is a quite convenient product and relatively environment friendly.

- Normally, they will refuse the order if the customer asks for use their own cups to package the coffee because of the coffee machine limitation.

## 3.4 Insight

### 3.4.1 User Personas

Personas are fictitious, generalized identities who cover diverse needs, aspirations, and activity habits within your actual and future consumers that will help you better understand your customers. Creating people helps you to segment contacts, delegate them to workflows, and import contacts from an individual. (Gupta, A. 2014)

Two personas (intern student and employee in SISPARK, which works every day in the office) was created to form design goals, challenges and opportunities (figure 3.2 and figure 3.3).


Figure 3.2: User persona-intern

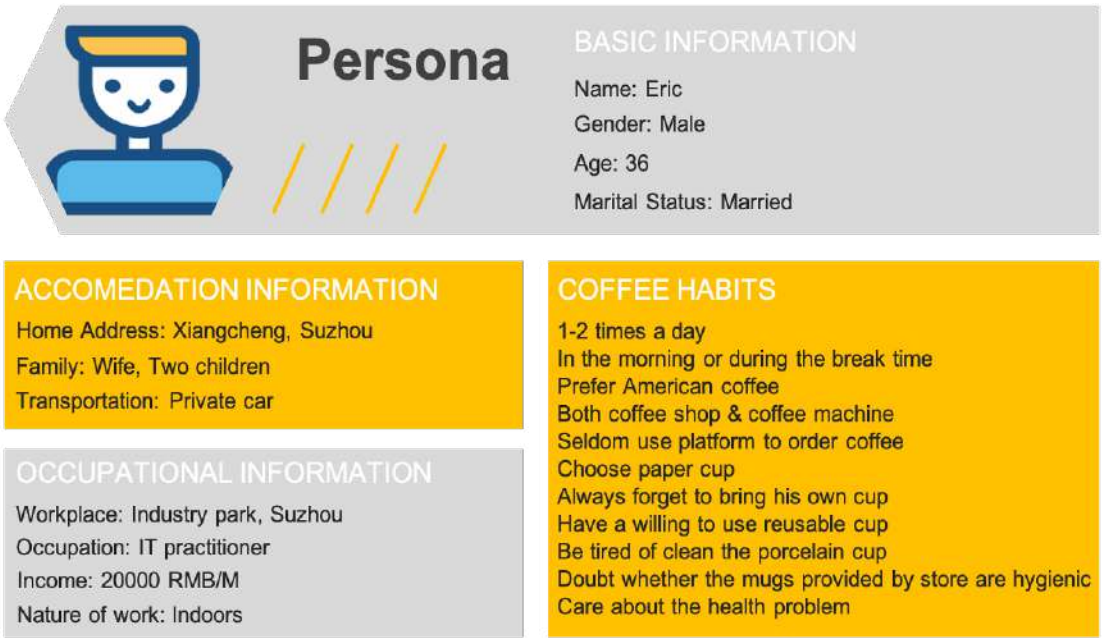



Figure 3.3: User persona- employee

### 3.4.2 Current User Journey Map

The travel map is a synthetic representation that describes step-by-step how a customer communicates with a service. The method is mapped from the point of view of the user, explaining what happens at each level of the interaction, what points of communication are involved, what challenges and barriers they can meet. The travel chart is also integrated with an additional layer that reflects the amount of positive/negative feelings encountered during the encounter.

After studied and summarized the habits and preferences of coffee consumers in the process of purchasing coffee and drew a customer journey map (figure 3.4).


Figure 3.4: Customer journey map

### 3.4.3 Stakeholders Map and System Map

Stakeholder analysis is particularly useful at the beginning of a project. This approach is focused on brainstorming and analysis of stakeholders within a specific area of interest defined before the mapping begins (Innovationenglish.sites.ku.dk,2019). This is an iterative process in which researchers will find that they might gain an understanding of stakeholders they had not imagined to be stakeholders at first. Discussing the stakeholder relationships (figure 3.5), and new knowledge gaps may emerge and be used to develop follow-up field surveys and projects.


Figure 3.5: Stakeholder map

A system diagram is a composite representation that shows in a framework all the different actors involved in service delivery and their interconnections (e.g., the flow of materials, energy, information, money, documents, etc.). The system map clarifies how the various service modules and functions are tied together, demonstrating the values they exchange.

After the basic understanding of the paper cup lifecycle and coffee supply service, the existing system map (figure 3.6) is like:

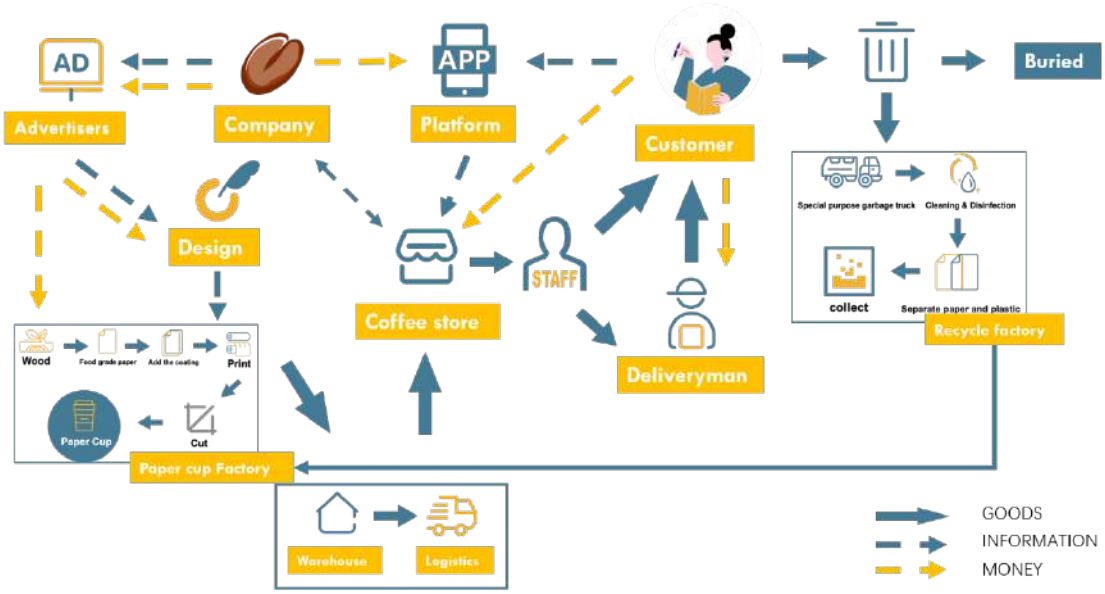



Figure 3.6: System map

### 3.4.4 Empathy Map

The ease with which empathy maps can be read and understood makes them a great tool to have a good understanding of the user's behaviour ensures their needs are met in all aspects of the design.

Through this method, some stakeholders' needs, and pain point could be found (figure 3.7 and figure 3.8).

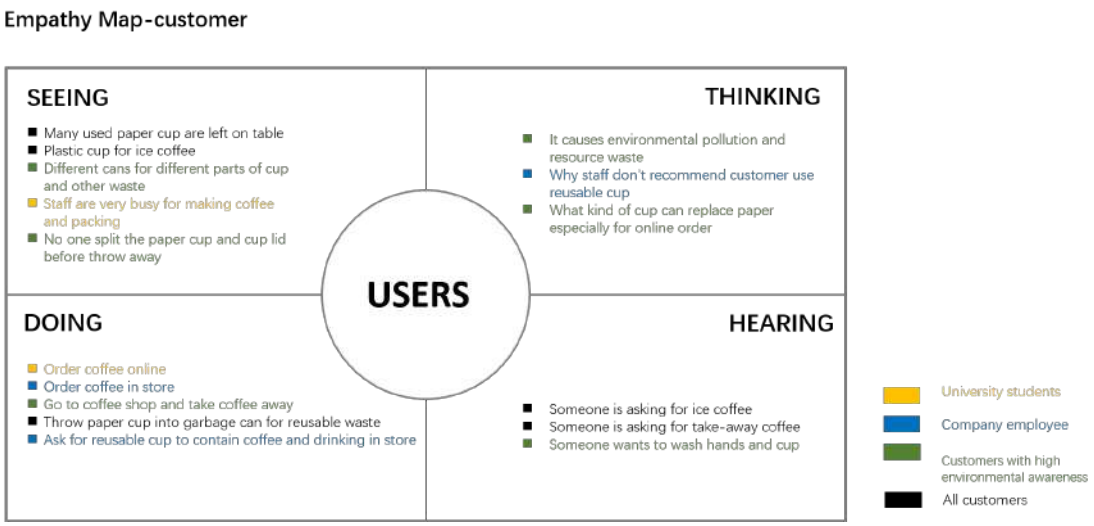



Figure 3.7: Empathy map-customer

**Empathy Map-staff**

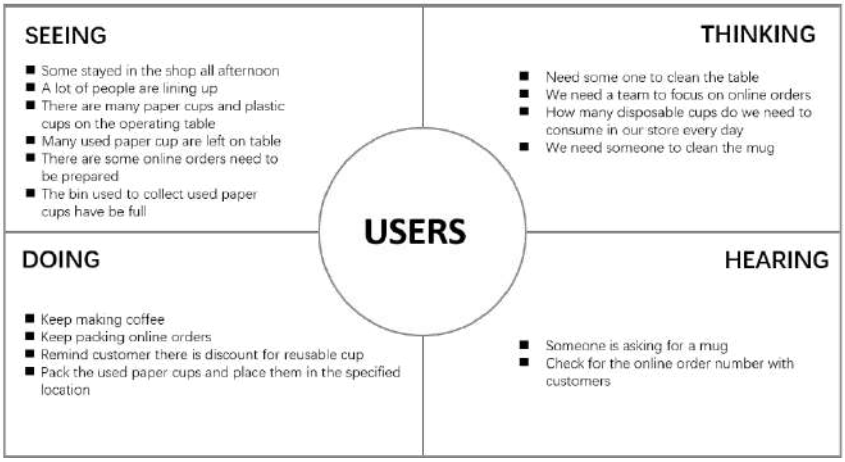



Figure 3.8: Empathy map-staff

# Chapter 4 Design Concept and Design Development

## 4.1 Pain Point and Concept Generation

Based on the research of coffee cups that most office workers would choose coffee paper cups in the coffee store, and they did not lower their awareness of coffee cup use. Thus, the author came up with an idea focus on the customers who spend a lot of time in the building and how it might help customers to get the clean cups conveniently.

After we had confirmed the problem statement as “offer white collars a convenience way to use clean reusable cup”, the author uses the method called ‘mind swap’ to force designer to think as much as possible about new ideas which focus on our persona. In the process of brainstorming, some tools such as ‘RAP model’ and ‘situation reversal’ were used to help author think this problem in some different ways, and come up with more ideas. The “excited me” template (figure 4.1) also been used to classify and organize different ideas.


Figure 4.1: ‘Excited me’ template

Critical thinking is quite important in the process of selecting ideas. These ideas, which are thought out in a short time, all have their own highlights and unreasonable points. Thus, each idea which can focus on the problem statement should be thought and analysed carefully. These solutions were sorted for analysis

and discussion, and this time, the tool called ‘add constraints’ had been valued. The author used three aspects which included user experience, innovation and feasibility as constraints to measure these ideas. In the process, the author also had found complementarities between ideas, and it meant that more reasonable solutions could appear by combining them together. Thus, the author finalized some concepts and defined the final concepts by continuing in-depth analysis, comparison. Reusable on-go cup design, collection system, cleaning system are necessary, and reward system in addition.

## 4.2 Design Part 1: Tangible Product Design

The first step of this design process is made the mood board (figure 4.2), which helps to find the cup design style and direction.

Since the target user is young urban white-collar workers in office gathering area. They have relatively high academic qualifications and income, have a very colourful personal life outside of work, familiar with the popular elements in time. They have relatively high requirements for the quality of life and know how to enjoy life and willing to pay more for products with good looking and texture quality or enjoyable service. And they are very easily attracted by bright colour and hope to show their unique personality and aesthetic taste. So, the modular object, bright colour, the vertical-like stripe will be the design elements.

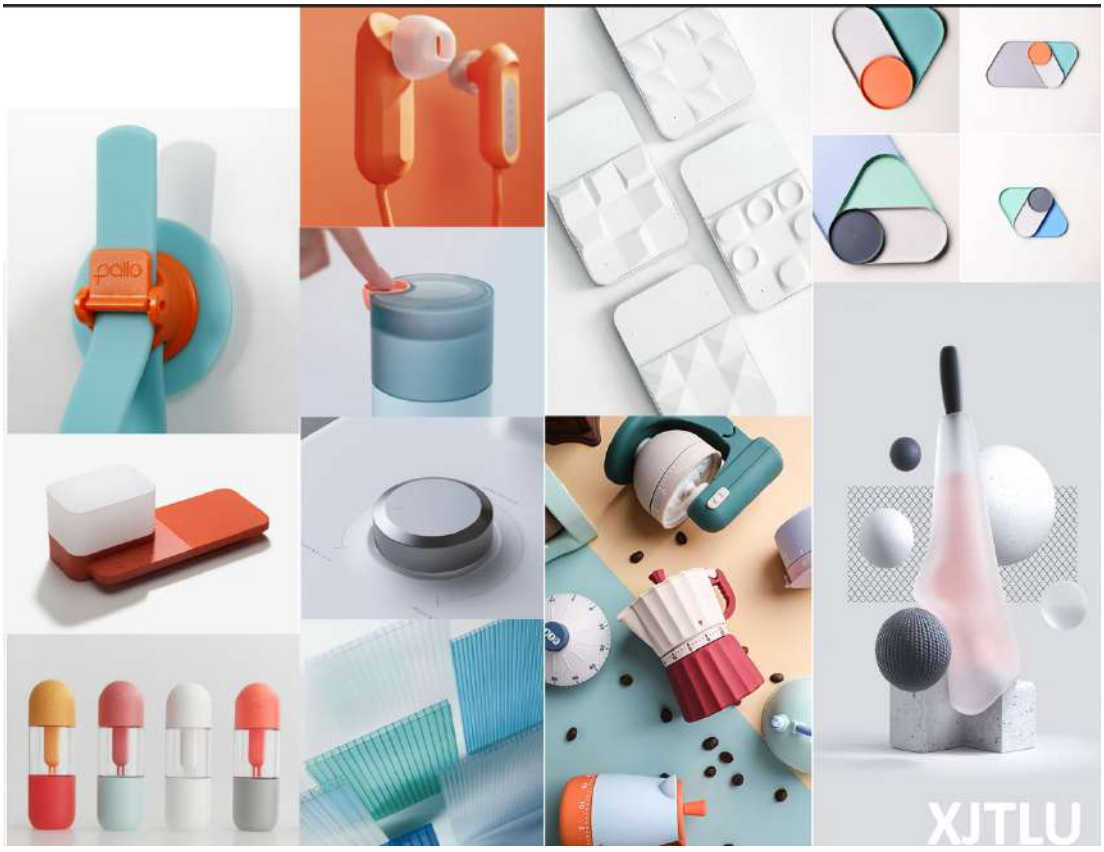



Figure 4.2: Mood board

### 4.2.1 Sharing On-Go Cup

Reusable cup redesign should follow the using scenes (figure 4.3), people may carry the cup in hand, dump it in bag or just put it on table. So, the cup design should concern the scalding, spilling and dumping issue.

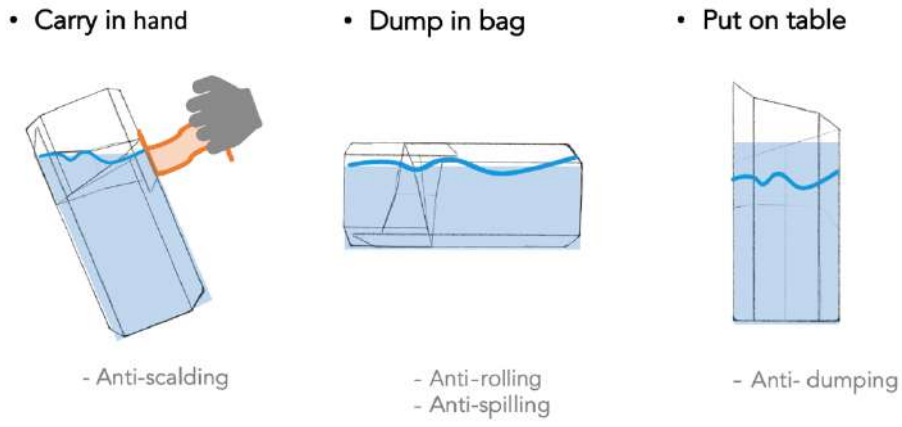



Figure 4.3: Using scenes

a) Sketching

The author referred to the shape of some coffee appliances and recorded the initial design ideas by drawing sketches (figure 4.4).

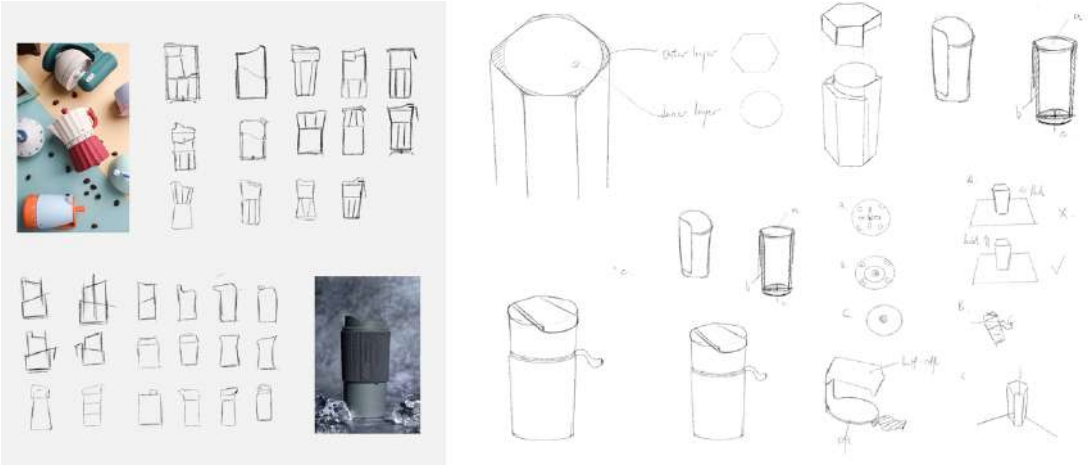


Figure 4.4: Original sketches

Most of the schemes in the sketch have retained the bottle design with vertical lines, which is not only based on the conclusion of the mood board but also the polygonal cylinder body can prevent the cup from rolling to some extent.

Another particular issue is that the traditional on-go cup is a kind of personal belongings as the cup edge would touch mouth directly. Therefore, to ensure the clean and hygienic of the part of the cup that touches the mouth and proposes a consumer-acceptable solution is a foundation for the establishment of the cup rental service design project.

A book named ‘Cup Lid’ which written by Louise Harpman was referenced in this stage. At the same time, the author still uses sketches to record possible design ideas (figure 4.5). One possible concept is that the mouth portion, i.e., the drinking opening can be designed to be partially taken down from the cup, as a separate accessory and be kept by consumer.

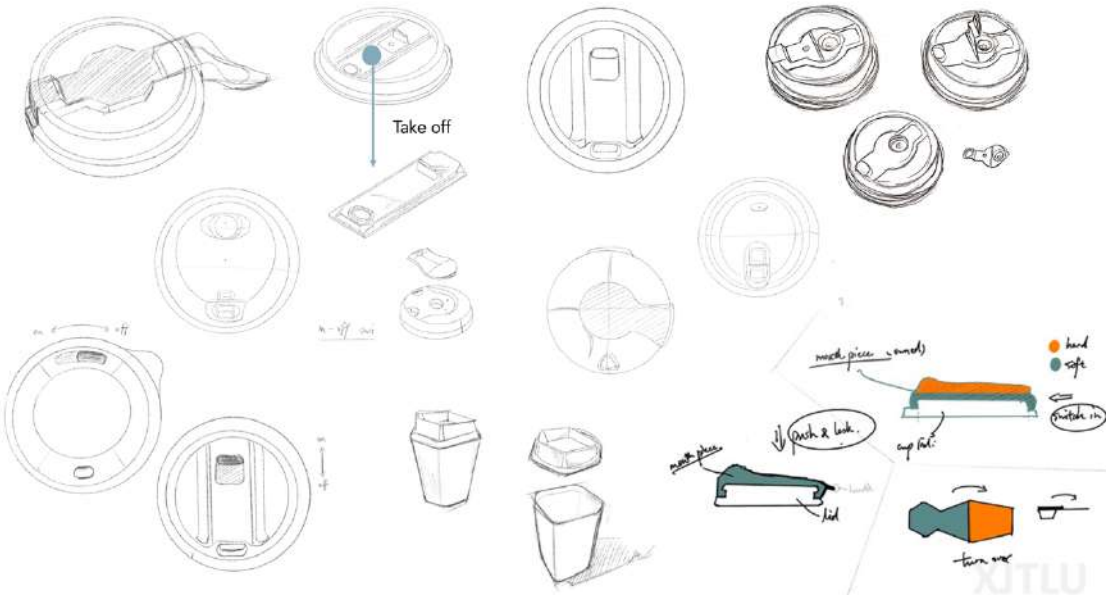



Figure 4.5: Cup lids sketches

b) Modelling

In order to verify the feasibility of the concept, the author takes advantage of making paper models (figure 4.6) to quickly prototype the solution to explore possible ways to make mouthpiece and cover can be locked together or separated easily.

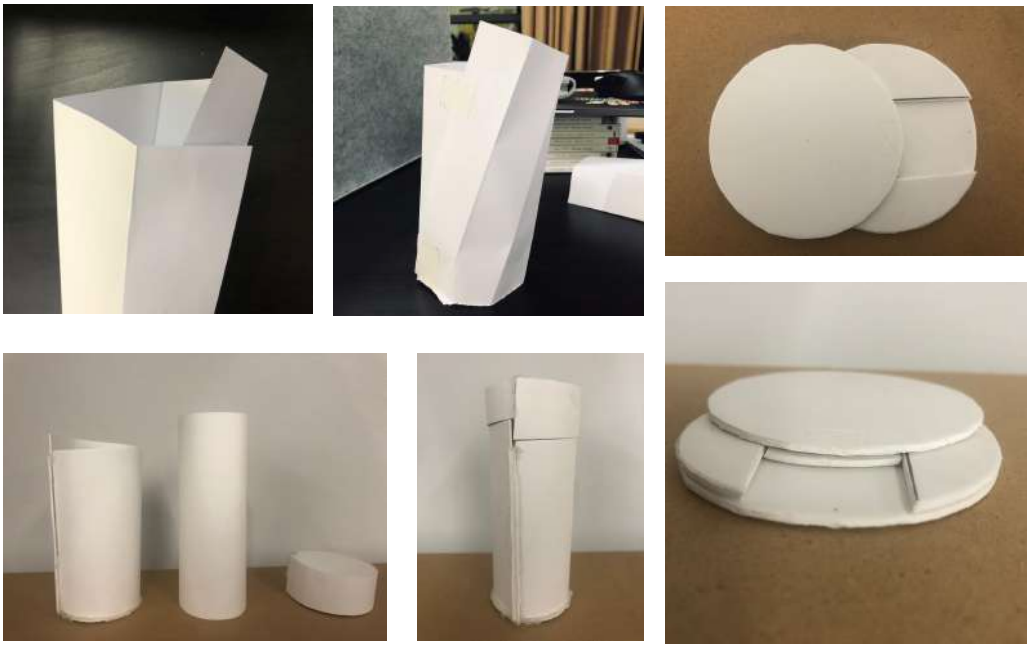


Figure 4.6: Paper models

According to the paper model, the author found that the ‘smooth switch’ is a comfortable and reliable way to connect the lid and the mouthpiece. Besides, the model making process helped the author have some preliminary ideas on the design of the cup and the overall size.

Then, the author made the first version (figure 4.7) of the cup sample through 3D printing to test whether the shape and size are user-friendly. The opinions and suggestions of the interviewees are the improvement direction of the next design phase.

In terms of the mouthpiece, the author made a series of form models (figure 4.8) with different shapes and joints. These form models will be used in user testing to pick the best one, which can bring the most comfortable experience.

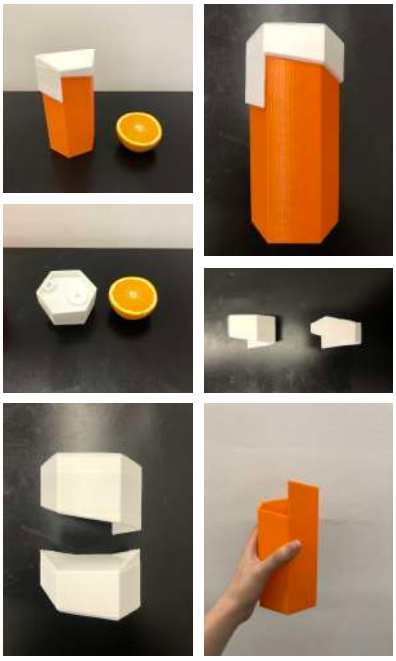


Figure 4.7 3D-print model

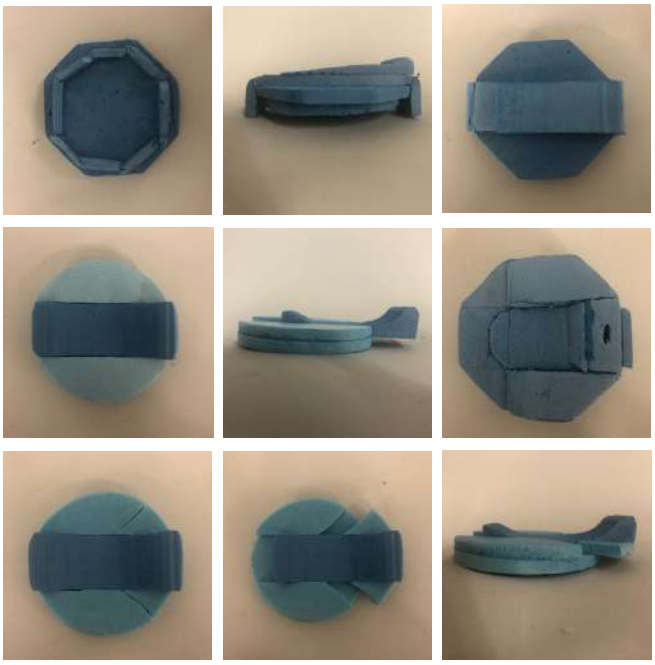


Figure 4.8: Form model

4.2.2 Rental Machine with Cleaning Function

The initial concept is a system of renting a cup. The implementation of this scheme will be a machine. The author tried to analyse the potential behaviour of users by drawing storyboards (figure 4.9). In addition, the behaviour of the user cannot be

separated from the interaction with the machine, so we not only think about the behaviour of the user but also thinking about the construction of the machine and how it is used.

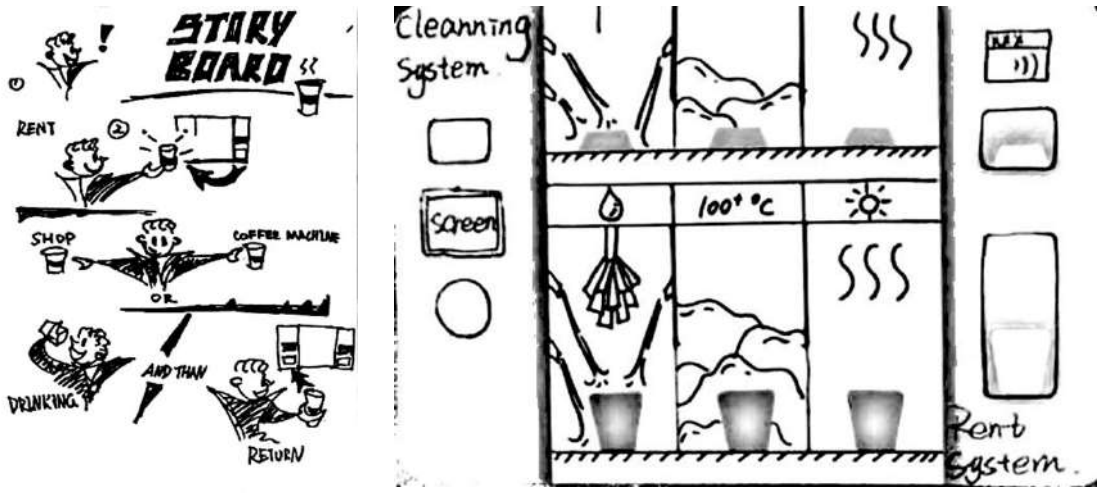



Figure 4.9: Storyboard

a) Sketching

After analysing the behaviour of users, the author believes that a useful cup rental station needs a reliable rental and return mechanism. According to the consumption habits of Chinese consumers who are used to using mobile phones to pay, scanning codes should be the most appropriate way. In addition, the visualized cup cleaning process can increase consumers' trust in this service.

The author tried to design a piece of indoor equipment by drawing a sketch (figure 4.10) and placed the lease, return, scan code, visualized window, automatic cleaning equipment and some necessary facilities in this equipment.

In order to facilitate subsequent user testing, the author also drew a more intuitive rendering (figure 4.11) to facilitate users to better understand the use of this device.

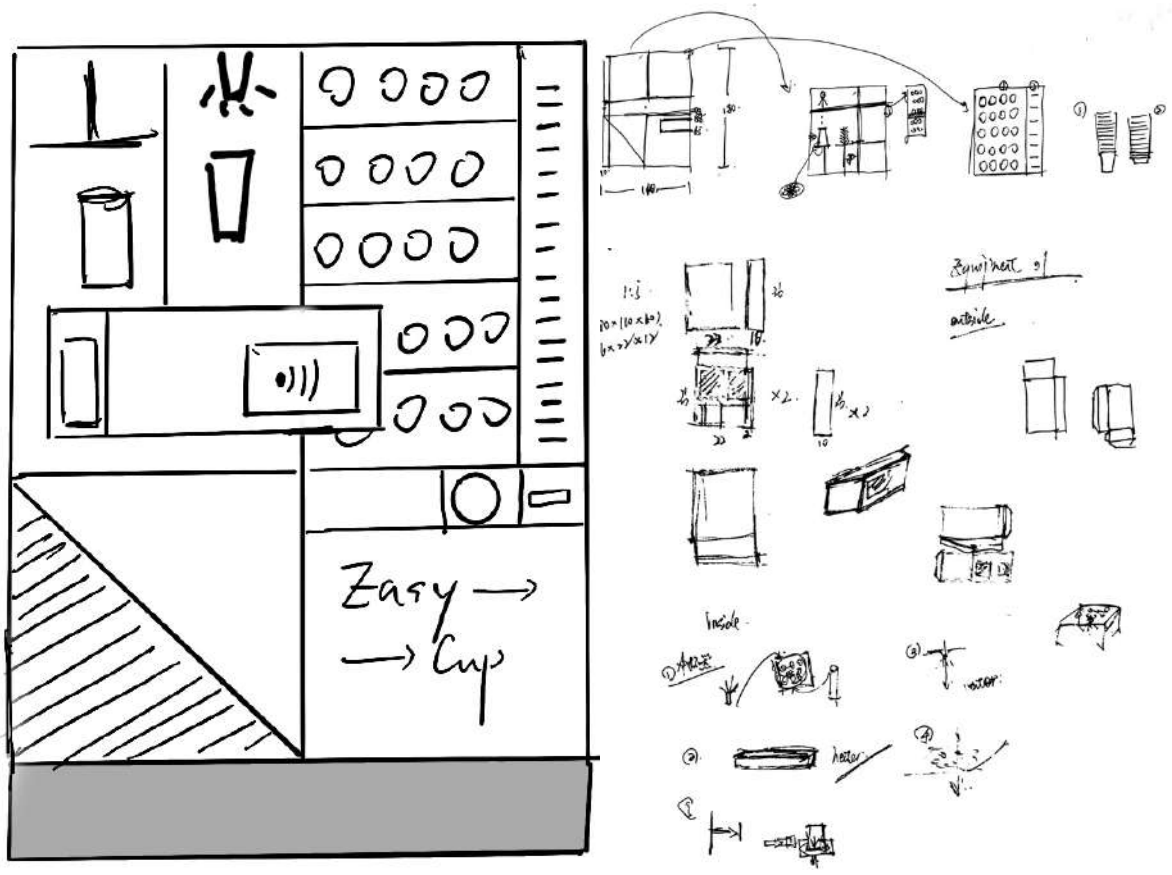



Figure 4.10: Sketches


Figure 4.11: Intuitive rendering

b) Modelling

In order to allow the interviewees to experience the product more intuitively in advance, and to facilitate the testers to better explain the use logic of this service system, the author used hard cardboard to make a more elaborate scaled model (figure 4.12) for testing.

Figure 4.12: Cardboard model

## 4.3 Design Part 2: System Design and Mobile APP Design

The design of mobile app is an important part of this service system design. Consumers will become members of this service project through the mobile application, find the nearest service station, and enjoy free cup cleaning service. Therefore, the detailed content of membership benefits will be set in the software. In addition, in order to encourage consumers to participate in this environmental protection project and use reusable cup, some reward mechanisms will also be implemented through mobile phone software, such as some additional discounts from coffee shops and membership rights for this service.

a) Name and Logo

The author named this service system as ‘EASYCUP’, as the aim of this project is to provide an easy way for customers to get the clean reusable cup.

The main elements of ‘EASYCUP’ logo (figure 4.13) are the cup-shape and the leaves, which means this project is the environmental-related cup project.

Figure 4.13: EASYCUP logo

b) Interface

This interface design project mainly highlights the function, so the interface style is simple and clean. The main colour is green, which is consistent with the logo, with some white and a small amount of yellow as ornament.

The interface design of the mobile app is mainly divided into three parts：

- The project description when first opened this software (figure 4.14):

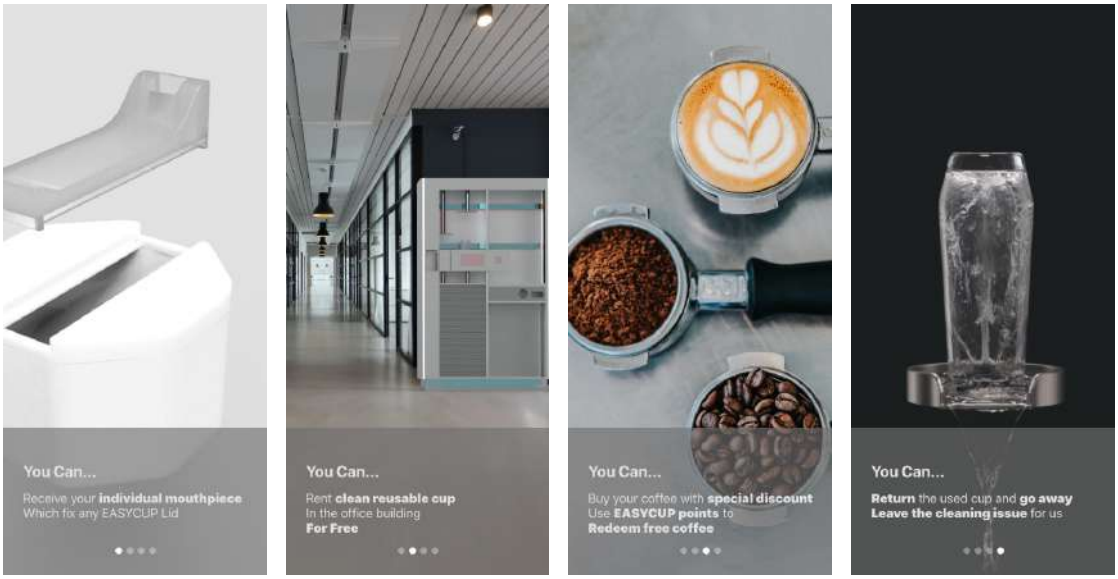



Figure 4.14: Guidance/Introduction

- Several key features, including coffee shop events and promotions, EASYCUP membership benefits, and membership fees (figure 4.15):

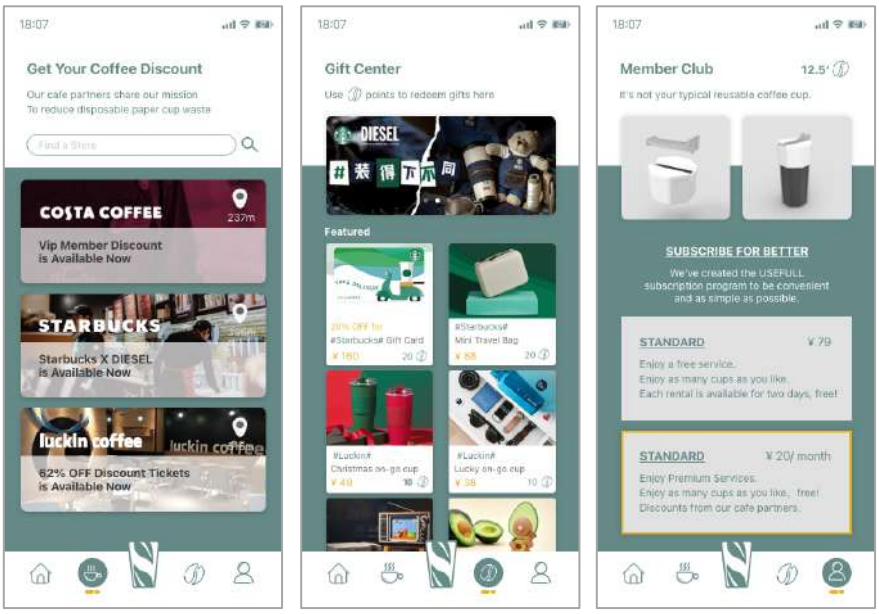



Figure 4.15: Content

- Rent and return interface (figure 4.16):

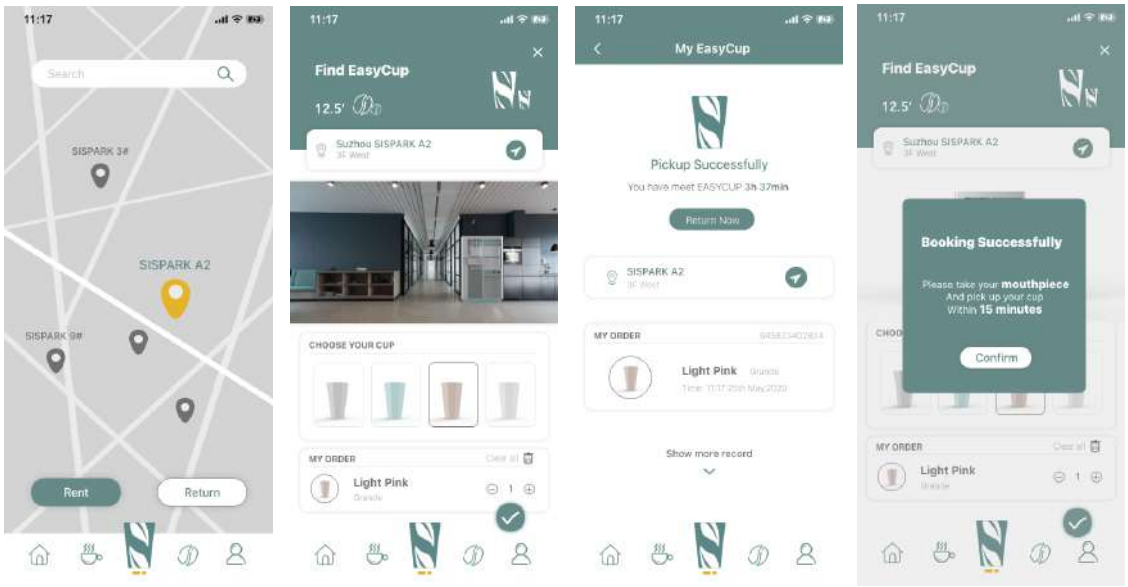



Figure 4.16: Rent and return

## 4.4 Testing and Feedback

a) On-go cup

The user test of on-go cup mainly focused on the comfort performance of the mouthpiece. The author put the mouthpiece form model into the clean bag one by one. And put it into the mouth to make the drink-like action to test the size and comfort (figure 4.17).

Figure 4.17: User test (cup)

The feedback shows that the through-shaped mouthpiece is more convenient to use, and the shape is softer, which is close to the shape of the mouth, and the user experience is best.

Besides, some responders mentioned that the shape of the body part is not comforting enough. There is something strange comparing with the normal paper cup shape. The author believes that the key reason is that in this concept, the bottle body is not designed into a large and small shape, just like a traditional paper cup. The shape of the traditional paper cup is reasonable because it is more convenient to hold, and the larger bottle mouth helps to dissipate heat, which is very important when hot liquid is filled. In addition, this shape lowers the centre of gravity of the item and makes it difficult to tip over.

b) Rental machine

User testing on the rental system mainly relies on paper models and simple storyboards (figure 4.18). The author explained to the interviewees the use process of this leasing system and showed them a preliminary rendering to facilitate the interviewee's understanding and obtain feedback or questions from the interviewee.


Figure 4.18: User test (rental machine)

Respondents said that the use process of this rental equipment is simple and easy to operate. However, some interviewees said that the current renderings look too similar to vending machines, and they are not satisfied with their appearance and painting. Some interviewees are also very concerned about the specific cleaning method of the automatic cleaning device inside the machine.

## 4.5 Design Outcome

Based on the feedback from user testing process, design points of this stage are:

- Modify the shape of the bottle, considering the anti-dumping performance.

- Modify the external coating equipment leasing.

4.5.1 Final Concept

In this phase, the author uses CAD software to build up digital models with design details and structures which can be used to make the final physical model and renderings.

a) On-go cup

- Digital model

The digital cup model is made by Rhino (figure 4.19). The shape of the whole cup looks similar to the traditional travelling cup.

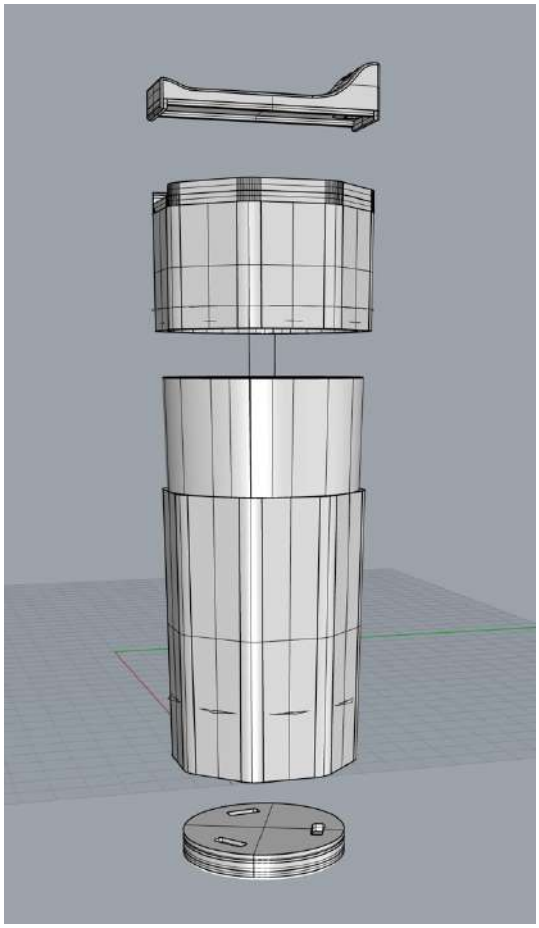


Figure 4.19: Digital model (cup)

The cup lid and the mouthpiece are removable with switch and lock structure (figure 4.20).

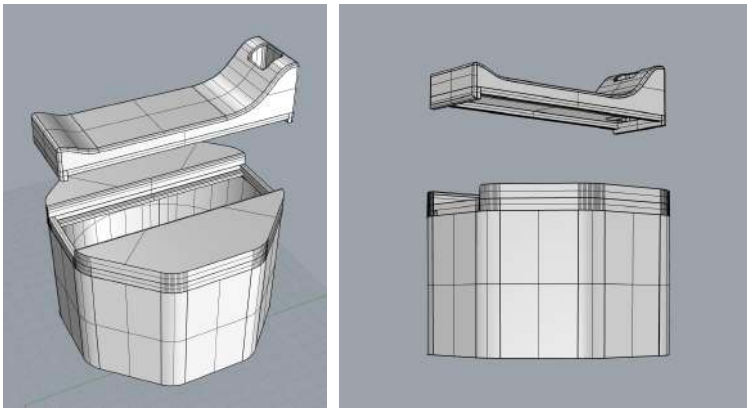


Figure 4.20: Cup lid and mouthpiece

Considering the anti-dumping performance, the author added a complex structure (figure 4.21) at the bottom of the cup, which is similar to a suction, so that the cup cannot be removed from the table unless the cup is picked up vertically.

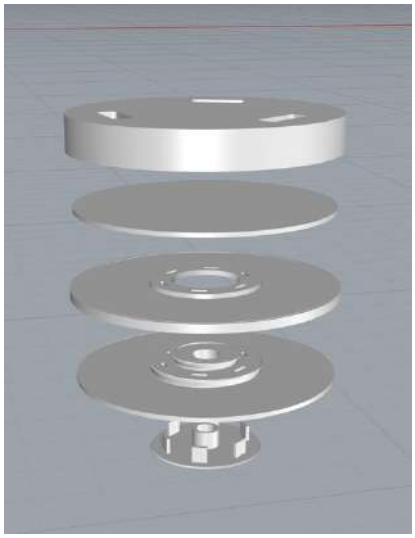


Figure 4.21: Bottom part

In terms of the body part of the cup, there is a two-layer structure (figure 4.22), which aims to Isolating heat source, preventing scald and providing better heat preservation effect.

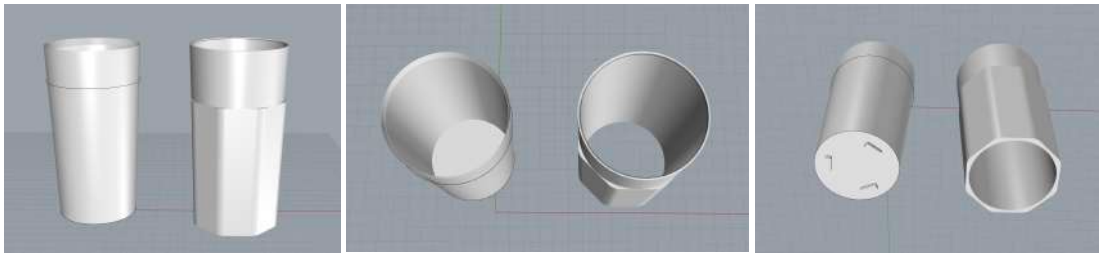


Figure 4.22: Body part

- Size and Material

The size of this reusable on-go cup (figure 4.23) is about 75*80*164 (unit: mm).

In actual production, the mouthpiece will be made of silicon, and the lid and the inner layer of the cup will be made of PPSU. These two materials are widely used in the manufacture of baby bottles, which are safe, reliable, lightweight, durable, and easy to clean. The outside layer would be made by the mix of resin and bamboo fibre, which is a kind of environmental protection material with delicate texture, not easy to attach stains and unbreakable. (figure 4.24)

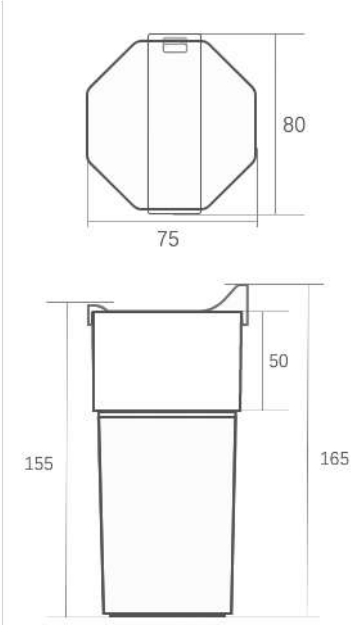
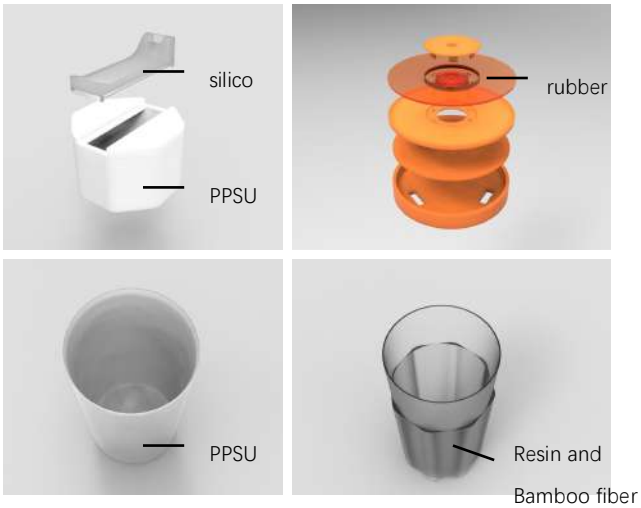



Figure 4.23: Size.




PPSU: Polyphenylene sulfone resins

Figure 4.24: Material chosen

- Rendering

The rendering of the on-go cup is made by Keyshot 9. Following rendering outcomes (figure 4.25) show the final visual effects.

Figure 4.25: Rendering (cup)

b) Rental Machine

- Digital Model

Rhino is still be used to build up rental machine digital model (figure 4.26), which including the rent and return slot, code scan equipment, cleaning facility and storage.

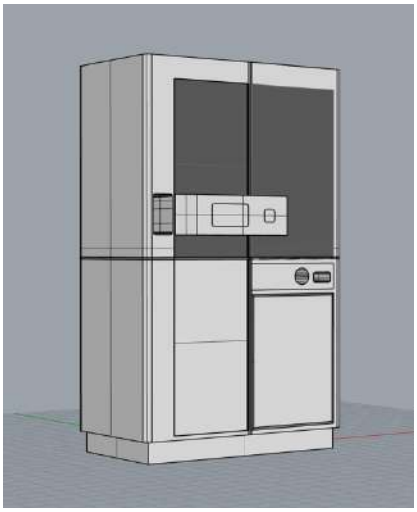


Figure 4.26: Rendering (rental machine)

The code reader and take or return slot are included in the rent and return functions (figure 4.27).

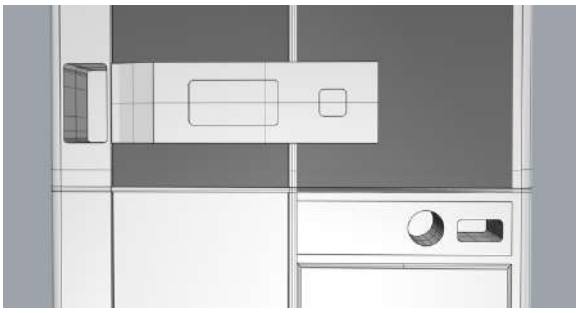


Figure 4.27: Rent and return slot

The cleaning system and storage space (figure 4.28) are the main part of the whole machine.

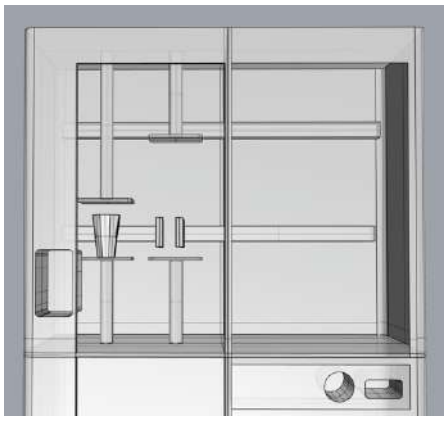


Figure 4.28: Body part

There are some nozzle and conveyor track inside of the cleaning system (figure 4.29).

Figure 4.29: Cleaning system

- Size and Material

The size of the whole rental machine (figure 4.30) is about 110*80*180 (unit: cm).

Stainless steel is the main material of the whole machine, and the water pipe is made by PVC, a normal pipe material. The cleaning equipment is the glass rinser, which is widely used in bar table in coffee shop. (figure 4.31)

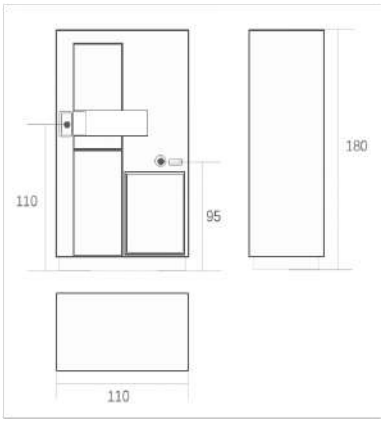



Figure 4.30: Size.

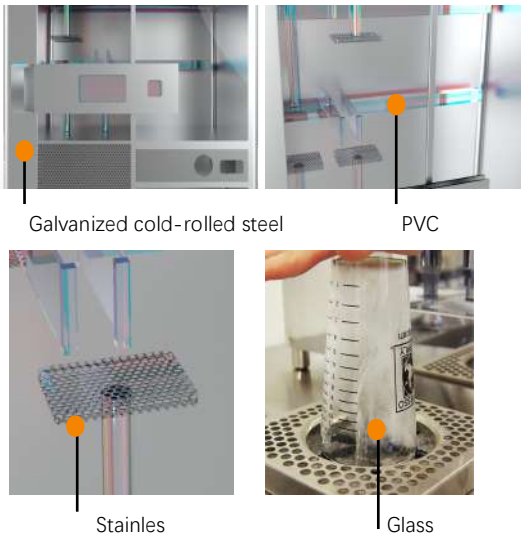



Figure 4.31: Materials

- Rendering

The rendering of rental machine is made by Keyshot 9. Following rendering outcomes (figure 4.32) show the final visual effects.

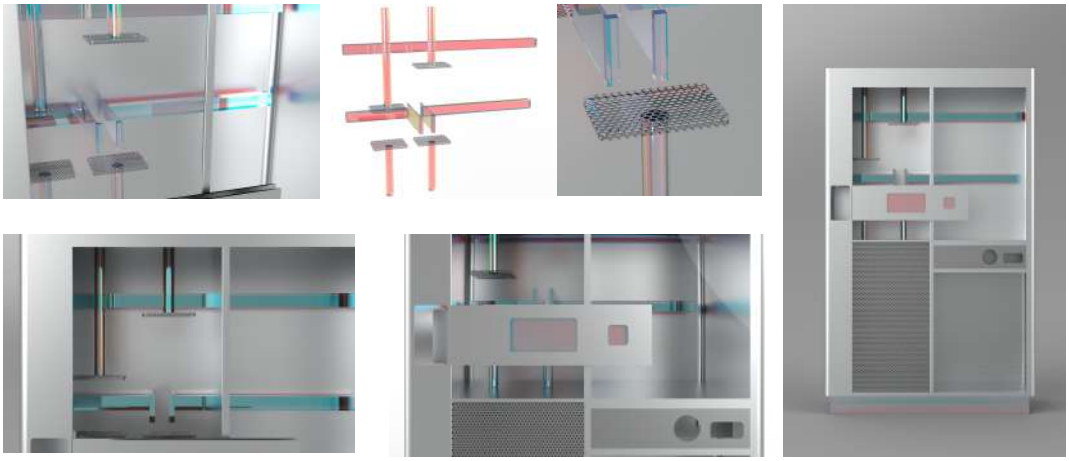


Figure 4.32: Rendering (rental machine)

4.5.2 Final Outcome

a) On-go cup

The author made the physical prototype (figure 4.33) of on-go cup by 3D print and CNC technical, and the main materials are rubber and ABS plastic.

Figure 4.33: Prototype

b) Rental Machine

Considering the large volume of the rental equipment, and the problem of electronic hardware and wiring need to be taken into account in the physical object, the final

result of this project has adopted the scene rendering (figure 4.34) to present the final effect. This device is used in indoor places, such as the corridor of an office building.

Figure 4.34: Scene rendering

c) Application interface

The high-fidelity mobile phone application interface (figure 4.35) is made using Adobe XD software and set the page jump and dynamic effects.

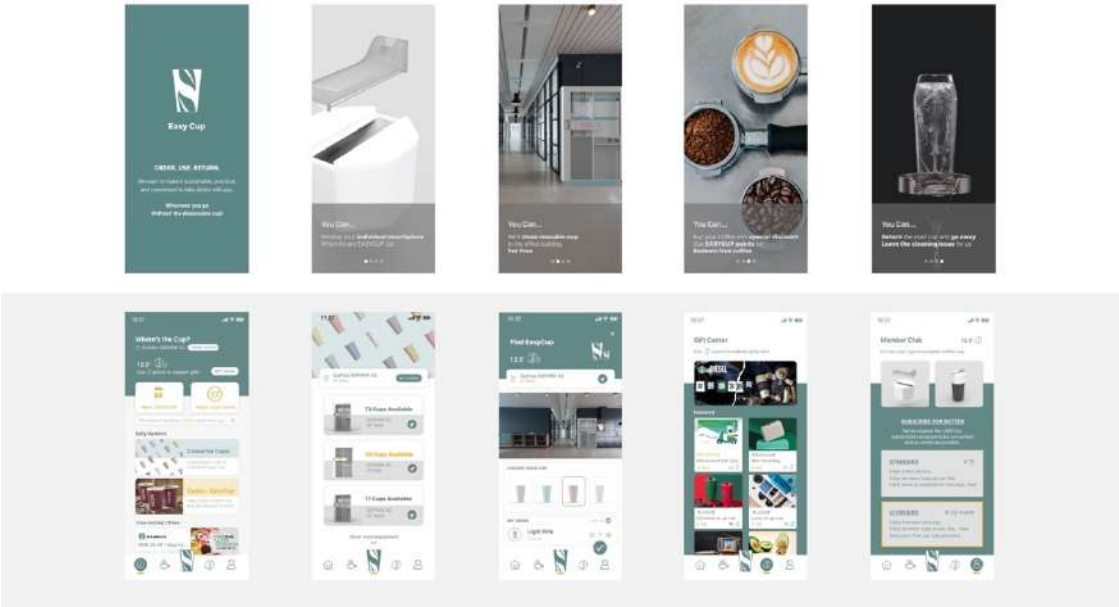



Figure 4.35: Interface

d) Others

In this design concept, the mouthpiece belongs to the consumer, so the author provides a box container (figure 4.36) for users to keep the mouthpiece.


Figure 4.36: Box container

4.5.3 Project Instruction

The main purpose of this design project is to reduce the use of disposable cups in the office building gathering area by providing reusable cup rental and cleaning services.

Under the action of this service system, the user's behaviour will change to a certain extent.

The storyboard (figure 4.37) explains the entire service process from the user's perspective.


Figure 4.37: Storyboard

The consumer should participate in EASYCUP service project firstly and pay the member fee on the website or application. There are two different service fee standards that can be chosen by consumer. After paying the fee, the consumer will receive an exclusive mouthpiece with a unique QR code on it. Then the user can find the nearest rental station on application, make an order and take the mouthpiece to the rental machine, scan the code and pick up the cup within 15 minutes. Switching on the mouthpiece the consumer can take the cup to the coffee shop and buy a cup of coffee with a special discount or just keep it for daily usage. If the consumer would like to return it back or get cleaning service, then take off the mouthpiece and

left the cup at the nearest EASYCUP station. The cup will be cleaned by glass rinser inside the cleaning system, disinfection, drying and stored in the machine for the next rental order.

Therefore, the user journey has also undergone some changes. In the new user journey map (figure 4.38), comparing the former one, the consumer doesn't need to take their own cup or cleaning after drinking. However, they should pay for this service, and make an order online by mobile application in advance. The benefits are the consumer could enjoy clean reusable cup providing service, more discount than usual, additional member rights.

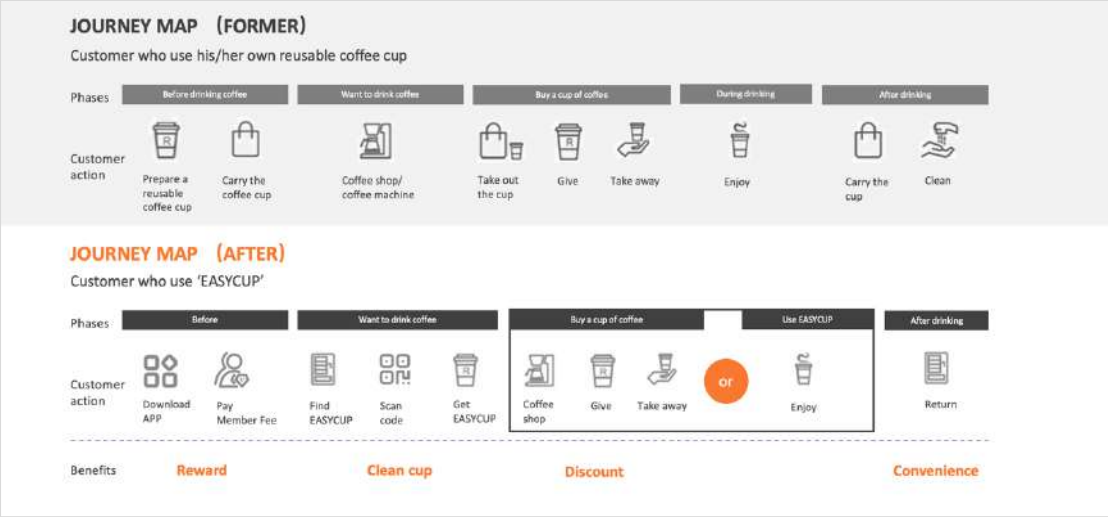



Figure 4.38: New customer journey map

Another issue of concern is the funding support source (figure 4.39) of this service project. In this project, the cup service is provided by the third party organization, the customer member fee, government financial support and advertisement income would cover the cost of maintain.

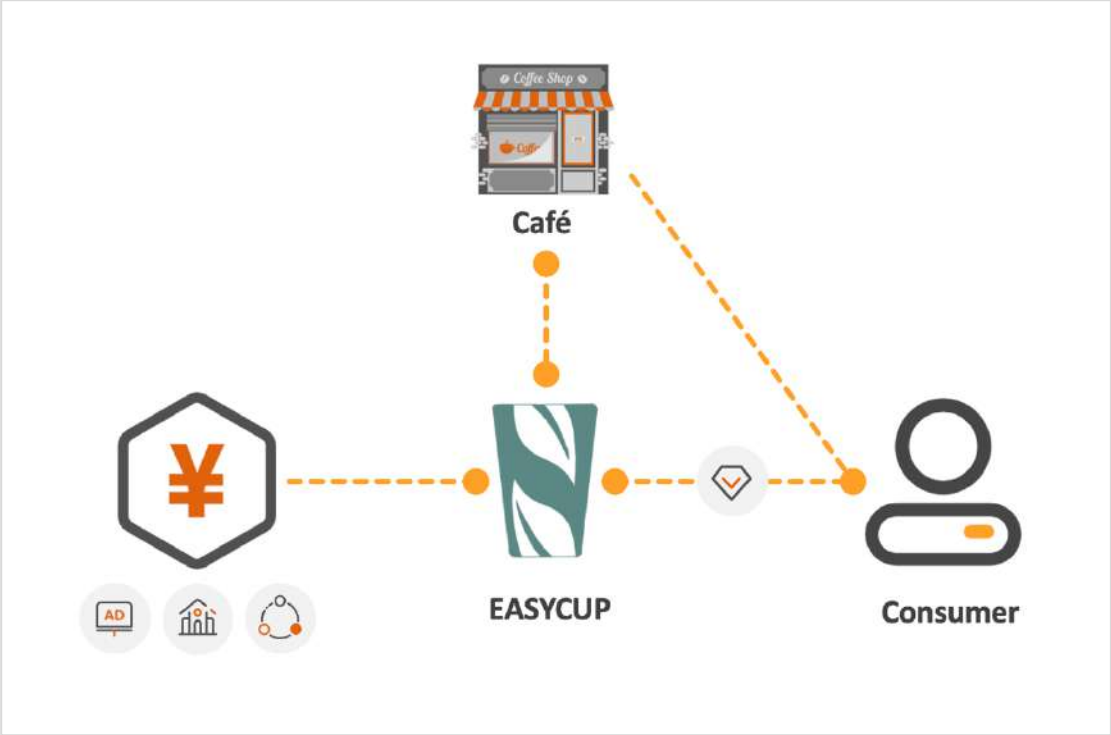



Figure 4.39: Financial support

## 4.6 Target User Retest

After completing the product prototype, the author re-tested the target users (figure 4.40). The tests included the user's understanding of the process, the user's satisfaction with the shape of reusable on-go cup and the user's satisfaction with the cup rental service system.

Figure 4.40: Target user retest

In the test, some users still said they did not know whether to wait for the machine to clean their cups when they needed to rent them. However, after reading the storyboard, they were no longer confused about the using process.

More than 80 per cent of target customers (figure 4.41) said they were satisfied with the look of the on-go cup as well as the rental machine and thought it would fit into the environment. Some users suggested that we set up more machines in the building. However, some responders mentioned that the lid of the cup prototype is a little bit tight, and it could be better if there is a handle on the cup. In addition, most responders said that the box container design looks not attractive enough.

All users indicated that they trusted the system to clean the cup. However, a small number of users concern about wastewater treatment.


Figure 4.41: Customer satisfaction

# Chapter 5 Conclusion and Further Step

## 5.1 Conclusion

From this whole project, the author has figured out a solution to help the office workers in office gathering areas to get well-designed reusable cups more easily. In the module of Design Research Project, the author has learned many useful design methods and research tools, and with the help of these tools and, the author could dig the topic more deeply. But there are still points worth to be improved, and there is always more than one good solution as well.

## 5.2 Further Directions

How to encourage more users to participate in the service plan is the main task of the next stage. One possible promotion scenario would be to redesign the special box for the mouthpiece to become an iconic trend item, attracting more white collars to participate in the EASYCUP project.

Otherwise, hope that the design thinking methods involved in this course module can be used to solve other more wicked problems in daily life.

## Appendix

Online Questionnaire

1. 你是否喜欢喝咖啡？/ Do you like drink coffee?

☐ 是 / YES.

☐ 否 / NO

2. 你多长时间喝一次咖啡？/ How often do you drink?

☐ 几乎每天 / Everyday

☐ 一周 1-2 次 / 1-2 times per week

☐ 一周超过 3 次 / More than 3 times per week

☐ 每天不止一杯 / More than once a day

3. 你通常会在什么情况下喝咖啡？/ When will you want to drink coffee?

☐ 逛街的时候作为饮料 / When go shopping

☐ 喝下午茶的时候 / At tea time

☐ 在工作的时候 / Work in the office

3. 你通常会在哪里喝咖啡？/ Where do you drink coffee? (Why?)

☐ 在咖啡店里 / Stay in the coffee shop

☐ 打包带走 /Take away

4. 如果选择打包，那么你更希望在哪里喝？/ If take away, where do you prefer to drink?

☐ 带去办公室 / Office

☐ 边走边喝 / On the way

☐ 户外 / Outdoor

5. 你更偏好使用哪一种杯子装咖啡？/ Which kind of coffee cup do you prefer to use?

☐ 一次性纸杯 / Disposable paper cup

☐ 店里的马克杯 / Mug in the shop

☐ 自带杯子 / Own cup

☐ 其他可重复使用的杯子 / Other reusable cups

6. 你如何处理使用过的咖啡杯？/ How do you deal with the used coffee cup?

☐ 清洗干净 / Clean

☐ 留在桌面上 / Leave

☐ 扔掉 / Throw

☐ 再多用几次 / Reuse for several times

7. 你是否曾经使用自己的杯子在咖啡店购买咖啡？/ Do you have any experience of using your own reusable cup in the coffee shop?

☐ 是 / YES

☐ 否 / NO

8. 你是否知道有些咖啡店会给自带杯子的消费者一定的折扣？/ Do you know some coffee shop will give some discount for the customer who uses their own reusable cup?

☐ 知道 / YES

☐ 不知道 / NO

☐ 知道，但仍然不愿意自带 / Yes, but still unwilling to bring.

☐ 不知道，但仍然不愿意自带 / No，and still unwilling to bring.

☐ 如果知道，愿意考虑自带 / I will consider if I know.

9. 你不愿意自带杯子去咖啡店的主要原因是？ / Why you unwilling to take your own cup?

☐ 太麻烦了 / Too much trouble

☐ 经常忘记带 / Always forget

☐ 喜欢咖啡店的印刷纸杯 / I like the printed paper cup.

☐ 通常是临时想到喝咖啡，没有准备 / The idea normally on the spur of the moment without prepared.

10. 你知道 99%的可回收纸杯最后仍然无法被回收吗？/ Do you know that 99% of recyclable paper cups still cannot be recycled in the end?

☐ 我听说过 / Yes, I heard about that.

☐ 我不知道 / I don't know.

<u>Interview – coffee shop staff</u>

1. 门店每天的咖啡销售量大概有多少？

How much is the average daily sales?

2. 消费者通常会选择在店内就餐还是打包带走，比例大概是多少？

Customers prefer to enjoy in the shop or take away?
And how about the percentage?

3. 在消费者没有特殊要求的前提下，你们通常用一次性纸杯装咖啡是为什么？是否是因为不推荐顾客在店内就餐？

Why do you usually use disposable paper cups for coffee when the. consumers have no special requirements.
Is it because customers are not recommended to enjoy coffee in the shop?

4. 您是否遇到过自带杯子的消费者，他们是常客吗，你是否知道他们的背景？

Have you ever met customers who bring their own cups? Are they regular customers?
Do you know anything about their background?

5. 顾客通常会在什么情况下要求使用店内的马克杯？

Under what circumstances do customers usually request to use a mug?

6. 你们通常如何处理顾客使用过的纸杯？

How do you deal with used disposable paper cups?

7. 你是否知道这些纸杯最后将被如何处理？

Do you know how these paper cups will be handled in the end?

8. 为了减少一次性纸质产品的使用，你们做过什么样的尝试？效果如何？

What attempts have been made to reduce the use of disposable paper products? And how's the effect?

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